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# EMOTIONAL-MENTAL BURNOUT OF DOCTORS IN UZBEKISTAN AND ITS REASONS

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✓ ***Resume,***

***Medicine has always been considered a profession with high requirements for its representatives (personal qualities, high level of education, its versatility, continuity, etc.). Many medical workers, as representatives of helping professions, are at high risk of emotional burnout, which is referred to in foreign literature as "burnout", which translates as "collapse", "exhaustion". Burnout is a global problem associated with the presence of distress arising in the process of performing work activities, which has the potential for a negative impact on both mental and physical health of a person, and the effectiveness of the organization. Most researchers of burnout believe that this phenomenon is negative for organizations, employees and their environment; therefore, it is necessary to strive to reduce its level, which generates an ongoing scientific interest in the factors that form this multicomponent mental syndrome [1]. Despite the large amount of accumulated material on the problem of burnout in domestic and foreign science, disagreements on the mechanisms of burnout and its structure persist today.***

***Key words: burnout, emotional exhaustion, depersonalization, decrease in professional achievements, risk factors, doctors, medical students, prevention, professional efficiency and success, length of service, dynamics of professional burnout.***

# O'ZBEKISTONDAGI SHIFOKORLANING HISSIY CHARCHASH XAVFI YUQORILIGI SABABLARI

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✓ ***Rezyume,***

***Tibbiyot har doim o'z vakillariga (shaxsiy fazilatlar, yuqori darajadagi bilim, uning ko'p qirraliligi, uzluksizligi va boshqalar) yuqori talablarga ega bo'lgan kasb sifatida qaraladi. Ko'pgina tibbiyot xodimlari, yordam beradigan kasblarning vakillari sifatida, hissiy charchash xavfi yuqori, bu esa chet el adabiyotida "burnout" deb tarjima qilingan "toliqish", "charchash" deb nomlanadi. Kuyish - bu insonning ruhiy va jismoniy sog'lig'iga va tashkilot samaradorligiga salbiy ta'sir ko'rsatishi mumkin bo'lgan mehnat faoliyatini amalga oshirish jarayonida yuzaga keladigan qayg'u-alam borligi bilan bog'liq global muammo.***

***Kuchsizlanish tadqiqotchilarining aksariyati ushbu hodisa tashkilotlarga, xodimlarga va ularning atrof-muhitiga salbiy ta'sir qiladi deb hisoblashadi, shuning uchun uning darajasini pasaytirishga harakat qilish kerak, bu esa ushbu ko'pkomponentli aqliy sindromni shakllantiruvchi omillarga doimiy ilmiy qiziqish uyg'otadi. Mahalliy va xorijiy fanlarda toliqish***

***muammosi bo'yicha juda ko'p materiallar to'planganiga qaramay, toliqish mexanizmlari va uning tuzilishi bo'yicha kelishmovchiliklar bugungi kunda ham davom etmoqda.***

***Kalit so'zlar: charchash, hissiy charchash, shaxssizlashish, kasbiy yutuqlarning pasayishi, xavf omillari, shifokorlar, tibbiyot talabalari, profilaktika, kasbiy samaradorlik va muvaffaqiyat, ish staji, kasbiy tükenme dinamikasi.***

## ЭМОЦИОНАЛЬНО-ПСИХИЧЕСКОЕ ВЫГОРАНИЕ ВРАЧЕЙ В УЗБЕКИСТАНЕ И ЕГО ПРИЧИНЫ

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✓ ***Резюме,***

***Медицина всегда считалась профессией с высокими требованиями к своим представителям (личностные качества, высокий уровень образования, его разносторонность, непрерывность и т.д.). Многие медицинские работники как представители помогающих профессий подвержены высокому риску эмоционального выгорания, которое в зарубежной литературе обозначается термином «burnout» (англ.), что переводится как «сгорание», «выгорание». Выгорание является глобальной проблемой, связанной с наличием дистресса, возникающего в процессе выполнения трудовой деятельности, имеющей потенциал отрицательного влияния как на психическое и физическое здоровье человека, так и на эффективность деятельности организации. Большинство исследователей выгорания считают, что этот феномен является негативным для организаций, работников и их окружения, поэтому надо стремиться к снижению его уровня, что порождает непрекращающийся научный интерес к факторам, формирующим этот многокомпонентный психический синдром. Несмотря на большой массив накопленного материала по проблеме выгорания в отечественной и зарубежной науке, разногласия по вопросам механизмов выгорания и его структуры сохраняются и сегодня.***

***Ключевые слова: выгорание, эмоциональное истощение, деперсонализация, снижение профессиональных достижений, факторы риска, врачи, студенты медицинского вуза, профилактика, профессиональная эффективность и успешность, стаж, динамика профессионального выгорания.***

### Relevance

Despite the large amount of accumulated material on the problem of burnout in domestic and foreign science, disagreements on the mechanisms of burnout and its structure persist today. There are two main modern approaches to the study of burnout: Representeffective and ctive approach consider burnout as a condition that includes a number of specific components, combined into larger blocks within a single syndrome [2].

The traditional and generally accepted theory of burnout can be considered a three-factor model proposed by K. Maslach and S. Jackson, according to which the burnout syndrome is understood as a state of physical, emotional and mental exhaustion that manifests itself in the professions of the social sphere and includes three main components:

- Emotional exhaustion (feeling of emotional emptiness, fatigue from work, decreased mood);
- Depersonalization (dehumanization: negative, cynical attitude towards colleagues and clients, detachment);
- Reduction of professional achievements (a sense of incompetence and awareness of their own inconsistency, failure) [3]

Four-factor models explain the emergence of the fourth additional factor by the specificity of professional activity. For example, such a factor may be the anxiety of specialists for the family in connection with a long stay outside the home [1].

Proponents of the two-factor model of the burnout structure suggest different variants of its structure. D. Green argues that the factors of emotional exhaustion and depersonalization are parts included in one basic factor, which, together with the reduction of professional achievements, constitutes the structure of burnout. A. Garden defines depersonalization as a factor specific only to social service professions T.J. Kalliath and other authors exclude the reduction of professional achievements from the structure of burnout [5].

One-factor models by A. Pines and E. Aronson interpret burnout as a complex state of physical, mental and emotional exhaustion caused by prolonged involvement in an emotiogenic situation [4].

From the point of view of the procedural approach, burnout is considered as a course of destructive development in the professional development of an individual, which includes a number of successive stages. M. Burish relies on dynamic changes in the development of burnout that unfold during the passage of six phases [6]. The main source of burnout is associated with the contradiction between the degree of involvement in the work and the quality of the results obtained. The stages of development of burnout in accordance with the six-step model proposed by M. Burish are characterized as follows:

- a preventive phase, manifested in excessive activity in work and the repression of experiences of failures and disappointments;

- a decrease in the level of their own participation in professional activities, accompanied by dissatisfaction with work and attributing their own failures to others;

- the manifestation of emotional reactions and such personality traits as depression, aggressiveness, conflict;

- phase of destructive behavior; - psychosomatic reactions and decreased immunity; - disappointment and negative attitude in life: a feeling of helplessness, loss of meaning in life, existential despair [6].

According to L.A. Kitaev-Smyk, burnout is associated with the meaning of professional activity and life in general, which allowed the author to call the studied syndrome "burnout of the soul" [7]. In this case, the problem of reversibility - irreversibility of burnout remains insufficiently studied. Representatives of the structural-results approach believe that professional burnout syndrome is irreversible [3]. Other authors, who support the procedural direction of the study of this phenomenon, note that the degree of reversibility of burnout is influenced by both personal factors and organizational factors, in particular, corrective measures taken at work [8].

A promising direction in the study of the degree of penetration of burnout and its negative consequences into the structure of the personality of a professional is longitudinal studies of burnout of doctors, which are practically absent in domestic science [1].

An alternative to long-term longitudinal studies of burnout can be studies of such groups of professions in which this syndrome develops very quickly in almost all specialists. In this regard, this work uses the results of research on the professional burnout of call center workers who provide telephone counseling to clients of free hot lines. In such organizations, staff turnover is a common daily occurrence. A complete change of the personnel of "hot telephone lines" of many companies occurs within six months or a year [6].

**Factors of development and risk of burnout**. Risk factors for the development of burnout can be such work-related factors as a place in the service hierarchy, understaffing and high requirements for it, professional experience, age of an employee, as well as negative characteristics of his professional activity (overwork, overwork, overtime work, conflicts with work, poor social support, boredom, limited resources, lack of feedback, professional insecurity and a sense of social injustice, imbalance between effort and reward, length of internship, delayed remuneration, etc.).

At the same time, the results of studies of employees of customer hotlines indicate that the risk of burnout, as well as the depth of its destructive influence on a doctor, depends to a large extent on the professional motivation of the doctor: specialists aiming at career growth, authority, recognition, as well as material remuneration (“external” factors that determine one's own value as a professional) are more susceptible to emotional burnout than those that aim to satisfy any internal emotional and spiritual needs.

However, the results of a study conducted by Yu.S. Guryanova and T.L. Kryukova [1], about the greatest susceptibility to burnout of teachers, for whom work has a positive personal meaning and is a meaning-forming motive of their professional activity, do not confirm the data obtained in our study. Although the professional burnout of call center employees was associated with the intensity of work and the overall efficiency of the employee, the most successful employees who rely on their own values and meanings in the implementation of their professional activities did not reveal clear signs of professional burnout.

Emotional burnout is associated not only with professional stresses, but also with existential reasons and is the payment for unfulfilled life expectations. A “burned out” person loses a sense of meaning, ceases to feel happy, loses his personal perspective and the ability to effectively self-actualize. Burnout leads to the development of an "existential vacuum", a decrease in the sense of meaningfulness of life in the present moment, and a devaluation of the meaning of future life. Dissatisfaction with the quality of life can also be a cause and a consequence of burnout. A decrease in personal achievements and responsibilities correlates with a decrease in the quality of life, job dissatisfaction, self-control, mood, relationships with others, and physical distress. In the group of dentists, the relationship between burnout and dissatisfaction with various aspects of life was revealed. Dissatisfaction with work and career growth was correlated with the experience of being “caged,” “expanding the sphere of saving emotions,” “personal detachment,” “emotional exhaustion,” and the phase of burnout.

The experience of loneliness also affects the formation of burnout. A high degree of burnout reduces sensitivity not only towards other people, but also towards yourself. This weakens the experience of loneliness as a defense against suffering. Emotional exhaustion and depersonalization negatively correlate with the degree of experience of loneliness: the dullness of freshness of feeling affects a more insensitive attitude towards oneself, leading to a decrease in the experience of loneliness [9]. The results of the study of burnout of dentists showed that “the more significant the emotional exhaustion and the feeling of hopelessness, emotional impasse, the stronger the feeling of dissatisfaction with work and oneself, which gives rise to such a strong sense of personal anxiety, which manifests itself outside of professional activity, the more pronounced the decrease in emotional background, manifestation of indifference to the patient. The higher the degree of exhaustion, the more the professional will tend to avoid thoughts or contact with patients. The burnout phase is associated with the indicator "caged in": the stronger the feeling of hopelessness, emotional deadlock, and the more significant the experience of distress. The stronger the professional's feeling that he can no longer help the subjects of his activity, the more he tries to alleviate or reduce the responsibilities that require emotional costs, and the more clearly this is manifested in the actions of a specialist in the field of communication: there is a complete or partial loss of interest in the subject of professional activities” [9].

The theoretical explanation for the development of burnout is provided by the model “Requirements for work - resources for work”. In this model, all factors associated with occupational stress fall into two main categories: job requirements and job-related resources. Job requirements are defined as physical, psychological, social and organizational aspects that require sustained physical, psychological effort or skill and therefore lead to certain physiological / psychological costs.

Examples of job requirements: intense stress, optimal workload, emotionally demanding interactions with clients, etc. Excessive job requirements lead to value conflicts, loss of independence, independence, initiative, role uncertainty and role conflicts, injustice, dishonesty, etc. When medical personnel are faced with high demands for work and have limited resources to complete it, they are at risk of developing burnout. Job requirements play a decisive role in poor health and, to a lesser extent, in the motivational process. They are important correlates of emotional exhaustion, while resources are the most important correlates of depersonalization. The resources for performing the work contribute to the achievement of the set goals, reduce the costs associated with it. Skills, sufficient time to get the job done and controllable, the ability to influence decisions, support from managers, high-quality peer relationships, productivity-related feedback, retraining opportunities, and career incentives are examples of these resources. Workplace resources especially affect motivation to achieve goals when job requirements are high. All types of resources have motivating potential and become especially useful when needed. Personal resources such as self-efficacy and optimism can act as resources in the workplace. They increase a person's confidence in their ability to control the environment, are a buffer for the negative effects of high demands at work, and prevent the development of professional deformation [10, 11].

Initially, it was believed that professional burnout occurs as the length of the work experience; however, the ideal ideas quickly gave way to pragmatic ones. Admiration, passion for medical practice gave way to routine work. Despite the growing desire of a certain part of doctors to retire earlier, referring to the high stress at work, a decrease in job satisfaction, the point of view is expressed that burnout among experienced doctors is less common than among doctors who are just starting their careers [12, 13].

The problem of burnout among medical students is becoming urgent, because as they move from teaching through lectures and seminars to clinical work with patients, focused on helping and caring for patients, there is an increase in negative experiences caused by increasing distress, a decrease in self-confidence and humanistic attitudes to the sick. This can lead to a decrease in the quality of health care provided and negatively affect the health and well-being of medical students. Distress during medical school can lead to burnout with significant consequences, especially if burnout continues in and out of residency.

Research carried out in 2006 involving different groups of three medical schools in Minnesota, found that 45% of students had burnout, in whom the experience of serious illness was the only negative life event highly associated with an increase in burnout. Positive life events were not associated with burnout, although they were significantly associated with a lower risk of alcohol use and depression. The study authors concluded that their self-reported estimates of the prevalence of burnout among medical students are limited and the prevalence of burnout is actually lower. In addition, the study found that burnout among 1st-2nd year students was closely related to perceived levels of support from faculty, while burnout among 3rd and 4th year students was most closely associated with medical practice, internships and devaluation of the importance of patients. Patient-related students on night shifts were more likely to experience burnout, possibly due to long hours in the hospital and the severity of practical work experiences. The frequency of calls, the number of patients served, appointments and consultations did not significantly affect the development of burnout [11].

In our country, a similar, but different situation is developing: the same internal, external "return" is important for students, as are the conditions of study at a medical university, its provision, the composition of teachers and their professional and personal qualities, "solidity", the level of requirements.

## Conclusion

Summarizing all of the above, professional burnout in doctors is a consequence of complex interactions:

1) A subjective assessment of reality: the quality of education at the university, the prospects for career growth and personal freedom, material security, a sense of legal security.

2) Objective reality: working conditions, requirements, the adequacy of the authorities, and the ratio of wages to the subsistence level in the region.

3) Personal trait, feelings, aspirations.

Moreover, it can develop at different stages of the formation of a doctor as a professional.

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# DIAGNOSTICS AND TREATMENT OF ACUTE EPIDIDYMO-ORCHITIS

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✓ ***Resume,***

***This article contains an overview of recent years on this pathology. The information in the article will help practicing doctors refresh their knowledge, and thereby help to carry out modern diagnostics and treatment of patients with epididymo-orchitis.***

***Key words: Epididymo-orchitis, epididymitis, diagnosis, treatment.***

# ДИАГНОСТИКА И ЛЕЧЕНИЯ ОСТРОГО ЭПИДИДИМООРХИТА

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✓ ***Резюме,***

***Данная статья содержит обзорную информацию последних лет по данной патологии. Информация, содержащаяся в статье, поможет практикующим врачам освежить свои знания, и тем самым поможет проводить современную диагностику и лечение больных с эпидидимоорхитом.***

***Ключевые слова: Эпидидимоорхит, эпидидимит, диагностика, лечения.***

# O'TKIR EPIDIDORMORITNI TASHXISLASH VA DAVOLASH

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✓ ***Rezyume,***

***Ushbu maqolada ushbu patologiya bo'yicha so'nggi yillarda umumiy ma'lumot mavjud. Maqolada keltirilgan ma'lumotlar amaliyotchi shifokorlarga bilimlarini yangilashga yordam beradi va shu bilan epididimo-orxit bilan og'rigan bemorlarni zamonaviy diagnostika va davolashda yordam beradi.***

***Kalit so'zlar: Epididimo-orxit, epididimit, diagnostika, davolash.***

## Relevance

Acute epididymo-orchitis is an inflammation of the testicle and its epididymis, manifested by pain, swelling, reddening of the scrotum and fever. Epididymitis is said to be an isolated inflammation of the epididymis. When the testicle is involved in the inflammatory process, epididymo-orchitis is Referred to [1,2]. The spread of the inflammatory process to the testicle with the development of acute epididymo-orchitis is observed, according to various authors, in 10-58% of cases [3,4]. Isolated testicular inflammation - Orchitis is much less common.

Chronic epididymitis refers to epididymal pain and inflammation, usually without scrotal edema, that lasts more than six months [5]. The disease is mainly unilateral, a bilateral process is observed in 5-10% of patients [7,8]. Acute epididymitis is one of the most common infectious and inflammatory diseases of the reproductive system in men. In the structure of urgent urological diseases, patients with this pathology occupy a very significant place. According to the literature - in 4-10.2% of cases [9.10]. The incidence of infertility after

transferred epididymo-orchitis is 20-35% with unilateral defeat and 80-87% in a bilateral process [11].

In acute epididymitis, inflammation of the epididymis occurs mainly due to nonspecific and specific infectious genesis, but it can also develop as a result of viral infections, trauma, autoimmune disorders, medication (amiodarone), etc. [12]. Most often, infection occurs through the canalicular route and is a complication of urethritis, prostatitis, and cystitis. With the canalicular pathway of infection, first of all, the inflammatory process develops in the tail of the epididymis, then passes into the body, the head of the epididymis, and subsequently passes into the testicle.

Sexually transmitted infections (Chlamydia trachomatis, Neisseria gonorrhoeae and Ureaplasma urealyticum) are common causative agents in men younger than 35 years old who have promiscuous sexual relationships. In men over 35 years old and not having promiscuous sexual intercourse, gram-negative enterococci (Escherichia coli, Pseudomonas spp) are more often detected. The tuberculosis bacillus should be kept in mind, especially in persons with a previous history and in countries with a high prevalence of tuberculosis. In immunocompromised men, brucellosis, coccidioidomycosis, blastomycosis, cytomegalovirus, and candidiasis may occur. Mumps orchitis occurs in up to 40% of post-pubertal boys with mumps [13, 14].

Risk factors include men who have promiscuous sexual intercourse, the presence of purulent discharge from the urethra, catheterization of the bladder, transurethral studies. Also, acute epididymitis may be preceded by prostatitis. Anal intercourse is also a risk factor for contracting intestinal pathogens. Not infrequently, epididymo-orchitis develops in men with anatomical and functional disorders of the urinary tract. Children may have urinary tract abnormalities, ectopia of the ureters, urethral valves, vesicoureteral reflux, etc.

Diagnosis of the disease should be started with a thorough questioning: Pain in the scrotum with or without edema begins gradually. The pain is usually one-sided and in the initial stage is mainly localized in the back of the testicle (in the epididymis). Fever and chills are reported in 75% of cases. Lower urinary tract symptoms such as dysuria, frequent urination, urgency are present in about 30% of cases. Discharge from the urethra, irritation in the urethra are more common in sexually transmitted infections [15].

On examination, the patient's body temperature may be elevated. The scrotum is usually swollen from the side of the lesion, the skin is hyperemic, and the folds of the skin are smoothed. If the inflammatory process has begun recently, and the reactive dropsy is not expressed, the epididymis and the testicle can be palpated separately. With epididymitis, the epididymis is enlarged and painful on palpation. When the inflammatory process lasts several days, as well as with reactive dropsy of the testicle and epididymis, it is not possible to palpate separately. With purulent fusion of the appendage or the formation of an abscess, softened areas can be palpated. With canalicular infection, edema begins in the tail of the epididymis and spreads to the body and head. The pain subsides slightly when the testicle is lifted up. The cremasteric reflex is usually present in the early stages of the disease.

In the diagnosis of STIs, a Gram-stained urethral smear is examined or a nucleic acid amplification test (PCR) is performed for N. Gonorrhoeae, C. trachomatis. Microscopy and bacteriological examination of the middle portion of urine. If there are risk factors or clinical suspicion, testing for tuberculosis and HIV infection should be performed.

To represent the condition of the testicle and its epididymis, an ultrasound scan is performed, which can reveal inflammatory infiltrates and purulent foci. Ultrasound is also used to study the condition of the urinary tract to identify anatomical and functional disorders. Color Doppler is used to assess arterial blood flow to help differentiate epididymo-orchitis and torsion of the spermatic cord. If mumps is suspected, an enzyme immunoassay for IgM and IgG is performed [16, 17]. Differential diagnosis should be performed with testicular torsion and torsion of the hydatid of Morgagni. The basic principles of differential diagnosis are given below:

In acute epididymo-orchitis, pain begins gradually, usually mild, and intensifies as the disease progresses. The pain is relieved by raising the testicle. The body temperature rises. On palpation, a thickened and painful appendage can be identified. The skin of the scrotum from the side of the lesion is hyperemic. Testicle positions are common. Urinary symptoms such as frequent urination and burning sensation in the urethra may be present. In the analysis of urine, leukocyturia can be detected, in the analysis of blood leukocytosis. Doppler ultrasound reveals a thickening of the epididymis, foci of inflammation, increased blood flow.

With testicular torsion: the pain begins acutely, usually of a strong character. When the testicle is raised, the pain is not relieved. Usually occurs in adolescents. On examination, the testicle is located

high; there may be a transverse position. Urinary symptoms, local and general symptoms of inflammation are absent. Doppler ultrasound reveals a decrease or absence of blood flow. Torsion of the hydatid of Morgagni occurs in children. The pain is usually mild and begins gradually. One can observe swelling in the region of the epididymis head, sometimes palpate the node [18,19,20].

**Treatment** General recommendations

Rest, analgesics, and an elevated position of the scrotum are recommended. Non-steroidal anti-inflammatory drugs are used for pain relief and as pathogenetic therapy [21, 22]. Patients with STIs and their sexual partners should be screened for other possible STIs. They are advised to refrain from sexual intercourse until they and their partners have completed treatment and follow-up.

**Etiotropic therapy**

Empiric therapy should be given to all patients with epididymo-orchitis pending bacteriological and / or PCR results. The antimicrobial drug and regimen should be determined according to tests such as urethral swab, urinalysis, age, sexual history, instrumentation, or catheterization. Drugs can vary based on local resistance and recommendations. As a rule, antibiotics active against C. trachomatis and Enterobacteriaceae are prescribed at the onset of the disease. In patients with suspected C. trachomatis and M.genitalium, doxycycline and Fluoroquinolones are effective. They are also effective against Enterobacteriaceae [23, 24, 25]. The clinical response to antibiotics should be assessed after three days, and in patients with a possible or confirmed STI, after 14 days.

The following guidelines are given for surgical treatment: Surgical treatment may be required to drain an abscess or remove necrotic tissue. It is indicated when it is impossible to separately palpate the epididymis and the testicle, as well as in the presence of an abscess on ultrasound examination after the start of antibiotic therapy [26,27]. Immediate surgical treatment is indicated if testicular torsion is suspected.

**Complications**

Complications are more common in patients with uropathogen-associated epididymo-orchitis than in patients with STI-associated epididymo-orchitis and may include the following:

Reactive hydrocele.

Abscess formation.

Infertility.

Mumps can lead to testicular atrophy, subfertility and infertility [28, 29,30].

**Conclusion**

Thus, acute epididymo-orchitis is a medical and social problem, due to the frequent occurrence of severe local and general symptoms of inflammation, which require a comprehensive examination and hospital treatment of patients.

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# ACUTE EPIDYMO-ORCHITIS, CLINICAL CASES OF INADEQUATE CONSERVATIVE TREATMENT

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✓ ***Resume***

***This article describes patients with epididymo-orchitis in whom the disease proceeded in a complicated form and led to an organ ablation operation. When describing cases, the authors show the clinical course and diagnosis of the disease and urge doctors to be alert about possible complications.***

***Key words: Epididymitis, epididymo-orchitis, orchiepididymectomy.***

# ОСТРЫЙ ЭПИДИДИМООРХИТ, КЛИНИЧЕСКИЕ СЛУЧАИ НЕАДЕКВАТНОГО КОНСЕРВАТИВНОГО ЛЕЧЕНИЯ

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✓ ***Резюме,***

***В данной статье описаны пациенты с эпидидимоорхитом у которых болезнь протекала в осложненной форме, и привело к орган уносящей операции. При описании случаев авторы показывают клинику и диагностику заболевания и призывают врачей к настороженности о возможных осложнениях.***

***Ключевые слова: Эпидидимит, эпидидимоорхит, орхоэпидидимэктомия***

# O'TKIR EPIDIMORXIT, ETARLI DARAJADA KONSERVATIV DAVONING BO'LMAGANI KLINIK HOLAT

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***Ushbu maqola epididimo-orxit bilan kasallangan bemor bo'lib, unda kasallik murakkab shaklda o'tdi va organlarni olib tashlash operatsiyasiga olib keldi. Holatlarni tavsiflashda mualliflar kasallikning klinikasi va diagnostikasini ko'rsatib, shifokorlarni yuzaga kelishi mumkin bo'lgan asoratlar to'g'risida ogoh bo'lishga chaqirishadi.***

***Kalit so'zlar: Epididimit, epididimo-orxit, orkiepididimektomiya.***

## Relevance

Acute epididymitis is an inflammation of the epididymis, orchitis is an isolated mation of the in flam testicle, epididymo-orchitis is an inflammation of the testicle and its epididymis, the symptom complex of which is pain, edema, redness of the scrotum and fever [1, 2].

Standard conservative therapy includes antibiotic therapy, pain relievers, and an elevated scrotum. Prior to obtaining a bacteriological analysis of urine, empirical antibiotic therapy is performed. For men with acute epididymitis and a low risk of gonorrhea (no discharge), it is recommended to prescribe one drug or a combination of two with a sufficient dose and duration of administration for the eradication of Chlamydia trachomatis and Enterobacteriaceae, for example: Fluoroquinolones 1 time per day for 14 days or Doxycycline, the first dose of 200 mg by mouth, then 100 mg 2 r / day for 10-14 days +

cephalosporins for 10-14 days. For men with suspected gonorrheal acute epididymitis, a combination of drugs active against gonococci and Chlamydia trachomatis is recommended, for example: Ceftriaxone 500 mg IM once in combination with doxycycline, the first dose of 200 mg orally, then 100 mg 2 r / day for 10-14 days . In severe infections, parenteral treatment is performed [3, 4, 5]. Surgical treatment is performed to drain the abscess or remove necrotic tissue [6, 7].

Currently, the irrational use of antibacterial drugs has led to the growth of antibiotic-resistant microflora. This, in turn, leads to a decrease in the effectiveness of standard conservative therapy. As a result, apostems and abscesses appear in the epididymis and testicle. Antibiotic resistance, untimely detection of apostems and abscesses leads to purulent fusion of the epididymis, which does not favorably affect the patient's condition, manifested by symptoms of intoxication, local symptoms such as pain and swelling in the scrotum and leads to an extension of hospitalization. In addition, a prolonged inflammatory process with the formation of apostems and abscesses leads to the destruction of the epididymis, which requires radical surgical intervention, such as epididymectomy and / or orchiepididymectomy.

In this article, we would like to give examples of the complications of inadequate conservative treatment.

Example No 1. Patient F. 60 years old.

Diagnosis: Complicated urinary tract infection. Acute epididymo-orchitis on the right.

Complaints of general weakness, fever, pain and swelling in the right half of the scrotum.

When interviewed, a patient 1 month ago had urinary symptoms - like frequent urination with burning, a feeling of incomplete emptying of the bladder, which he did not attach importance to. 7-10 days ago, pain began and edema of the left half of the scrotum appeared. Then he began to shiver, the temperature rose. The patient went to the local polyclinic. After examination by a doctor, antibacterial and anti-inflammatory therapy was prescribed - Cefoperazone 1g x 2 times a day IM, Nimesulide 100mg x 2 times a day, for a period of 7 days. After the treatment, no improvement was observed, and therefore he was hospitalized.

On examination, the general condition of moderate severity, body temperature is 38.5C. The right half of the scrotum is enlarged due to edema, the skin is red, and the skin folds are smoothed. On palpation, the right testicle and epididymis are not palpable separately. Palpation is sharply painful.

On ultrasound, the left testicle is normal. The right testicle measures 4.1x2.8 cm, the structure is heterogeneous with echo-negative inclusions 0.2-0.5 cm in diameter. Echogenicity is increased. Around the testicle, a layer of liquid is 0.3 cm. The appendage has smooth, clear contours, the structure is homogeneous, the echogenicity is uniformly increased. The diameter of the head is 2.6 cm, the body is 1.2 cm, the tail is thickened, in its projection there is an inflammatory infiltrate of 1.6 x 1.5 cm, purulent foci of 0.1-0.5 cm in diameter. With CFM, blood flow is increased.

In 1 ml of urine leukocytes-1250, erythrocytes-1000. Bacteriological urine culture showed no growth.

The patient underwent surgery - revision of the right half of the scrotum. At the moment of opening the testicle's own membrane, pus began to flow out (photo No 1).

Photo No 1. The testicle and epididymis were in places closely adhered to their own membrane, covered with fibrinous bloom. There were multiple purulent foci throughout the appendage, some of them had opened, and pus was released. The testicle also contains purulent foci under the tunica albuginea (photo No2).

Photo No 2

Given the significant destructive changes, the testicle and epididymis were found not viable; it was decided to perform orchiepididymectomy with wound drainage.

The patient received antibacterial and anti-inflammatory therapy. The postoperative course is favorable. The patient was discharged on the 4th day after the operation.

Macrodrug: the right testicle and its appendage with multiple purulent foci (photo No. 3).

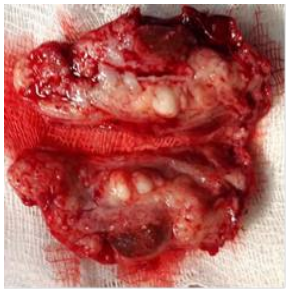

Photo No 3. The reason for such a severe course of the disease was that the patient did not seek medical attention for urinary symptoms. After epididymitis was detected, he underwent outpatient treatment and the course of the disease was not assessed, he was not examined in time for the presence of purulent foci, which led to a protracted course of the disease, purulent destruction of the testicle and its epididymis, which ended with organ-carrying surgery.

Example No. 2. Patient B. 39 years old. Diagnosis: Neurogenic bladder. Acute urinary retention on the background of chronic urinary retention. Complicated urinary tract infection. Acute epididymo-orchitis on the right. Condition after spinal surgery (2001). Lower paraplegia.

**Complaints:** Lack of appetite, malaise, inability to urinate independently, involuntary discharge of urine (paradoxical ischuria), swelling in the right half of the scrotum, limitation of movement in the lower extremities.

**Anamnesis**: A patient in 2001 was injured when he fell from the third floor. The patient underwent three operations in the area of the thoracic spine. After injury, he lacks movement and sensitivity in the lower limbs. He has been also suffering from constipation since then. In recent years, he noted a weak stream of urine, and in recent months, an involuntary loss of urine. Due to impaired sensitivity and lack of pain, he does not know exactly when the swelling began in the right half of the scrotum. 10 days ago, he was admitted to a surgical clinic with dynamic intestinal obstruction. In the surgical department, in addition to dynamic intestinal obstruction, acute urinary retention and right-sided epididymitis were identified. Dynamic intestinal obstruction was resolved with enemas and proserin stimulation. They also installed a urethral catheter for urinary retention, prescribed antibiotics and topically Vishnevsky's ointment on the scrotum. For 10 days, the patient received antibacterial and anti-inflammatory therapy for epididymitis. After discharge from the surgical hospital, the patient was referred to the urological clinic.

On examination of the patient, the general condition of moderate severity, body temperature was 37.5C. After removal of the urethral catheter, urination was not restored, the bladder was palpated high above the bosom. The right half of the scrotum was enlarged due to edema, the skin was red, the skin folds were smoothed, on palpation the right testicle and the epididymis were not separately palpated, there was a softening of the tissues of this half of the scrotum.

On ultrasound, the left testicle was normal. The right testicle measured 37.2 x 26.1 x 33.0mm; the contours were uneven, indistinct. Echogenicity was reduced; the parenchyma was heterogeneous with areas of reduced echogenicity. With CFM, blood flow was increased. The epididymis head was 28 mm in size, the contours were uneven, the echogenicity was increased, and the echo structure was heterogeneous. Around the testicle, there was an accumulation of 50 ml of fluid, of a heterogeneous nature with hyperechoic inclusions. The kidneys and prostate were normal. The volume of the bladder was 1100 ml.

In 1 ml of urine leukocytes-65000, erythrocytes-2000. Urine culture showed an increase in Escherichia coli 105.

The patient underwent a PC cystostomy with bougienage, in which 1.2 liters of turbid urine were released. After that, an orchiepididymectomy was performed on the right.

When performing a skin incision, thick pus began to flow out (photo No. 4) with seminiferous tubules (photo No. 5, No. 6). During revision, the anatomical boundaries of the testis and epididymis were not clearly visualized (photo No 7). Since the testicle and epididymis were found not viable, orchiepididymectomy was performed. The wound was sutured on a rubber graduate with rare sutures. The operating wound healed by secondary intention.

Photo No 4. Leakage of thick pus when the skin of the right half of the scrotum is cut.

Photo No. 5 and No. 6 discharge of pus with the content of seminiferous tubules.

Photo No 7 Purulent fusion of the right testicle and its epididymis.

The patient had a risk factor for neurogenic bladder and residual urine. Since the patient did not

feel pain, he had lower paraplegia; he could not indicate the disease in time and consult a doctor. After going to the surgical department, he was placed with a urethral catheter for 10 days, which may aggravate the infection. In addition, after the detection of the disease, conservative therapy was carried out, and the surgical tactics were delayed, which adversely affected the patient's condition and prolonged the course of the disease.

**Conclusion**

Patients with acute epididymitis or epididymo-orchitis are considered urgent urologic patients and require hospital treatment. All patients with this pathology need to undergo a comprehensive examination and strongly recommend inpatient treatment.

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# МУЛЬТИСПИРАЛЬНАЯ КОМПЬЮТЕРНАЯ ТОМОГРАФИЯ КАК ИНСТРУМЕНТАЛЬНЫЙ МЕТОД ОБОСНОВАНИЯ УСТАНОВКИ ВЕРТЛУЖНОГО КОМПОНЕНТА ЭНДОПРОТЕЗА ТАЗОБЕДРЕНОГО СУСТАВА ПРИ ДИСПЛАСТИЧЕСКОМ КОКСАРТРОЗЕ

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✓ ***Резюме,***

***При диспластическом коксартрозе проведение МСКТ диагностики позволяет точно определить угол между плоскостными образованьями и центр ротации для обработки вертлужной впадины. Разработанное устройство для измерения угла между плоскостными анатомическими образованиями позволяет определить угол между плоскостными образованиями и точку ремирования в истинной вертлужной впадине для централизации вертлужного компонента у больных с диспластическим коксартрозом.***

***Цель исследования: оценка МСКТ и клинико-рентгенологических особенностей диспластического коксартроза.***

***Материалы и методы исследования: в основу работы положены данные обследования 32 пациентов с ДК III-IV стадии, находившихся на обследовании и оперативном лечении и РСНПМЦ травматологии и ортопедии МЗ РУз с 2018 по 2019 г.г. Диагноз устанавливался на основании клинико-рентгенологических критериев. Основными признаками, характеризующими диспластический сустав, являлись: антеверсия шейки бедренной кости; отклонение вертлужной впадины кпереди от сагиттальной плоскости; нарушение центрации головки в горизонтальной плоскости; изменение шеечно-диафизарного угла и угла вертикального наклона впадины (более 60°). Вертлужная впадина при этом становится неглубокой, и погружение в нее головки составляет менее 1/3 (норма 1/2).***

***Среди всех обследованных большинство составили женщины – 90,6% (29 пациентов), тогда как мужчины – 9,4% (3 пациента). Средний возраст обследованных составил 45,8±2,3 лет.***

***Результаты и методы исследования: результаты исследований показали, что проведение МСКТ у больных с диспластическим коксартрозом позволило получить объективную информацию о качественных и количественных изменениях в тазобедренном суставе, выявить рентгено-анатомические изменения тазобедренного сустава, которые оказывают существенное влияние на прогноз в отдаленном периоде лечения. Нами разработано устройство для измерения угла между плоскостными анатомическими образованиями. Эту устройству используют следующим образом. Предварительно определяют на МСКТ угол градуса для ремирования истинной вертлужной впадины (от 40$^{o}$ до 60$^{o}$). Настраивают устройство для определения точки ремирования истинной вертлужной впадины. Угломер не травматично, удобно и просто в использовании, позволяет определить точку ремирования для централизации вертлужного компонента у больных с диспластическим коксартрозом.***

***Ключевые слова: диспластический коксартроз, диагностика, лечение, мультиспиральная компьютерная томография.***

# МУЛЬТИСПИРАЛ КОМПЬЮТЕР ТОМОГРАФИЯ ТЕКШИРУВИ – ДИСПЛАСТИК КОКСАРТРОЗЛАРДА ЧАНОҚ-СОН БЎҒИМИ ЭНДОПРОТЕЗИНИНГ КОСАЧА КОМПОНЕНТИНИ ЎРНАТИЛИШИНИ АСОСЛОВЧИ ИНСТРУМЕНТАЛ ҚЎЛЛАНМА

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✓ ***Резюме,***

***Диспластик коксартрозларда МСКТ текшируви ўтказилиши ясси анатомик бурчак орасидаги юзани ва чаноқ косачасига ишлов бериш учун ротация марказини аниқлаш имконини беради.***

***Диспластик коксартрозли беморларда ясси анатомик бурчак орасидаги юзани аниқлашда биз томондан ишлаб чиқилган қурилма ёрдамида ясси анатомик бурчак орасидаги юзани ва чин чаноқ косачасига ишлов бериш нуқтасини аниқлашга, шунингдек, чаноқ компонентини марказлаштиришга кўмак беради.***

***Калит сўзлар: диспластик коксартроз, чаноқ-косачаси, ишлов бериш нуқтаси, бўкса бўғими, эндопротезлаш, МСКТ***

## MULTISPIRAL COMPUTER TOMOGRAPHY AS AN INSTRUMENTAL METHOD FOR SUBSTANTIATING THE PLACEMENT OF THE ACETABULAR COMPONENT OF THE HIP JOINT ENDOPROSTHESIS IN DYSPLASTIC COXARTHROSIS

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✓ ***Resume***

***In case of dysplastic coxarthrosis, MSCT diagnostics makes it possible to accurately determine the angle between the planar formations and the center of rotation for the treatment of the acetabulum. The developed device for measuring the angle between planar anatomical formations helps to determine the angle between planar formations and the point of remission in the true acetabulum for centralization of the acetabular component in patients with dysplastic coxarthrosis.***

***Key words: dysplastic coxarthrosis, acetabulum, remission point, arthroplasty, hip joint, MSCT***

### Актуальность

Диспластический коксартроз это особый вид дегенеративно-дистрофического поражения тазобедренного сустава, проявляющийся деформацией, дезорганизацией и пространственным несоответствием всех его компонентов и структур. Несмотря на своевременное раннее выявление врожденного недоразвития элементов тазобедренного сустава, проблема диагностики и лечения диспластического коксартроза остается до настоящего времени далекой от окончательного разрешения [4, 6, 9].

В последние годы отмечается рост заболеваемости тазобедренного сустава и выявление заболевания в более ранних возрастных группах, причем в запущенных формах, что в свою очередь приводит к стойкой инвалидности от 38% до 71% случаев [2, 3, 13]. Таким образом, своевременная диагностика коксартроза необходима для решения не только медицинских, но и социальных проблем. Решающее значение в диагностике коксартроза принадлежит лучевым методам [5, 12]. Пусковым механизмом развития коксартроза являются изменения параметров и морфологии гиалинового хряща. В результате многочисленных исследований было установлено, что дегенерация хряща увеличивается по мере прогрессирования стадии заболевания, причем дегенерация хряща впадины способствует развитию аналогичного процесса в головке бедренной кости [6, 7, 8]. Гиалиновый хрящ поражается намного чаще в вертлужной впадине, чем в головке: 72,2% и 16,7% соответственно. Страдает в основном передневерхняя порция вертлужной впадины [9]

Среди факторов возникновения коксартроза дисплазия тазобедренного сустава составляет от 10 до 76%, тогда как диспластическим коксартрозом страдают 86,3% больных с патологией тазобедренного сустава старше 15 лет. [10]

МСКТ позволяет достоверно визуализировать дегенеративно-деформирующие изменения тазобедренных суставов (коксартрозы), определить соответствие выраженности изменений

рентгенологическим классификациям; выявить субхондральные кисты и точно определить степень выраженности остеосклероза суставных поверхностей; уточнить, имеются ли в структуре костной ткани нетипичные участки, обусловленные, например, наличием литических либо склеротических метастазов [1, 11]. Также МСКТ тазобедренных суставов применяется при внутрисуставных переломах бедра и тазовой кости (шейки бедра, головки бедра, вертлужной впадины) с целью визуализации смещения отломков, а также планирования оперативного лечения [2]. МСКТ позволяет выполнить трехмерные реконструкции, благодаря которым травматолог может точно понять, куда и как сместился отломок, и принять меры к его фиксации, восстановить анатомическую форму кости [3, 4].

**Цель исследования:** оценка МСКТ и клинико-рентгенологических особенностей диспластического коксартроза (ДК).

## Материал и методы

В основу работы положены данные обследования 32 пациентов с ДК III-IV стадии, находившихся на обследовании и оперативном лечении и РСНПМЦ травматологии и ортопедии МЗ РУз с 2018 по 2019 года.

Диагноз устанавливался на основании клинико-рентгенологических критериев. Основными признаками, характеризующими диспластический сустав, являлись: антеверсия шейки бедренной кости; отклонение вертлужной впадины кпереди от сагиттальной плоскости; нарушение центрации головки в горизонтальной плоскости; изменение шеечно-диафизарного угла и угла вертикального наклона впадины (более 60°). Вертлужная впадина при этом становится неглубокой, и погружение в нее головки составляет менее 1/3 (норма 1/2).

Среди всех обследованных большинство составили женщины – 90,6% (29 пациентов), тогда как мужчины – 9,4% (3 пациента). Средний возраст обследованных составил 45,8±2,3 лет.

Всем пациентам было проведено МСКТ исследование, которое выполняли на двухсрезовом спиральном компьютерном томографе по стандартным протоколам. Определялись угловые и линейные параметры вертлужной впадины и головки бедренной кости.

При статистическом анализе использовали параметрические и непараметрические критерии в программе Statistica for Windows V 7.0 с использованием t–критерия Стьюдента для средних величин. Статистически достоверными считали групповые различия при $p < 0,05$.

## Результат и обсуждения

У всех обследованных пациентов главными клиническими проявлениями были сгибательно-приводящие и ротационные контрактуры тазобедренных суставов, укорочение заинтересованных в патологическом процессе конечностей, стойкий болевой синдром, грубая хромота с нарушением опорной функции конечности и локомоторного акта ходьбы.

Одностороннее поражение сустава имели 15 человек (53,1%), у 17 больных (46,9%) процесс распространялся на оба сустава.

При анализе МСКТ снимков отмечалось сужение суставной щели явное, неравномерное. Визуализируются множественные остеофиты значительного размера; выражен субхондральный склероз; определяются множественные (до десятка) субхондральные кисты (рис. 1).

**Рис. 1. МСКТ кистозные образование в области вертлужной впадины и головки бедренной кости.**

Размеры кистозных участков в головке бедренной кости, а также в тазовой кости имели размеры 4-11 мм в поперечнике и были окружены зоной остеосклероза.

Размеры длины шейки бедренной кости на пораженной стороне в среднем составляют 1,7±0,09 см, тогда как на здоровой стороне 2,2±0,1 см. Шеейчно-диафезарный угол на пораженной стороне был незначительно увеличен и в среднем составил $141,3±1,2^0$, тогда как на не пораженной стороне $129,4±0,8^0$.

Анте и ретроверсия вертлужной впадины в среднем составила $19,0±0,7^0$ на пораженной стороне и $16,7±0,6^0$ на не пораженной. Передний угол входа вертлужной впадины составил $66,9±0,8^0$ на пораженной стороне и $73,1±2,9^0$ на не пораженной (рис. 2.).

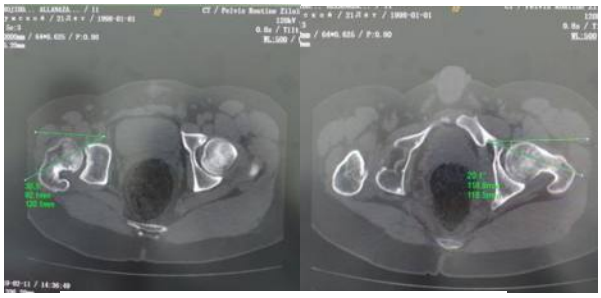
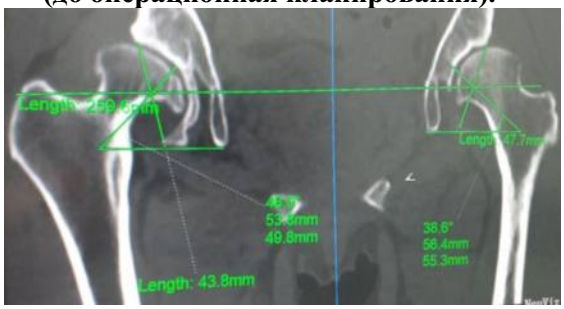


**Рис. 2. МСКТ: Определение угла анте и ретроверсия**

Незначительное укорочение (до 2 см) – у 8 больных (25,0%), умеренное (до 5 см) – у 1 больного (3,1%), в остальных случаях укорочение не наблюдалось.

Центр ротации для обработки вертлужной впадины в среднем составил 45,8±0,12 градусов (рис. 3).

**Рис. 3. МСКТ: Определение центра ротации для обработки вертлужной впадины (до операционная планирования).**




В результате предоперационного планирования точка ремирования варьировала от 44 до 48 градусов.

Результаты работы показали, что использование МСКТ у больных с диспластическим коксартрозом позволило получить объективную информацию о качественных и количественных изменениях в тазобедренном суставе, выявить рентгено-анатомические изменения тазобедренного сустава, которые оказывают существенное влияние на прогноз в отдаленном периоде лечения.

В РСНПМЦ Травматологии и ортопедии было разработано и внедрено устройство для измерения угла между плоскостными анатомическими образованьями. Устройство для измерения угла между плоскостными анатомическими образованиями используют следующим образом.

Предварительно определяют на МСКТ угол градуса для ремирования истинной вертлужной впадины (от 40$^{o}$ до 60$^{o}$). Настраивают устройство для измерения угла между плоскостными анатомическими образованьями и для определения точки ремирования истинной вертлужной впадины. (рис. 4).

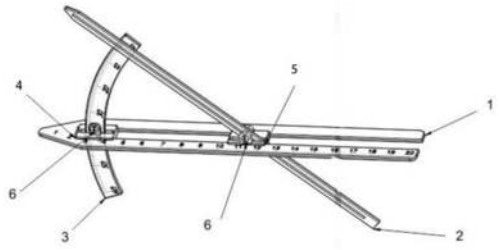



**Рис. 4. Устройство для измерения угла между плоскостными анатомическими образованиями**

На транспортире осевой мерной шкалой выводят необходимый угол, крепят его с помощью передвижной муфты транспортира винтом отверткой; и стерилизуют.

Ближайшие результаты лечения в сроки до 6 месяцев после операции изучены у 22 больных. При этом больные вели активный образ жизни, передвигались без дополнительной опоры отсутствовал болевой синдром, но допускались небольшие анатомическими нарушениями, существенно не влияющими на функцию конечности в виде укорочения конечности в пределах 1-1,5 см, ограничение движений в тазобедренном суставах в пределах не более 10 градусов.

Отдаленные результаты в сроки от 1 до 2 лет после операции изучены у всех больных. При изучении главное внимание обращали на бытовую и производственную активность и опорную функцию конечности. Хороший результат отмечен в 95,5% случаев, тогда как удовлетворительный в 4,5%.

Таким образом, устройство для измерения угла между плоскостными анатомическими образованиями не травматично, удобно и просто в использовании.

**Выводы**

1. Диспластическим коксартрозом позволило получить объективную информацию о проведение МСКТ у больных с качественных и количественных

   в тазобедренном суставе, выявить рентгеноанатомические изменения тазобедренного сустава, которые оказывают существенное влияние на прогноз в отдаленном периоде лечения.
2. Проведение МСКТ у больных с диспластическим коксартрозом позволяет точно определить угол между плоскостными образованиями и центр ротации для обработки вертлужной впадины.

3. Разработанное устройство для измерения угла между плоскостными анатомическими образованьями не травматично, удобно и просто в использовании, способствует определить угол между плоскостными образованиями и точку ремирования в истинной вертлужной впадине для централизации вертлужного компонента у больных диспластическим коксартрозом.

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# КОГНИТИВНЫЕ НАРУШЕНИЯ У ЛИЦ МОЛОДОГО И СРЕДНЕГО ВОЗРАСТА С АРТЕРИАЛЬНОЙ ГИПЕРТЕНЗИЕЙ

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✓ ***Резюме,***

***Артериальное гипертензия (АГ) остаётся одной из самых актуальных проблем современной медицины и является одним из главных корригируемых факторов риска развития когнитивных нарушений (КН) у пациентов молодого и среднего возраста. Когнитивные нарушения возникают даже при небольшой длительности заболевания и проявляются расстройствами управляющих функций, снижением скорости когнитивных процессов. Представлены результаты нейропсихологического обследования 50 пациентов молодого и среднего возраста. Для оценки когнитивных функций использовали метод нейропсихологического тестирования, применяя тест Mini-Cog и тест SAGE (Self Administrated Gerocognitive Exam).***

***Ключевые слова: артериальная гипертензия, лица молодого возраста, фактор риска, когнитивные нарушения, нейропсихологическое тестирование, тест Mini-Cog, тест SAGE***

# COGNITIVE IMPAIRMENT IN YOUNG AND MIDDLE-AGED PEOPLE WITH ARTERIAL HYPERTENSION

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***Arterial hypertension remains one of the most pressing problems of modern medicine and is one of the main corrected risk factors for the development of cognitive impairment in young and middle-aged patients. Cognitive impairment occur even with a short duration of the disease and are manifested by disorders of control functions, a decrease in the speed of cognitive processes. The results of a neuropsychological examination of 50 patients of young and middle age are presented. To evaluate cognitive functions, the neuropsychological testing method was used using the Mini-Cog test and the SAGE (Self Administrated Gerocognitive Exam) test***

***Keywords: arterial hypertension, young people, risk factor, cognitive impairment, neuropsychological testing, Mini-Cog test, SAGE test.***

# АРТЕРИАЛ ГИПЕРТЕНЗИЯ БИЛАН КАСАЛЛАНГАН ЎРТА ЁШДАГИ БЕМОРЛАРДА КОГНИТИВ БУЗИЛИШЛАР

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✓ ***Резюме,***

***Артериал гипертензия замонавий тиббиётни долзарб муаммоларидан бири бўлиб қолади ва ўрта ёшдагиларда когнитив бузулишларнинг тўғирланадиган хавф омилларига киради. Касалликни қисқа давомийлигида ҳам когнитив бузулишлар пайдо бўлади, бошқарувчи функцияларни бузулиши билан, ва когнитив жараённи тезлигин пасайиши билан пайдо бўлади. Ушбу мақолада 50 та ўрта ёшдаги беморларни нейропсихологик текширувини натижалари келтирилган. Когнитив функцияларни баҳолашда нейропсихологик тестлардан, хусусан Mini-Cog ва SAGE тестлардан фойдаланилган.***

***Калит сўзлар: артериал гипертензия, ўрта ёшдагилар, хавф омиллари, когнитив бузулишлар, нейропсихологик тест, тест Mini-Cog, SAGE тест***

**Актуальность**

Артериальная гипертензия (АГ) остаётся одной из самых актуальных проблем современной медицины из-за широкой распространённости этого заболевания и серьёзного влияния на развитие сердечно-сосудистых осложнений, а также повышение смертности от сердечно-сосудистых катастроф. Особую тревогу вызывает рост заболеваемости АГ среди лиц молодого трудоспособного возраста, для которых характерна высокая активность симпато-адреналовой системы, часто лежащая в основе формирования и становления АГ. Достаточно широкий диапазон распространенности АГ среди лиц молодого возраста объясняется низким уровнем ее своевременного диагностирования и выявления [1, 6]. Показано, что АГ приводит к развитию многообразных изменений, которые прослеживаются на всех структурно-функциональных уровнях единой сосудистой системы головного мозга, и является самостоятельными независимым фактором риска возникновения когнитивной дисфункции [2, 4, 5]. Когнитивные нарушения у больных АГ могут приводить к социально-бытовой дезадаптации и увеличению сроков временной нетрудоспособности [5].

Когнитивные нарушения (КН) – это нарушения одной или нескольких указанных познавательных функций. Когнитивным расстройством признается снижение по сравнению с индивидуальным преморбидным уровнем одной или нескольких высших мозговых функций, таких как восприятие, память, праксис, управляющая функция, внимание, речь и социальный интеллект [10].

Эти расстройства разделяются на: лёгкие, при сохранении возможности жить самостоятельно; умеренные, когда пациенту необходима некоторая степень ухода; тяжёлые (деменция), при которой больной беспомощен в быту [3,11,12].

Многие пациенты молодого и среднего возраста на приеме у врачей разных специальностей предъявляют жалобы когнитивного характера: ухудшение памяти и работоспособности, снижение концентрации внимания, повышенная отвлекаемость, трудности при обучении и приобретении новых профессиональных навыков и т.д. [7–9]. Как правило, КН у молодых пациентов развиваются на фоне более или менее отчетливой очаговой неврологической симптоматики. Ряд заболеваний, дебютируя с мнестических и других КН, постепенно прогрессируют.

Начальные симптомы КН протекают под маской астенических проявлений и характеризуются снижением инициативы, активного внимания, сужением круга интересов, общей слабостью. Все это негативно влияет на бытовое и профессиональное функционирование пациента, что могут подтвердить его родственники и сослуживцы.

Для уточнения причины когнитивных нарушений у лиц молодого и среднего возраста следует оценить их количественные и качественные характеристики, изучить историю развития когнитивного расстройства. Для этого всем пациентам с жалобами когнитивного характера помимо оценки неврологического статуса необходимо проводить нейропсихологическое исследование [7]. При этом конкретные нейропсихологические методики подбираются индивидуально в зависимости от особенностей клинического случая.

Удивительным является то обстоятельство, что в дальнейшем прогрессирование возрастных когнитивных нарушений происходит крайне медленно, и данное положение диктует целесообразность детального изучения указанного факта.

Когнитивные нарушения у лиц молодого и среднего возраста – серьезная социальная проблема, поскольку это наиболее трудоспособные группы населения. Своевременная диагностика и подбор адекватного лечения в зависимости от этиологии когнитивного нарушения позволяют значительно улучшить качество жизни пациентов и предупредить или замедлить прогрессирование когнитивных расстройств.

**Цель исследования.** Изучить когнитивные нарушения у лиц молодого и среднего возраста с артериальной гипертензией.

**Материал и методы**

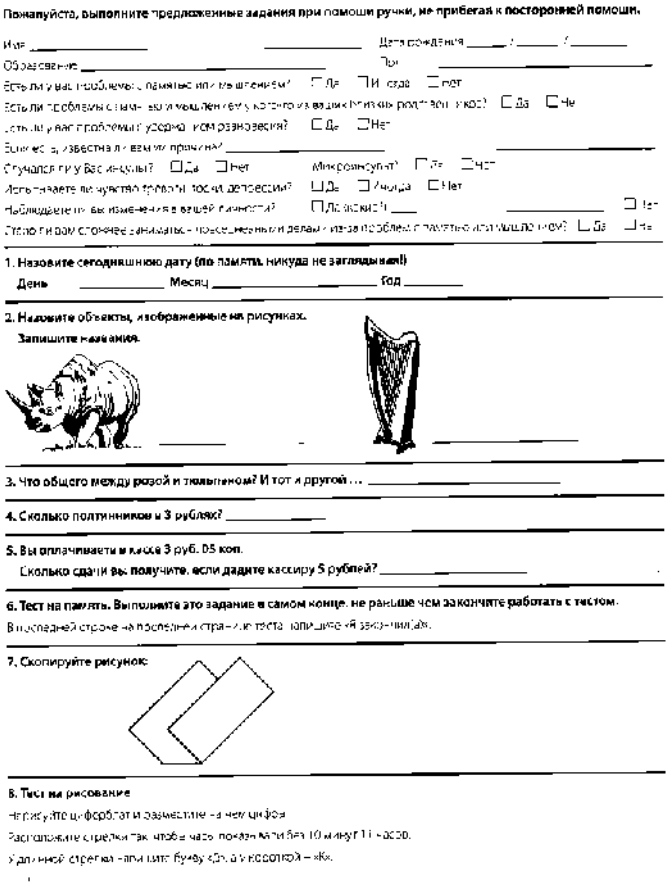
В исследование были включены 50 пациентов с артериальной гипертензией: 29 (58 %) женщин и 21 (42 %) мужчин в возрасте от 23 до 58 лет. Средний возраст составил 42 ± 10,85 года.

Для скрининговой оценки уровня когнитивных функций использовали тест Mini-Cog (скрининговый опросник для определения когнитивных нарушений). Он состоит из

запоминания 3 предметов и теста рисования часов. Если набрано менее 3 баллов, это основание предположить деменцию. Впрочем, многие пациенты с клинически значимыми когнитивными расстройствами набирают больше двух баллов. Поэтому для большей чувствительности теста рекомендуется рассматривать как свидетельствующий о необходимости более глубокого обследования результат менее 4 баллов [13].

Тест SAGE (Self-Administered Gerocognitive Examination) (рис. 1) направлен на выявление умеренных нарушений памяти и мышления, а также ранних симптомов деменции. При проверке тест продемонстрировал высокую чувствительность и низкую вероятность ошибочного диагноза. Тест имеет четыре взаимозаменяемых варианта и представляет собой четыре страницы с 22 вопросами и заданиями, которые респондентам предлагается распечатать и самостоятельно, без посторонней помощи и поиска сведений из внешних источников, заполнить. Предполагается, что в среднем на это должно уйти от 10 до 15 мин, но временных ограничений не установлено.

Выполнение заданий позволяет проверить ориентацию во времени, вербальные, интеллектуальные и зрительно-пространственные способности, возможности памяти и способность к решению проблем. За каждый выполненный пункт начисляются очки, пропуск респондентом шести или более пунктов рассматривается как «сигнал тревоги» и необходимость обратиться к врачу для более детального обследования [14]. Несмотря на то, что нейропсихологическое тестирование является основным методом диагностики когнитивных нарушений, в ряде случаев могут регистрироваться как ложноположительные, так и ложноотрицательные результаты. Это может быть связано с низким или очень высоким уровнем образования, длительной изоляцией от общества, наличием ситуационной тревоги в момент тестирования, переутомлением и т. д.



**Пожалуйста, выполните предложенные задания при помощи ручки, не прибегая к посторонней помощи.**

Имя _____ _____ Дата рождения ____ / ____ / _____

Образование _____ Пол _____

Есть ли у вас проблемы с памятью или мышлением? ☐ Да ☐ Иногда ☐ Нет

Есть ли проблемы с памятью или мышлением у кого-то из близких (или родственников)? ☐ Да ☐ Не

Есть ли у вас проблемы с устойчивостью равновесия? ☐ Да ☐ Нет

Известна ли вам их причина? _____ _____

Случался ли у Вас инсульт? ☐ Да ☐ Нет Микроинсульт? ☐ Да ☐ Нет

Испытываете ли чувства тревоги, тоски, депрессии? ☐ Да ☐ Иногда ☐ Нет

Наблюдаете ли вы изменения в вашей личности? ☐ Да, какие? _____ _____ ☐ Не

Стало ли вам сложнее заниматься повседневными делами из-за проблем с памятью или мышлением? ☐ Да ☐ Не

**1. Назовите сегодняшнюю дату (по памяти, никуда не заглядывая!)**

**День** _____ **Месяц** _____ **Год** _____

**2. Назовите объекты, изображенные на рисунках.**

**Запишите названия.**

_____ _____

**3. Что общего между розой и тюльпаном? И тот и другой …** _____

**4. Сколько полтинников в 3 рублях?** _____

**5. Вы оплачиваете в кассе 3 руб. 05 коп.**

**Сколько сдачи вы получите, если дадите кассиру 5 рублей?** _____

**6. Тест на память. Выполните это задание в самом конце, не раньше чем закончите работать с тестом.**

Вспомните слова, которые вы писали в первом задании теста (в самом начале).

**7. Скопируйте рисунок:**

**8. Тест на рисование**

Нарисуйте циферблат и расставьте в нем цифры.

Расположите стрелки так, чтобы часы показывали без 10 минут 11 часов.

Длинная стрелка – красная буква «Д», а короткая – «К».

Статистический анализ полученных входе исследования результатов проводился в специализированных приложениях: Statistica 6.0, Microsoft ® Office Exel 2003. Проверка гипотез проводилась с помощью параметрических методов для нормально распределенных величин (t-критерий Стьюдента для средних величин и средних квадратичных отклонений); различия считались статистически значимыми при $p < 0,05$.

**Результат и обсуждение**

В результате исследования выявлено, что 28 (56 %) пациентов имели среднее образование, и 22 (44 %) пациентов имели высшее образование. У 11 (22%) пациентов была симптоматическая АГ, АГ 1-й степени было у 12 (24%), АГ 2-й степени было у 12 (24%) пациентов, ГБ 2-й степени было у 10 (20%), и ГБ 3-й степени было у 14 (28%) пациентов. Клиническая характеристика пациентов приведена в таблице 1.

| **Показатель** | **Пациенты с ГБ, n=50** |
|---|---|
| | |
| **Средний возраст (лет)** | 42 ± 10,85 |
| **Мужчины, n (%)**<br>**Женщины, n (%)** | 21 (42 %)<br>29 (58 %) |
| **Стадия ГБ, n (%) II**<br>**III** | 10 (20 %)<br>14 (28 %) |
| **Образование, n (%) среднее**<br>**высшее** | 28 (56 %)<br>22 (44 %) |
| **Длительность анамнеза АГ (лет)** | 8,8 ± 3,6 |
| **Степень АГ, n (%) I**<br>**II** | 12 (24 %)<br>12 (24 %) |

**Таблица 1. Клиническая характеристика пациентов**

Также оценивалось качество контроля АГ (рис. 2), 21 (42%) больных регулярно принимали антигипертензивные препараты и посещали врача не менее 1 раза в год, 20 (40%) больных принимали антигипертензивные препараты и эпизодически посещали врача, и 9 (18%) пациентов принимали препараты для снижения давления только при значимом повышении АД.

Хорошо известно, что АГ играет важную роль в развитии и прогрессировании когнитивных расстройств, при нейропсихологическом тестировании у больных АГ отмечаются несколько худшие когнитивные функции, чем у лиц с нормальным АД.

На рис. 3 представлено распределение пациентов по данным нейропсихологического тестирования. При нейропсихологическом обследовании у пациентов, суммарный показатель по тесту SAGE от 17 до 22 баллов был выявлен у 16 (32%) больных, 15-16 баллов у 29 (57%), что свидетельствовало о наличии у них умеренных когнитивных нарушений, и у 5 (11%) пациентов были выявлены выраженные когнитивные нарушения. По результатам теста Mini-Cog: 30 (60%) пациентов набрали 2 балла, что послужило основанием предположить когнитивные расстройства, и 20 (40%) пациентов набрали 3 балла. Углубленное обследование этих пациентов подтвердило, что нарушение когнитивных функций соответствовало УКН по МКБ-10: 1) отмечались жалобы на снижение памяти, повышенную утомляемость при умственной работе; 2) выявлялись объективные свидетельства снижения памяти, внимания или способности к обучению; 3) уровень нарушений был недостаточен для диагностики деменции; 4) когнитивные нарушения имели органическую природу.

Рис.2. Качество контроля АД.

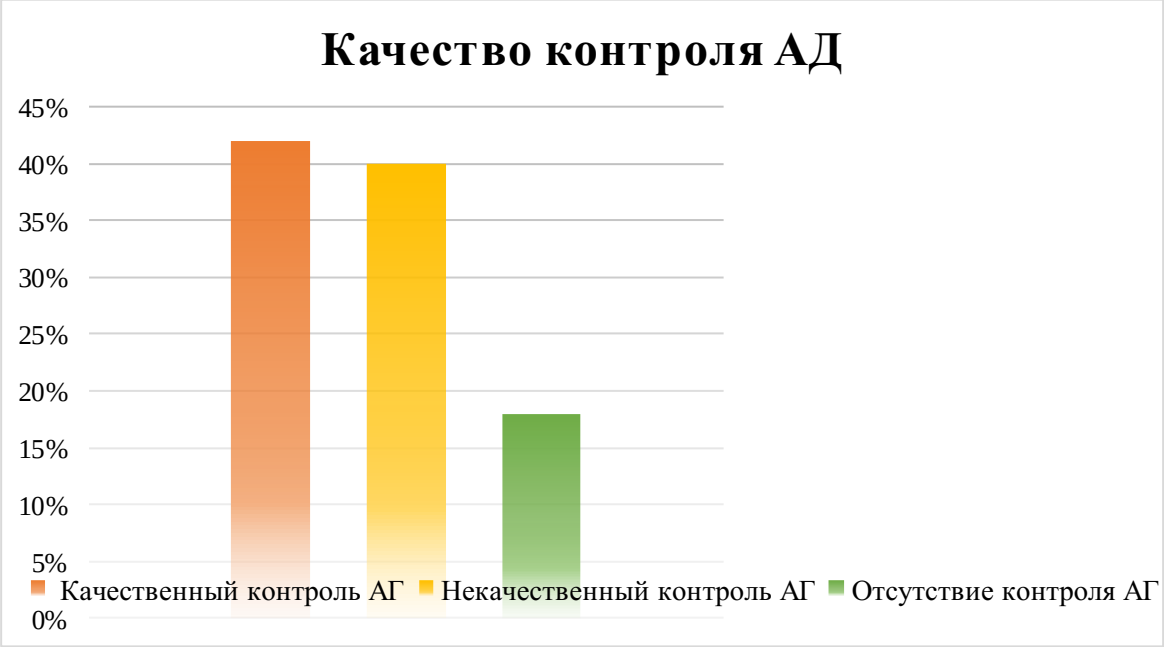



Рис. 3. Результаты нейропсихологических тестов.

**Выводы**

1. Пациенты с гипертонической болезнью молодого и среднего возраста имеют более низкий объем памяти, внимания, мышления и нейродинамики.
2. Увеличение степени и стадии гипертонической болезни, отсутствие ночного снижения АД и низкий образовательный уровень пациента ассоциируются с ухудшением показателей памяти, внимания, мышления и нейродинамики.
3. У пациентов молодого и среднего возраста важное место среди причин когнитивных нарушений также занимают сосудистые когнитивные нарушения. При оценке когнитивных функций у пациентов с АГ использовали такие нейропсихологические тесты как тест Mini-Cog, тест SAGE.
4. Имеется U-образная зависимость между степенью когнитивных нарушений и длительностью анамнеза гипертонической болезни. Наименее благоприятные показатели памяти, внимания, мышления и нейродинамики выявлены у пациентов с анамнезом гипертонической болезни до 1 года и более 10 лет.

Таким образом, артериальная гипертензия является сильным и независимым фактором риска возникновения и прогрессирования когнитивных расстройств, которые могут иметь как сосудистую, так и нейродегенеративную природу. Поэтому у всех пациентов с данным заболеванием следует обращать пристальное внимание на состояние высших психических функций. Ведение пациентов с когнитивными расстройствами на фоне артериальной гипертензии предусматривает достижение адекватного контроля над артериальным давлением и проведение антигипертензивной терапии.

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# FUNCTIONAL STATUS OF SMALL INTESTINE AFTER APPLICATION OF GUANETIDIDE SULFATE

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***Experiments on rats with different ages have shown that some enzymes (such as lactase amylase, saccharase, dipeptihydrolase ) precisely determine the period of adaptation to milk nutrition. Accordingly we decided to determine the type of nutrition for some enzymes. Chemical desympathetization at the early stages of postnatal ontogenesis changed the development of hydrolytic function of the small intestine.***

***Key words: guanetidine, desympathetization, CNS-central nervous system, DT- digestive tract.***

# ФУНКЦИНАЛЬНОЕ СОСТОЯНИЕ ТОНКОГО КИШЕЧНИКА ПРИ ВОЗДЕЙСТВИИ ГУАНЕТИДИНА СУЛЬФАТА

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***Опыты, проведённые с крысами различных возрастных категорий, показали, что некоторые ферменты (лактаза, амилаза, сахараза, дипептигидролаза) точно определяют период адаптации к молочному питанию. Поэому мы решили определить вид питание для некоторых ферментов. На начальных этапах постнатального онтогенеза химическая десимпатизации изменяет гидролитическую функцию развитие тонкой кишки.***

***Ключевые слова: гуанетиден, десимпатизация, ЦНС-центральное нервное систем, ЖКТ-желудочное кишечное тракте.***

# ГУАНЕТИДИН СУЛЬФАТ ТАЪСИРИДА ИНГИЧКА ИЧАКНИНГ ФУНКЦИОНАЛ ҲОЛАТИ

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✓ ***Резюме,***

***Турли ёшдаги каламушларда ўтказилган тажрибалар шуни кўрсатдики, баъзи ферментлар (лактаза, амилаза, сахараза, дипептигидролаза) сутли озуқага адаптация бўлиш даврини аниқлайди. Шунинг учун биз айрим ферментларнинг озуқа турига таъсирини аниқлашни қарор қилдик. Постнатал онтогенезнинг бошланғич босқичларида кимёвий десимпатизация, ингичка ичакнинг ривожланишида гидролитик функциясини ўзгартиради.***

***Калит сўзлар: гуанетиден, десимпатизация, МНС-марказий нерв системаси, ОИТ-ошқозон ичак тракти.***

## Relevance

With the transition from dairy nutrition to the definitive in mammals, the properties of the small intestine change, primarily the enzymatic spectrum and the distribution of enzymes in different parts of the digestive tract [1,2,5,]. The mechanisms of maturation of the functions of the digestive system are quite complex, many links of the nervous and endocrine systems are involved in them [4,7,8]. Sources indicate that, at present, the activity of the small intestine in the digestive system is not fully understood. The study of the functional state of these biological systems is of great importance.

Therefore, the study of the activity of some enzymes involved in the activity of the small intestine is of great importance.

Purpose of the research: To study the participation of sympathetic innervation in the formation of the enzymatic spectrum of the small intestine in early postnatal ontogenesis.

## Material and methods

The experiments used white laboratory rats of different ages. To obtain offspring, animals of different sexes with a body weight of 150-180 g were selected. Pregnant females were placed in individual cages. Newborns were assigned to 8 animals per lactating rat. The studies were carried out at the ages critical for the growth and development of rats: 13-24 days - the period of opening the eyes; 21-22 days - transition to definitive nutrition; 30 day emancipation from the mother, the formation of skeletal muscle tone and thermoregulation mechanisms.

For each experiment, 6 rats from at least three litters were used. In the first series of experiments, the development of the enzymatic spectrum of the small intestine in intact rats was studied. In the second, after chemical sympathization, which was carried out by the introduction of guanethidine sulfate at a dose of 20 mg / kg (daily) for 14 days. As a result of the drug administration, the number of nerve cells in the sympathetic ganglia, for example, in the upper cervical ganglion, decreases by 93-95%, and this sympathization is irreversible [2,6,12,17].

That is, this indicator decreased in the direction from the duodenum 12 in the caudal direction. On the 21st and 30th days, the gradient became more pronounced (table). distribution of amylolytic activity along the

The enzyme activity was calculated per unit weight of the raw tissue of the intestinal mucosa.

The data were statistically processed by Student and Fisher.

## Result and discussion

The activity of intestinal enzymes in intact rat pups during ontogeny undergoes significant rearrangements. So the amylase activity gradually increases from the 14th to the 21st and further up to the 30th day of life. Lactase activity gradually decreases. Sugar activity, very low on the 14th day, progressively increases until the 21st day and remains at this level on the 30th day.

During the period of pure milk feeding in the mucous membrane of the small intestine of rat pups, there is no or very low sucrase activity and a well-expressed lactase activity. By the time of the transition to definitive nutrition (21st day of life), enterocytes acquire the ability to synthesize sucrase while sharply suppressing the formation of lactase in them.

The activity of monoglyceride lipase practically does not change from the 14th to the 30th day. The activity of dipeptide hydrolase increases sharply on the 21st day and decreases by the 30th day.

Existing ideas about the functional topography of the small intestine suggest that in most cases, even complete information about the state of hydrolytic transport mechanisms in one area of the mucous membrane is insufficient for a reliable judgment about the activity of the small intestine as a whole. Changes in the activity of enteral hydrolases in different parts of the intestine during ontogenesis under the influence of various factors do not always occur in parallel.

Our studies have shown that on the 14th day of life there was a proximodistal gradient in the

**Enzyme activity in the homogenate of the mucous membrane removed along the entire rat small intestine (M ± m).**

| Enzyme | Age, days | | |
|---|---|---|---|
| | 14-th | 21-th | 30-th |
| **Amylase, mg / min • g** | 54,0±3,6<br>P<0,05 > | 120,0±0,5<br>P<0,3 | 157,0±22,4<br>P<0,05 |
| **Sucrase, µmol / min • g** | 9,4±0,4<br>P<0,05 | 20,1±1,6<br>P<0,05 | 21,0±1,5<br>P<0,001 |
| **Lactose, µmol / min • g** | 3,03±0,07<br>P<0,02 | 1,49±0,05<br>P<0,02 | 0,80±0,03<br>P<0,02 |
| **Dipeptide hydrolase, µmol / min • g** | 11,0±0,2<br>P<0,10 | 21,0±0,5<br>P<0,03 | 11,1±0,3<br>P<0,05 |
| **Monoglyceride lipase, µmol / min • g** | 4,49±0,12<br>P<0,02 | 5,59±0,18<br>P<0,10 | 5,11±0,11<br>P<0,5 |

***NOTE - The table shows the average of five experiments.***

In the homogenate of the mucous membrane, removed along the entire small intestine or separately from the duodenum and from three equal underlying areas, conventionally called proximal, medial, distal (to clarify the topography

During the period of pure milk feeding (14th day), the maximum activity of sucrase was observed mainly in the distal parts of the small intestine and moves in the oral direction during the transition to definitive nutrition.

The spatial distribution of lactase activity throughout the small intestine during the first month of life practically does not change: lactase activity is most pronounced in the proximal section, less and approximately the same in the duodenum, medial and distal segments.

During the period of milk feeding, the maximum indicator of dipeptide hydrolase was observed mainly in the distal part of the small intestine. In the duodenum and proximal part, the activity of this enzyme is minimal. By the time of the transition to definitive nutrition, there is a redistribution of activity along the small intestine. The maximum activity is found in the duodenum 12 and in the caudal region. This topography of enzyme activity remains on the 30th day.

The topography of monoglyceride lipase activity along the intestine practically does not change during ontogenesis - it is distributed relatively evenly in the three lower sections, and its maximum is noted in the duodenum.

After chemical sympathization, the body weight of experimental rat pups is less than that of intact ones (statistically significant), and is 18.6 ± 0.7 g on the 14th day and 23.8 ± 0.9 g on the 21st day 20.0 ± 0 , 7 g and 35.2 ± 1.5 g on the 30th 30.6 ± 1.8 g and 45.1 ± 1.3 g, respectively. The activity of amylase (180.0 ± 8.6 mg / min • g), sucrase (35.0 ± 2.0 μmol / min • g), dipeptide hydrolase (49.0 ± 3.3 μmol / min • g) is significantly higher , lactase (0.78 ± 0.03 μmol / min • g) is lower than in inactive individuals. Monoglyceride lipase activity in rats of both groups does not differ. After sympathization, it is 5.7 ± 0.2 μmol / min • g.

Determination of the topography of enteric hydrolases made it possible to reveal the mixing of the peak of the activity of all enzymes in the distal segment. In this regard, for almost all enzymes, a distal-proximal gradient was established, that is, a decrease in activity in the direction from the caudal to the oral parts of the small intestine.

Of enzymatic activity) sections, photoelectrocolorimetric methods were used to determine the activity of enteric enzymes: monoglyceride lipase -1-leucine dipeptide hydrolase, amylase, sucrase, lactase [2,4,17].

Such a change in the topography of enzymes after sympathization, in our opinion, is consistent with the idea that in the oral-caudal direction in the gastrointestinal tract, the regulatory role of nervous mechanisms decreases and the importance of humoral and local mechanisms increases.

The small intestine takes part in all stages of digestion, including absorption and movement of food. Here, food gruel, processed with saliva and gastric juice, is exposed to the action of intestinal juice, bile, pancreatic juice, and absorption of digestion products into the blood and lymphatic capillaries also occurs here. In the small intestine, enzymes are produced that, together with enzymes produced by the pancreas and gallbladder, help break down food into its individual components.

Then proteins are converted into amino acids, carbohydrates are broken down into simple sugars, and fats into smaller components, which contributes to the effective absorption of nutrients [5,7,15].

It is in the small intestine that most medicinal substances, poisons, toxins and xenobiotics are absorbed when administered orally. Only a few of the drugs, poisons and other xenobiotics are absorbed in the stomach. In addition to digestion, absorption and transportation of food masses, the small intestine also performs the functions of immunological protection and secretion of hormones [2,14].

In the small intestine, the gastric contents undergo deep mechanical and chemical processing. The small intestine is the main site of digestion and absorption of nutrients; cavity, parietal and intracellular digestion is carried out here [2,13].

In the small intestine, the gastric contents undergo deep mechanical and chemical processing. The small intestine is the main place for digestion and absorption of nutrients; cavity, parietal and intracellular digestion is carried out here. Intestinal digestion occurs in a neutral or weakly basic environment [4,5,6,8,10].

A special place in digestion and regulation of the functions of the digestive apparatus is occupied by the duodenum. Its contents on an empty stomach have a slightly alkaline reaction (pH 7.2-8.0). Neutralization of the acidic contents of the stomach is provided by the secretions of the pancreas, small intestine and bile, stopping the

action of gastric proteases and providing subsequent processes of cavity digestion in the small intestine [5,6,8,10,12].

The pathology of abdominal digestion may be due to insufficient intake of pancreatic juice, bile into the intestinal lumen, a violation of the formation of intestinal juice, as well as a change in the nature of nervous and humoral influences on secretory processes. A significant role in the pathology of cavity digestion is played by a change in the motor function of the intestine (increased motility or its decrease) [5,6,8,10].

In violation of membrane digestion, the main role is played by insufficient production of enzymes by enterocytes, a change in the structure of microvilli, a decrease in their number, a violation of hormonal and humoral regulation of the mitotic activity of enterocytes, as well as disorders of intestinal motility. The completeness of parietal digestion largely depends on the state of cavity digestion [5, 9, 10].

Lack of intracellular digestion is associated with primary or secondary fermentopathy, which is based on genetically determined or acquired intolerance to disaccharides or some proteins [5,6,8,10].

Guanethidine has a short-term ganglion blocking effect and some stimulating effect on β2-adrenergic receptors. Virtually no effect on the level of catecholamines in the central nervous systems of the central nervous system and the adrenal medulla. By oppressing the adrenergic innervation of the gastrointestinal tract of the gastrointestinal tract, guanethidine enhances intestinal motility [1,4].

Damage to the liver and gastrointestinal tract, tolerance, physical dependence, withdrawal syndrome, weakening of short-term memory, emotional lability, paresthesia of the extremities, Wernicke-Korsakoff syndrome, folate deficiency anemia, cardiomyopathy, arrhythmias, arterial hypertension, gynecomastia, testicular atrophy, fetal alcohol syndrome, immunodeficiency syndrome cancer, murder, suicide. Mechanism of action. They excite their own receptors in the central nervous system, coupled with the GABA receptor [2,6,17].

Guanethidine - Sympatholytic, inhibits the transmission of excitation from adrenergic neurons. Selectively accumulates in granules of sympathetic postganglionic nerve endings and displaces norepinephrine from them. Part of the released norepinephrine reaches postsynaptic α-adrenergic receptors and has a short-term pressor effect, but the main part is inactivated by MAO. As a result of depletion of norepinephrine reserves in adrenergic endings, the transmission of nerve excitation to them is weakened or stopped [1, 12,17].

Guanethidine has a short-term ganglion blocking effect and some stimulating effect on β2-adrenergic receptors. Virtually no effect on the level of catecholamines in the central nervous system and the adrenal medulla [1,6].

They act both at the level of peripheral organs (heart, blood vessels) and at the level of the central nervous system, which is associated with a variety of clinical and side effects of this group of drugs.

The most famous representatives are reserpine and guanethidine (octadine), used in medicine for the treatment of arterial hypertension [6, 9,17].

Sympatholytic, has a hypotensive effect. It accumulates in the granules of sympathetic nerve endings, reduces the amount of mediator entering the receptors, as a result of which the transmission of nerve excitation is weakened or stopped. Has a short-term ganglion-blocking and small beta2-adrenostimulating and local anesthetic effect. It causes a decrease in systolic and diastolic blood pressure, in terms of the strength of the hypotensive effect it is superior to reserpine, has a cardiodepressant effect, reduces myocardial contractility, conduction and heart rate (thus, a decrease in blood pressure is due to both a decrease in OPSS and IOC). At the beginning of treatment (sometimes up to several hours), a vasoconstrictor reaction may develop (massive inflow of norepinephrine into the nerve endings), which is then replaced by persistent vasodilation [3,6,11].

The sympatholytic effect of guanitedine is due to the fact that it selectively accumulates in the granules of sympathetic nerve endings and displaces the adrenergic mediator, norepinephrine, from them. Part of the released mediator reaches postsynaptic a-adrenergic receptors and has a short-term pressor effect, but the main part of the mediator is destroyed under the influence of axonal monoamine oxidase. As a result of depletion of norepinephrine reserves in adrenergic endings, the transmission of nervous excitation to them is weakened or stopped [4,6].

Violation of the transmission of nervous excitement is associated, in addition, with the fact that, accumulating in the nerve endings, octadine has a local anesthetic effect on them. Octadine affects the cardiovascular system in two phases: first, a transient pressor reaction with tachycardia and an increase in cardiac output develops, then a progressive decrease in systolic and diastolic blood

pressure occurs, the heart rate, minute volume and pulse pressure decrease, and later (after 2-3 days after oral administration) persistent hypotension occurs. The initial pressor reaction can last up to several hours. With prolonged use of the drug, the hypotensive effect may decrease due to a gradual increase in cardiac output [4,6,15].

**Conclusions**

1. Comparison of enzymatic activity of enteral hydrolases at different stages of postnatal ontogenesis suggests that lactase characterizes adaptation to milk nutrition, amylase, sucrase - to the definitive one. For monoglyceride lipase, it is not possible to establish dependence on the type of food.

2 After chemical sympathization, the body weight of rats on days 14, 21, and 30 is less than that of intact animals. The activity of most intestinal enzymes is higher, and the lactase activity is lower than in the control.

3. Chemical sympathization changes the topography of the distribution of enteric hydrolases along the small intestine due to the shift of their activity to the distal site.

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# QUALITY OF LIFE OF CHILDREN WITH DIABETES MELLITUS ASSOCIATED WITH IRON DEFICIENCY ANEMIA

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✓ ***Resume,***

***On the basis of studies found the influence of local factors on the course of diabetes in children and adolescents with anemia was established, characterized by increased appearance of symptoms of the disease de compensation, decreased physical abilities, intellectual and psychosocial functions of patients.***

***Key words: diabetes, iron deficiency anemia, quality of life, children and adolescents.***

# КАЧЕСТВО ЖИЗНИ ДЕТЕЙ С САХАРНЫМ ДИАБЕТОМ, АССОЦИИРОВАННЫМ С ЖЕЛЕЗОДЕФИЦИТНОЙ АНЕМИЕЙ

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✓ ***Резюме,***

***На основании проведенных исследований установлено влияние местных факторов на течение сахарного диабета у детей и подростков с анемией, характеризующееся повышением выраженности симптомов заболевания декомпенсации, снижением физических способностей, интеллектуальных и психосоциальных функций больного.***

***Ключевые слова: сахарный диабет, железодефицитная анемия, качество жизни, дети и подростки***

# ТЕМИР ТАНҚИСЛИГИ АНЕМИЯСИ ФОНИДА ҚАНДЛИ ДИАБЕТ БИЛАН ОҒРИГАН БОЛАЛАРНИНГ ҲАЁТ СИФАТИ

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✓ ***Резюме***

***Ўтказилган тадқиқотлар асосида болалар ва ўсмирларда қандли диабет касаллигининг камқонлик фонида маҳаллий факторлар асосида ўзига хос кечиши аниқланган. Декомпенсацион касаллик белгилари оғирлигининг ошиши, беморнинг жисмоний қобилиятлари, ақлий ва психик функцияларининг пасайиши билан характерланади.***

***Калит сўзлара: қандли диабет, темир танқислиги анемияси, ҳаёт сифати, болалар ва ўсмирлар.***

## Relevance

Diabetes mellitus (DM) is the most widely spread endocrine disease which is recently called world non-infectious epidemics: it is supposed that the number of DM patients will exceed 300 million to 2025. It means that remote complications, appearing as a result of metabolic disorders caused by hyperglycemia, will also increase. It is well known that the duration and quality of DM patients' life is conditioned by the development and progress of the complications [2, 8–9; 4, 62–63]. Opposite to that, in the case of one-moment patients' examination in one of Australian diabetic clinics it was detected that 23% of them were diagnosed anemia according to WHO criteria [5, 1165–1667]. There are cogent data of the latest researches proving that anemia has unfavorable impact on the progress of diabetic

complications, it increases the risk of cardiacvascular diseases and rise of lethality.

We found a lot of works dedicated to interrelation of anemia and diabetes mellitus in adults in scientific research references. Though, that problem is not clarified in children yet, and the available works are inconsistent [3, 2–4]. Besides that, we didn't find works dedicated to the quality of children's life with diabetes mellitus complicated by anemia.

**The objectives of the study**: In relation with that, we consider it reasonable to study the effect of anemia on the progress and quality of life of children with pancreatic diabetes.

## Materials and methods

The research includes the results of examination of 72 children with the 1st type diabetes mellitus agedfrom 5 to18 years old sick and getting insulin therapy from one to ten years.

For the evaluation of anemia impact on the quality of life of children with diabetes mellitus the patients were divided to two groups: the first group (n = 43) included children with DM and anemia, and the second group (n = 29) — children with DM without anemia. The evaluation of QL of sick children was performed using international standard inquirer PedsQL™: its common and diabetic modules. PedsQL™ (Pediatric QL inquirer) is one of the most popular inquirers in the world [1, 7]. That inquirer is meant for the study of QL of patients aged from 2 to 18 years old inclusive suffering DM. The mentioned instrument consists of 28 questions united in the following scales:

«Diabetes» (clinical manifestations of hypoglycemia, ketoacidosis) — 11 questions;

«Therapy» (problem situations appearing due to the necessity of daily glycemia self-control, insulin therapy, complaints of painful feelings) — 11 questions;

«Anxiety» (the risk of acute and chronic diabetic complications development, worry about the efficiency of performed therapy) — 3 questions;

«Communication» (complications in patients communication with medical staff and surrounding people) — 3 questions.

The answers to the questions in both modules are presented in 5-point Liquert's scales (horizontally located variants of answers to the questions, each of which correspond to certain number). The amount of points in the answer varies from 0 to 4 (0=never, 1=almost never, 2=sometimes, 3=often, 4=almost always). There are from three to five answers suggested for each question (dependently on the age of children).

The respondent can choose only one of the suggested answers. Each question is estimated according to the frequency of proposed situation appearance for "the last month". The final results of each scale of the inquirer are presented in points from 0 to 100: the greater is the total value the better the quality of life is.

## Result and discussion

In manifestation period of DM all examined patients had prevailing typical symptoms of the disease such as thirst, polyuria and progressing loss of body weight.

The structure of DM 1st type complications among children the first place is occupied by diabetic neuropathy (79,2%), less percentage — nephropathy (5,6%), retinopathy (4,2%) and diabetic cataract (1,4%).

Specific weight of iron deficiency anemia (IDA) frequency among children with DM is 59,7%.

Several reasons were detected in the analysis of anemia development in children with pancreatic diabetes. Among these reasons there is inflammation, insufficient nutrition, accompanying autoimmune diseases, renal diseases, drugs and hormonal alterations.

According to the received data it was detected that anemia in children with DM increases the risk of unfavorable progress of diabetic retinopathy, nephropathy, neuropathy and cardiac-vascular complications.

Thus, the given group of children more often had registered cardiac-vascular diseases in comparison with DM patients without anemia (52,9% con 34,5% correspondingly), and it is evidently linked with the independent factor contributing disorder of the work of heart and blood vessels.

Children with DM associated with anemia have average НвА1 с value 9,2±0,12%: 23,2% patients had the values of metabolic control corresponding to subcompensation level, and 76,7% — de-compensation level.

Children with DM without anemia had НвА1 с average value 7,1±0,14%: 12 patients (41,4%) had subcompensation state, 17 patients (58,6%) — carbohy-drate exchange compensation state.

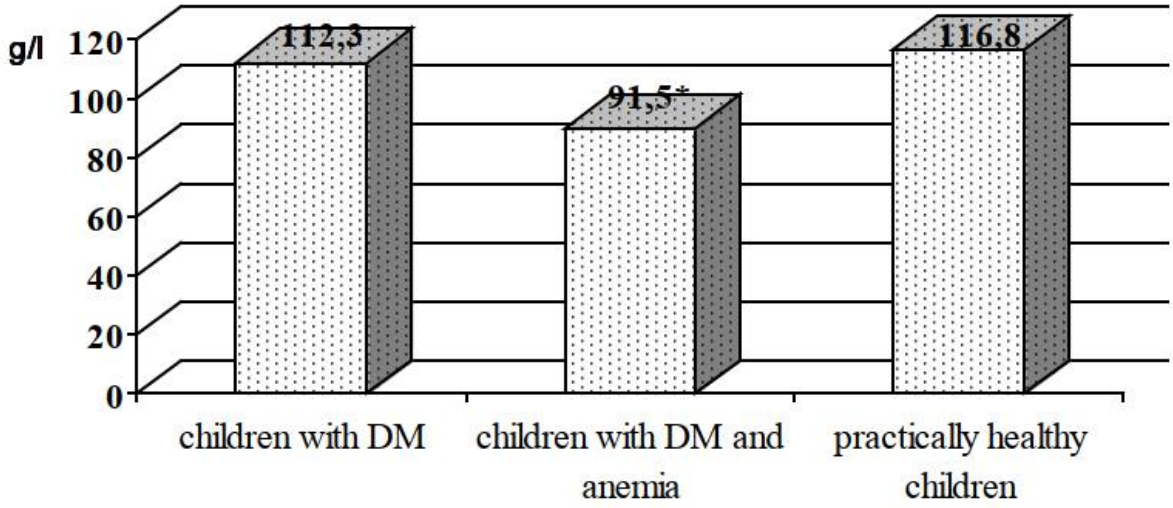
Study of hemoglobin level in children with DM with anemia showed that hemoglobin concentration in the patients of that group was much lower than that of the comparison group ($P < 0,01$) (fig. 1).

The given contingent of children had decrease of appetite, physical abilities, intellectual and

mental functions because of the background inclusive

The analysis of the values of life quality was conducted in three age groups in compliance with methodic standards: from 5 to 7 years old inclusive, from 8 to 12 years old , anemia. from 13 to 18 years old inclusive.

**Figure 1. Concentration of hemoglobin in peripheral blood of children with DM**




* — reliability of the data in comparison with practically healthy children and children with DM (P<0,01)

The group of children with DM associated with anemia had prevailing patients aged 5–7 years old (44,2%), though in case of DM without anemia prevailing age group was 8–12 years old children (34,5%) and 13–18 years old (37,9%). Reliable decrease of the level of physical, emotional, social and psycho-social functioning, functioning in kindergarten and school (tab. 1) in all age groups was detected in the analysis of the values of life quality of children and adolescents with DM associated with anemia.

According to the data of diabetic module children of kindergarten and junior school age gave the lowest evaluation of “Diabetes” scale among patients of the 1st and 2nd groups, and the highest values in that age group were given to “Therapy” (unit 1) and “Anxiety” scales.

**Table 1. – Comparative values of life quality of children and adolescents**

| **Scales of inquirer** | Estimation of age groups | | | | | |
|---|---|---|---|---|---|---|
| | 5–7 years old | | 8–12 years old | | 13–18 years old | |
| | 1 group | 2 group | 1 group | 2 group | 1 group | 2 group |
| 1. Common module | | | | | | |
| Physical functioning | 69±1,2 | 80,5±1,4* | 72±1,1 | 92,5±0,5* | 72±0,9 | 94±0,8* |
| Emotional functioning | 68±1,1 | 74±0,9* | 77,5±1,1 | 82,5±1,2* | 80±1,3 | 90±1,1* |
| Social functioning | 75±1,2 | 79±0,9* | 82,5±1,2 | 95±1,2* | 90±0,8 | 95,5±0,9* |
| Functioning in kindergarten/school | – | – | 82,5±1,1 | 80±1,3 | 55±1,4 | 77,5±1,1* |
| Psycho-social functioning | 72±1,1 | 77±1,2* | 82,5±1,3 | 86±0,9* | 75±0,8 | 90,5±1,1* |
| Summary point | 71±1,0 | 78±1,2* | 81±1,1 | 89±0,9* | 74±1,3 | 89,5±0,9* |
| 2. Diabetic module | | | | | | |
| «Diabetes» | 63±1,2 | 64±1,3 | 59±1,2 | 86±1,2* | 64±1,1 | 79±1,3* |
| «Therapy» unit 1 | 82±1,1 | 93±1,2* | 81±1,3 | 88±1,1* | 88±1,2 | 87±1,4 |
| «Therapy» unit 2 | 86±1,3 | 85±1,2 | 64±1,4 | 100±0,8* | 89±1,1 | 93±0,9* |
| «Anxiety» | 80±1,4 | 84±1,1* | 75±0,9 | 67±0,9 | 58±1,6 | 87,5±1,3* |
| «Communication» | 69±1,2 | 67±1,3 | 75±1,2 | 83±1,2* | 100±0,9 | 100±0,6 |

Note: * — reliability of the data between the groups (P<0,05–0,01)

Initially at the debut of the disease all manipulations (self-control, glycemia values interpretation, count of bread units, insulin injection) of the patients of that age group are performed by their parents because of patients' young age. Though, as it was clarified in the process of individual interview, in future the situation does not change in most of the families. Children are more like detached onlookers and not active participants of the process. That's why most of the situations immediately linked with the process of pancreatic diabetes therapy are not considered to be problematic for them, except periodically appearing painful feelings relevant to insulin injection and/or taking blood samples for selfcontrol of glycemia.

Because of young age these patients do not worry about diabetic complications and are not afraid of the aforesaid complications, and it is reflected in the evaluation in "Anxiety" scale.

Respondents of the middle age group considered the situations linked with self-control and insulin injection less problematic and painful in comparison with younger children, and that can be conditioned by the adaptation to own disease, rise of pain sensitivity threshold with proceeding of DM.

Different from younger children, significant part of the respondents in the age of 11–15 are ashamed of their disease. Because of the same reason most of them avoid questions about their disease in communication with other people.

The wish of being similar to children of the same age is a distinctive feature of children at that stage of personality development, and often it becomes the reason of deviation of therapy curriculum, leading in its turn to appearance of several conflict situations in relations with parents. That is proved by estimation in the "Therapy" (unit 2) scale.

In the analysis of the received data we pay attention to the fact that all three age groups estimated "Diabetes" scale, reflecting disease de-compensation symptoms, very low, proving labile progress of DM in overwhelming majority of inquired respondents. Though adolescents and children of senior school age are more concerned about the symptoms characteristic for hypoglycemic states (shivering, headache, hunger), while kindergarten age children, on the opposite, more often subjectively feel manifestations of hyperglycemia (thirst, often urina-tion, rise of appetite).

The respondents of the senior group (mostly girls) differ from the other patients by the high degree of anxiety about developing and progressing of chronic diabetic complications reflected in extremely low estimation in the "Anxiety" scale. Among the patients with DM 1st type the worry about future characteristic for all teenagers [6, 63] is additionally aggravated by the awareness of their disease as a new category of existence, reality of invalidity and possible limitation of workability.

We would like to notice, that reliable low values in the evaluation of diabetic module were received from the children of the 1st group ($P<0,05–0,01$).Thus, anemia has negative impact not only on the clinical progress of DM, intensifying the development of the disease and its complications, but also life quality of these children and adolescents.

**Conclusions**

1. The impact of anemia on the progress of pancreatic diabetes in children and adolescents is characterized by the increase of disease de-compensation symptoms, decrease of physical abilities, intellectual and mental functions of the patients.

2. The negative effect of diabetes mellitus associated with anemia on the quality of life of children and adolescents is proved and it is related to the decrease of the level of physical, emotional, social and psycho-emotional functioning.

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# PERSPECTIVES OF USING INNOVATIVE TECHNOLOGIES IN HIGHER EDUCATION INSTITUTIONS

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✓ ***Resume***

***The article deals with the problem of introducing interactive learning into the practice of higher educational institutions, which is relevant in modern innovative conditions. The concepts of interactive teaching, interactive teaching technologies are considered, the characteristics of the interactive teaching technologies popular in the conditions of pedagogical innovations are given, the advantages and disadvantages of an interactive lesson are highlighted.***

***Key words: discussion, business game, interactive learning, interactive learning technologies, interactive lecture.***

# ПЕРСПЕКТИВЫ ИСПОЛЬЗОВАНИЯ ИННОВАЦИОННЫХ ОБРАЗОВАТЕЛЬНЫХ ТЕХНОЛОГИЙ В ВУЗЕ

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✓ ***Резюме***

***В статье рассмотрена актуальная в современных инновационных условиях проблема внедрения интерактивного обучения в практику высших учебных заведений. Рассмотрены понятия интерактивного обучения, интерактивных технологий обучения, дана характеристика популярным в условиях педагогических инноваций интерактивным технологиям обучения, выделены преимущества и недостатки интерактивного занятия.***

***Ключевые слова: дискуссия, деловая игра, интерактивное обучение, интерактивные технологии обучения, интерактивная лекция.***

# OLIY TA'LIM MAKTABLARIDA INNOVATSIYA TEXNOLOGIYALARIDAN FOYDALANIShNING PERSPEKTIFLARI

*H.T. Musashixov, F.D. Ikromova, E.A. Vasilevskiy*

Andijon davlat tibbiyot instituti

✓ ***Rezyume***

***Maqolada zamonaviy innovatsion sharoitda dolzarb bo'lgan oliy o'quv yurtlari amaliyotiga interaktiv ta'limni joriy etish muammosi haqida so'z boradi. Interfaol o'qitish, o'qitishning interfaol texnologiyalari tushunchalari ko'rib chiqilib, pedagogik yangiliklar sharoitida ommalashgan interaktiv o'qitish texnologiyalarining xususiyatlari keltirilgan, interfaol darsning afzalliklari va kamchiliklari ta'kidlangan.***

***Kalit so'zlar: munozara, ishbilarmonlik o'yini, interaktiv ta'lim, interaktiv ta'lim texnologiyalari, interaktiv ma'ruza.***

## Introduction

New requirements are imposed on education today, and the problem of the quality of training university students is becoming more and more urgent. In modern conditions, there is still a gap between the quality of the practical training of graduates and the needs of institutions, which, in conditions of market competition, are increasingly

oriented towards new technologies. This gap can be eliminated through the widespread introduction of innovative educational technologies at the university [7].

Today, a teacher in a higher school, in addition to performing the function of a translator of scientific knowledge, must be able to choose the optimal teaching strategy, use modern educational technologies aimed at creating a creative atmosphere of the educational process. The passive form of conducting classes, when the influence of the teacher on the students is dominant, and the teacher's connection with the students is carried out through surveys, performing independent and control works, performing tests, is replaced by active learning which is such an organization and conduct of the educational process, which are aimed at enhancing the educational and cognitive activity of students through the wide, comprehensive use of didactic and organizational and managerial means, their widespread use of various means and methods of activation [5,8].

## Main part

By introducing new forms and methods of teaching, means of enhancing the cognitive activity of students, in addition to the goals of forming personal, educational, familiarization and activity competencies, an additional goal is pursued - to transfer the educational process from the outdated paradigm of "knowledge baggage" to a new educational paradigm of activity, project, personality-oriented, differentiated learning.

The alternative of modern teaching programs and forms of teaching expands the field of choice, asserts the right of students to free access to various set of subjects and methods of transferring knowledge, actively using the information space of the Internet, satellite television and other means.

In the process of active learning, students become more subjects of educational activity, enter into a dialogue with the teacher, and actively participate in the cognitive process, completing the tasks offered to them. One of the modern forms of active learning is interactive learning, based on the organization of interaction between the teacher and students through active feedback between them and the organization of interaction between students. An integral part of the modern educational process based on the use of interactive forms of education is the active introduction and use of computer technology in teaching.

The use of interactive teaching methods is most consistent with a student-centered approach, since it involves co-teaching, that is, collective learning in cooperation, and both the students and the teacher are subjects of the educational process. The teacher here often acts as the organizer of the learning process, the creator of conditions for the students to show initiative. Interactive learning is based on the students' own experience, their direct interaction with the area of being mastered professional experience. In addition, the use of interactive educational technologies presupposes a slightly different logic of the educational process: not from theory to practice, but from practical experience to its theoretical understanding.

**Purpose of the study:** to assess the current processes taking place in the system of higher professional education, to study the change in approaches to the organization of the educational process in higher educational institutions. At our institute, a competent approach is being implemented, which provides for the widespread use of active and interactive forms of conducting classes in the educational process (business and role-playing games, analysis of specific situations, psychological and other trainings) in combination with extracurricular work, which contributes to the formation and development of students' professional skills. Generalization, however, makes it possible to apply knowledge and skills in specific situations, when considering particular issues in the future industrial, scientific and social life of graduates of the institute.

The object of study of the teachers of the institute is interactive educational technologies. Therefore, some teachers use the method of conducting a lecture, when students are given the text of an upcoming lecture in advance, which reflects the practical significance of the material, draws the students' attention to unresolved issues or problems in this area. The teacher's task is to explain complex questions, expand the material contained in the outline, and answer questions. Students make notes only if they have problems with mastering the material or they are interested in the details of a specific issue.

Thus, the interaction of students and teachers is a characteristic and desirable feature of interactive technology, reflecting the position of the student, on the one hand, and the skill and professionalism of the teacher, on the other. Interactive technologies are technologies in which learning takes place in the interaction of all students, including the teacher. Everyone makes their own special individual contribution, in the course of work there is an exchange of knowledge, ideas, and methods of activity. An environment of

educational communication is created, which is characterized by openness, interaction of participants, equality of their arguments, accumulation of joint knowledge, the possibility of mutual assessment and control.

The use of various interactive teaching technologies, such as business and role-playing games, allows teachers to effectively solve the problems of teaching and upbringing in the educational process. Such games involve the presence of participants with different, often opposing interests and the need to make a decision at the end of the game. They allow students to form such important key competencies as communication skills, tolerance, the ability to work in small groups, independent thinking, etc. As a method of interactive learning, business games are more aimed at building students' professional competence, but they should be used where they are really needed. Unfortunately, the teaching of students is more often carried out according to the classical version, although the content of the program material for the disciplines of the curriculum has the potential to include gaming technologies in the educational process [6]. We believe that a modern teacher should master the methodology of their implementation, taking into account the specifics of the areas of training, academic discipline, personal characteristics of students in the study group.

The innovative nature of educational technologies used in the process of organizing the educational process in higher education is becoming one of the most important tools in the competitive struggle of higher educational institutions in modern conditions. The introduction of innovations in educational activities will ultimately lead to an increase in the quality of training for future specialists and undergraduates. In turn, improving the quality, accessibility, efficiency of education, its continuous and innovative nature, the growth of social mobility and activity of young people, their involvement in various educational environments make the education system an important factor in ensuring the national security of the country, the growth of the well-being of its citizens.

An innovative approach to education should include [4]:

- Intra-subject innovations - innovations implemented within the subject, which is due to the specifics of its teaching (for example, the transition to new educational and methodological complexes, the development of copyright methodological technologies);

- general methodological innovations - the introduction into pedagogical practice of non-traditional pedagogical technologies, universal in nature, since their use is possible in any subject area (for example, the development of creative tasks for students, project activities);

- administrative innovations - decisions made by managers of various levels, which, ultimately, contribute to the effective functioning of all subjects of educational activity;

- ideological innovations - innovations are caused by the renewal of consciousness, the trends of the times; they are the fundamental basis of all other innovations, since without realizing the need and importance of priority updates, it is impossible to proceed directly to the update.

A feature of innovations in the educational process can be considered the use of new knowledge, techniques, approaches and technologies to obtain results in the form of educational services that are distinguished by social and market demand. The main focus of innovation is the qualitative renewal of professional pedagogical activity. The introduction of innovative educational technologies in higher educational institutions, in our opinion, is possible in two ways: the adaptation of certain innovative technologies to traditional forms of education for universities, as well as the use of qualitatively new forms of education. The main obstacles to deeper integration of innovative technologies into the educational process are the lack of necessary skills for innovative work among university teachers and insufficient material and technical support of universities.

However, we consider their introduction into the educational process especially important and relevant, since innovative technologies are aimed primarily at improving the quality of training in higher educational institutions by developing students' c creative abilities and independence, which they show in the decision-making process, which, ultimately, will lead to an increase in the personal and professional self-esteem of the future specialist, will transfer to him a significant part of the cultural and social standards of society.

Analysis of the annual survey of graduates of the medical institute shows that the majority of respondents (97%) consider it expedient to use business games, Case technologies in the learning process. As a justification, they cite the following arguments: theoretical material is better assimilated (68%), skills of practical work in the specialty are acquired (76%), communication skills

are developed (41%), motivation for educational activities is increased (73%), the ability to make

decisions in a non-standard situation is formed (54%), etc. To identify students' interest in interactive forms, a questionnaire was carried out, analysis of the answers of 2-3 year students showed that 73% of students are attracted to work with a book, 83% - imitation of pedagogical situations, 76% - work in mini groups, 93% - training sessions . When answering the question: "What contributes to the effectiveness of interactive learning technologies?" the respondents' opinions were distributed as follows: it is important to create problem situations in class for 69%, content selection - for 67%,57% noted the perception of the objectives of the lesson, 69% correlate the effectiveness of the interactive lesson with the professionalism of the teacher, 45% opted for a flexible lesson structure, 43% - control over the assimilation of the content. Thus, the position of medical students is based on their preference for interactive learning technologies.

Interactive learning allows you to simultaneously solve several problems, the main of which is the achievement of learning goals, the development of communication skills and abilities. It helps to establish emotional contact between students, provides an educational task, as it teaches to work in a team, to listen to the opinion of their comrades [1,2].

Despite the many advantages of interactive teaching technologies, it is necessary to note the disadvantages: the result depends significantly on the professionalism of the teacher; the teacher needs experience in the careful design of communicative relationships that meets the requirements of the problematic principle; processing the content of classes takes a lot of preparation time; great tension for the teacher during the lesson; focus on continuous creative search; large time costs [3].

The use of interactive forms in the learning process, as practice shows, relieves the nervous load of students, makes it possible to change the forms of their activities, switch attention to the key issues of the topic of classes, provides high motivation, an active life position, forms solid knowledge, develops creativity and imagination, team spirit, the value of individuality, freedom of expression, emphasizes mutual respect and democracy.

**Conclusion**

1. Thus, the use of innovations in higher education today is a direct path to the integration of education, science and practice. The goal of the innovative activity of higher educational institutions is to qualitatively change the personality of students in comparison with the traditional system used for many years, which is a direct transmission of knowledge from teacher to student. In addition, innovations should become the main tool for improving the quality of education in a modern university. 2. A feature of innovations in the educational process can be considered the use of new knowledge, techniques, approaches and technologies to obtain results in the form of educational services that are distinguished by social and market demand. The main focus of innovation is the qualitative renewal of professional pedagogical activity.

3. Interactive teaching technologies are focused on increasing the volume of students' independent work, on improving the learning and education process, which will lead to an improvement in the results of these activities and the introduction of innovations into the educational process.

4. Interactive learning, contributing not only to the acquisition of professional knowledge, but also to the development of the abilities and qualities of initiative required today, contributes to the formation of students' independence, readiness for action, responsibility, decisiveness, and the ability to achieve their goals.

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# PRIMARY ANASTOMOSIS IN THE SURGERY OF COLON OBSTRUCTION OF TUMOR ETIOLOGY

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✓ ***Resume***

***Acute obstructive intestinal obstruction of tumor etiology in recent years has an upward trend. Colon tumors rank third among all quality neoplasms. This paper discusses the surgical tactics of the primary anastomosis after the elimination of acute intestinal obstruction and removal of the tumor complex.***

***Key words: colonic obstruction of tumor etiology, primary anastomosis.***

# ПЕРВИЧНЫЙ АНАСТОМОЗ В ХИРУРГИИ ТОЛСТОКИШЕЧНОЙ НЕПРОХОДИМОСТИ ОПУХОЛЕВОЙ ЭТИОЛОГИИ

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✓ ***Резюме***

***Острая обтурационная кишечная непроходимость опухолевой этиологии в последние годы имеет тенденцию к росту. Опухоли толстой кишки занимают 3-е место среди всех злокачественных новообразовании. В данной работе рассмотрена хирургическая тактика наложения первичного анастомоза после ликвидации острой кишечной непроходимости и удалением опухолевого комплекса.***

***Ключевые слова: толстокишечной непроходимость опухолевой этиологии, первичный анастомоз.***

# ЎСМА ЭТИОЛОГИЯЛИ ЙЎҒОН ИЧАК ТУТИЛИШИДА ХИРУРГИЯДА БИРЛАМЧИ АНАСТОМОЗ

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✓ ***Резюме***

***Кейинги йилларда ўсма этиологияли ўткир обтурацион ичак тутилиши сони ошиб бормоқда. Барча ёмон сифатли ўсмалар ичила йўғон ичак ўсмалари 3-ўринни эгаллайди. Бу мақолада ўткир ичак туилишини бартараф қилиб, ўсма комплексини олиб ташлагандан кейин бирламчи анастомоз қўйишнинг хирургик тактикаси кўриб чиқилган.***

***Калит сўзлар: ўсма этиологияли йўғон ичак тутилиши, бирламчи анастомоз.***

## Relevance

In recent years, there has been a steady increase in patients with colon tumors. According to the WHO, this pathology ranks third among malignant neoplasms (1.23 million cases per year) [8].

Despite the introduction into clinical practice of modern highly informative methods for diagnosing diseases of the colon, the proportion of advanced and complicated forms of tumors of this

localization remains at a high level and exceeds 30% [4].

Among the complications in 15-40% of colon tumors, obstructive large bowel obstruction is most common, which occupies 85% of all emergency conditions associated with diseases of the colon. Most of these patients operate in institutions that provide emergency surgery. However, even in planned specialized oncological departments, such patients make up a considerable part [12].

Until now, the issues of tactics, volume and methods of therapeutic action remain debatable. Surgical interventions are accompanied by a higher frequency of pyoinflammatory complications (40-80%) and significant postoperative mortality (40-55%) [7]. Or in the world population 309 thousand deaths per year [2,3].

The consensus of the conference of the World Society of Emergency Surgery on the Treatment of Obstructive Colonic Obstruction, recommends in some cases the use of resection of the large intestine with primary anastomosis, observing certain indications and using a special technology for their implementation. However, the treatment of patients with acute colonic obstruction of tumor genesis requires an individual differentiated approach, taking into account the cause of the intestinal passage disorders, the severity of concomitant pathology, the degree of progression of intestinal obstruction and the possibility of a surgical hospital [11].

Such surgical approaches are not widely used in practical surgery, which makes it urgent to study this problem more closely.

**Purpose of the study:** to consider options for surgical tactics and to study the immediate results of the use of primary anastomosis in the treatment of patients with acute colonic obstruction of tumor etiology.

## Materials and methods

The study is based on observations of 193 patients with acute colonic obstruction, who were treated in the surgical department of the Tashkent State Dental Institute for the period from 2000-2018. The patients' age ranged from 19 to 88 years. There were 117 men (60.7%). women 76 (39.3%) Average age 67.1 + - 1.6 years. All patients were examined. As a result of the examination, an overview fluoroscopy of the abdominal cavity, MSCT, irrigoscopy, colonoscopy, ultrasound of the abdominal cavity and large intestine confirmed the diagnosis of acute intestinal obstruction, and after a short preparation of them in an emergency or delayed manner, all patients were operated on.

Of 193 patients, 162 (83.9%) had a colon tumor as the cause of intestinal obstruction. In other cases, volvulus of the sigmoid colon (9.3%), adhesions (4.7%), Crohn's disease (2.1%).

Of 162 patients, 31 had the tumor localized in the right half (in the ascending section in 26, in the right bend in 5), in the remaining 131 patients in the left half, in the left fold in 19, in the descending section in 59, in the sigmoid colon in 48 and in 5 in the rectosigmoid region. Of the 162 patients, 103 patients were diagnosed with comorbidities.

Patients were more often admitted to the clinic in average and serious condition. The severity of the condition of these patients was due to two unfavorable combinations and the presence of intestinal obstruction and a locally advanced tumor process, and in some cases, the presence of distant metastases.

Results and their discussion:

With right-sided localization of colonic obstruction of tumor etiology, 26 underwent hemicolectomy with the imposition of ileotransverse anastomosis "end-to-side" or "end-to-end" (in 6), in 5 patients due to peritonitis against the background of disintegration and perforation of the tumor, after thorough debridement of the abdominal cavity hemicolectomy with Brook ileostomy.

In 15 patients, tumor invasion into the retroperitoneal tissue, the ureter, the lateral abdominal wall and an increase in the pair of aortic lymph nodes and liver metastases (in 4) were observed.

All these patients also underwent radical surgery. In 11 patients, extended hemicolectomy with extensive retroperitoneal lipo-lymphadenectomy was performed, in 3 patients the right ureter was involved in the perifocal process, which was resected and then the ureter was restored to a catheter

End to end. The catheter was removed with a cystoscope on day 12. In all 11 patients, the operation was completed with the imposition of a side-to-side ileotransverse anastomosis. In 4 patients, as a result of a pronounced adhesive process in the upper floor (cholecystectomy operation), hemicolectomy was performed and the operation was completed with the imposition of an ileostomy

Of 131 patients with left-sided localization of the colon tumor complicated by intestinal obstruction, 56 patients underwent Hartmann's operation with single-barreled colostomy, 11 had sigmoid resection with end-to-end colorectoanastomosis.

In 39 patients with left-sided hemicolectomy, the operation was completed by a one-stage interintestinal anastomosis "end-to-end"

In 10 patients with a tumor of the left half complicated by intestinal obstruction, pronounced stretching of the wall of the adducting section was observed, where longitudinal and transverse ruptures of the serous membrane were noted, in connection with which, a subtotal colectomy was performed with simultaneous application of ileosigmoanastomosis or ileorectoanastomosis "end-to-side".

All operations were accompanied by nasoenteric and transanal decompression. In the postoperative period, homeostasis was corrected, electrolyte transfusion, protein drugs, drugs that improve the rheological properties of blood.

In the postoperative period, 26 patients died, which amounted to 16%.

Most of the mortality was observed in patients over 65 years of age. The cause of death was leakage of the interintestinal anastomosis (2), prolapse in the abdominal cavity of the ileostomy (2), colostomy (1), thromboembolism of the mesenteric vessels (7), continuing peritonitis (7), myocardial infarction (7).

Analyzing the causes of mortality, we noted that the age factor, the time factor was the leading one. At the same time, from the onset of symptoms of intestinal obstruction to surgery in the group of deceased was 52.5 ± 5.6 hours. Probably, purulent and toxic intoxication was the main reason for the postoperative death of patients.

In the postoperative period, the situation is aggravated by the development of postoperative paralytic intestinal obstruction, which usually occurs after anesthesia and laparotomy against the background of pronounced metabolic disorders; immediate correction of the identified disorders helps to resolve these changes. Therefore, in our opinion, any striving for oncological radicalism is highly justified [1,2].

Of course, subject to the operability of the tumor. One of the most important stages of the operation that largely determines the course of the postoperative period and the outcome of treatment is adequate decompression of the intestine, nasogastrointestinal intubation is absolutely indicated for the slightest paresis of the small intestine [7].

Antegrade colon cleansing through an appendicostomy or cecostomy performed on the operating table can create conditions for a one-stage resection of the corresponding segment of the intestine with the imposition of a primary anastomosis including the left half of the colon.

Antegrade decompression on the operating table was performed as follows. At the beginning, the cecum with the appendix was brought into the wound, at the base of the appendix, a purse-string suture was applied on the cecum and tightened. Then made an appendectomy and through the stump of the appendix into the lumen of the cecum, a Foley catheter No. 18 was introduced, through which it was possible to partially suck out the gaseous fraction and liquid intestinal contents. After that, through the catheter into the intestinal lumen, 500 ml, 700 ml, 1 liter, physiological saline were introduced in stages to liquefy the intestinal contents and sucked off. At the same time, the colon decreases in size and diameter. After that, the left half of the large intestine was mobilized, depending on the volume, in this case in 10 patients, intestinal pulp was applied to the lower third of the sigmoid colon distal to the tumor, 10-15 cm, a purse-string suture was applied proximal to the upper border of the tumor in accordance with the diameter of the introduced into the lumen gut decompression tube. We used a plastic corrugated tube with a diameter of 3.5, which was inserted in the proximal direction under the cover of intestinal pulp. After its removal, at the beginning, a passive outflow of intestinal contents was carried out into a plastic bag put on the distal end of the decompression tube. Then, for the purpose of complete cleaning of the large intestine, it was washed through a Foley catheter, 100 ml of metrogil and 2.0 kanamycin were added to the solution after washing and decompression of the large intestine. After the end of irrigation, the cecostomy was closed using the usual method.

After decompression, partial retraction of the bowel wall was observed, which made it possible to perform bowel resection without any particular difficulties and establish a primary end-to-end anastomosis. To protect the anastomosis, a gas outlet tube was inserted transrectally 10-15 cm above the suture lines. We did not observe any complications associated with the anastomosis.

## Conclusions

Thus, with obstructive colonic obstruction of tumor etiology, one should strive not only to eliminate the complication, but also to perform a primary radical operation, which is favorably distinguished by the fact that the tumor is removed as a source of intoxication and metastasis [6].

1. In case of right-sided localization of the tumor, it is advisable to perform hemicolectomy with the imposition of an ileotransverse anastomosis.
2. In case of left-sided localization, in the case of minor changes in the intestinal wall, it is possible to perform a left-sided hemicolectomy

with the imposition of an anastomosis, in case of pronounced changes in the intestinal wall, perform subtotal colectomy with ileostomy.

3. All operations must be accompanied by nasogastroenteric and transanal bowel decompression.

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# PROGNOSIS OF RESISTANT TUBERCULOSIS COURSE AMONG CHILDREN AND TEENAGERS

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✓ ***Resume***

***The simulation mathematical model serves not only for mathematical calculations, but also for formation of system ideas of epidemic process of a tuberculosis infection. By means of the specified model, there is an opportunity to estimate efficiency of the differentiated antitubercular actions concerning groups of the increased risk, their influence on an epidemiological situation.***

***Key words: tuberculosis, epidemiology, children, model, risk of group***

# ПРОГНОЗ РАЗВИТИЯ РЕЗИСТЕНТНОГО ТУБЕРКУЛЕЗА СРЕДИ ДЕТЕЙ И ПОДРОСТКОВ

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✓ ***Резюме***

***Имитационная математическая модель служит не только для математических расчетов, но и для формирования системных представлений об эпидемическом процессе туберкулезной инфекции. С помощью указанной модели, есть возможность оценить эффективность дифференцированных противотуберкулезных мероприятий в отношении групп повышенного риска, их влияние на эпидемиологическую ситуацию.***

***Ключевые слова: туберкулез, эпидемиология, дети, модель, риск группы.***

# БОЛАЛАР ВА ЎСМИРЛАР ОРАСИДА ДОРИЛАРГА ТУРҒУН СИЛ РИВОЖЛАНИШИ ПРОГНОЗИ

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✓ ***Резюме***

***Имитацион математик модель нафақат математик ҳисоблар қилиш учун, балки сил инфекциясининг эпидемиологик жараёни ҳакида тизимли тушунча ҳосил қилишга хизмат қилади. Ушбу модель ёрдамида хавф гуруҳлари орасида силга қарши дифференциалашган чора- тадбираларнинг самарасини ва уларнинг эпидлемиологик ҳолатга таъсирини баҳолаш имконияти мавжуд.***

***Калит сўзлар: сил, эпидемиология, болалар, модель, хавф гуруҳлари.***

## Relevance

The Republic transition to market relations, having entailed going far social transformations, put most countries population in extraordinary conditions. Nowadays in CIS-republics the results of social and epidemiological experiment of TB-infection growth were observed on a country scale,

when the management priorities and evaluation of phthisiological service were changed [1,2]. The more significance acquired economical and mathematical ways of management The task of control epidemiological process, planning and timely carry out anti-epidemiological measures, determination tasks regularity of anti-tuberculosis service cannot be solved without operative prognosis of epidemiological situation on tuberculosis [3]. In this connection it is actual to carry out short-term prognosis of epidemiological tuberculosis indices among children and teenagers in the Republic. The prediction of epidemiological process was based on detection and study its course regularities [4,5]. For deep study process regularities it was necessary to use systemic analysis of one tool mathematical simulation [6].

The simulation as a variety mathematical model served not only for mathematical calculations, but for formation systemic imaginations on epidemic process of tuberculosis infection. With the help of given model the possibility to evaluate efficacy of differentiated anti-tuberculosis measures on increased risk groups and their influence on epidemiological situation occured.

The data of 1918 showed positive tendency stabilization of children morbidity situation in Kazakhstan. It was marked the decrease of index from 13,3 per 100000 population in 2017, and, in 2018 it was 11,8 per 100.000 population. The teenagers morbidity was 47,9 per 100.000 population in 2017, but in 2018 it was 46 per 100.000 population in 2018. It was considered that decrease was caused by general tendencies of epidemiological situation on tuberculosis in the Republic but not real reduce of infection reservoir among children. The trouble was the fact of annual safety and increase specific weight of destructive pulmonary tuberculosis among the primary revealed children, and, it was is 11,4%. But at the same time from the generalized TB-forms 4 children died which was 0,08 per 100.000 population. And in 2018 the morbidity was 0,3 in children per 100.000 population. One of the causes was non-qualitative formation of tuberculosis risk groups in PMSC (prediction medical sanitary care) net.

Study dynamics tendencies of epidemiological situation and prediction construction indices for the next years became priority direction of anti-tuberculosis institutions in resistant tuberculosis prevalence period. It is obvious that the prediction being maintained on hypothesis with keeping existed tendencies in conditions of non-stable economic position and social conditions influencing essentially on tuberculosis process development cannot be long-term.

Last decade the main danger of tuberculosis endemy development became the increased number of sick people with tuberculosis and being affected with mycobacterium tuberculosis resistant to anti-tuberculosis drugs including children and teenagers. The rate of primary multi-resistant tuberculosis was in 1,5 times higher among the teenagers than in children, and, occurrence of secondary multi-resistant tuberculosis was on the same level. The treatment efficacy of such patients mainly depended on possibility of timely and objective control of its behavior. In connection with it the search of new ways of determination for evaluation clinical situation and detectionreveal factors characteristic for the patients with risk development drug-resistant tuberculosis will promote timely change of therapeutic tactics and treatment correction.

**The aim of study** was creation mathematical model of prediction for drug-resistancy and determination factors, making the most influence on morbidity with drug-resistant forms of tuberculosis among children and teenagers.

## Material end methods

Methods of study were the correlation and factor analyses, method of main components, imitation simulation in the research. For prediction epidemic process of given study the work out of equalization with use method of binary logistical regression was carried out. The study with method of main components was also performed where the interrelation structure of some indices in dynamics of correlation analysis was carried out. At prediction of timely series epidemiological indices the support was on supposition that the main factors and tendencies of last period, which determined the course of tuberculosis process, had definite inertness and were preserved for prediction period, and together with, they wouldn't change in connection with last indices and do it a little.

For elucidation occurrence causes and tuberculosis development among children and teenagers with primary revealed pulmonary tuberculosis and drug-resistant forms of TB the special map for the primary revealed patients with drug-resistant tuberculosis of respiratory organs, was worked out. The map reflected the next factors: patient's age, social status, clinical form of TB, data of bacterial diagnosis, TDS tuberculin diagnosis, presence of BCG scar, living and domestic conditions, number of family members, social well-being of family, presence of associated diseases, contact with tuberculosis patient, carry out chemical prophylaxis, terms of conversion abacillation and closing decomposition cavity.

## Results and discussion

There were two groups of patients: 105 people with TB MRS (the first main group) 72 children and teenagers with the primary revealed tuberculosis of respiratory organs; (the second control group ) they got treatment in ATD clinic at department of pulmonary tuberculosis for children and teenagers.

For prediction of drug resistance TB the various

social and medical factors making influence on its development were researched. After preliminary study and further processing them 14 features were selected ($X_{1-14}$): sex, age, material and living conditions, place of location, method of reveal, complaints at admission, presence of contact with tuberculosis person, size of BCG scar, data of tuberculin diagnosis, clinical form of tuberculosis, clinical general blood analysis, prevalence of process, associated diseases, complications of tuberculosis process. Then the researching features were processed on computer with binary logistical regression complex programs.

At study interrelation DR (drug resistance) with different clinical and social factors the next data were taken. By the feature «sex» in selection with primary revealed respiratory tuberculosis were prevailed 55,6% boys, the girls were 44,4%. Among children and teenagers with drug resistant tuberculosis, on the contrary, prevailed 61,9% girls, 38,1% boys were sick. The contingent mainly consisted of teenagers from 15 to17 years old and they were 67,2%; from 12 to 14 years old were 22,6%; from 7 to 11 years were 6,8%; children of junior age group from 1 to 6 years were only 3,3% cases. Among sick persons prevailing city residents were 68,4% cases above country people 31,6%. The children and teenagers of both groups were mainly(62,5 % and 53,3%) during prophylactic examination. The social and living conditions of children and teenagers in both groups were unsatisfactory in 55,6% and 62,9% cases accordingly. It is necessary to mark that in cases of reveal the drug resistant tuberculosis the unfavorable factors were marked in many percentages of cases, but the true differences between groups were not taken ($p>0,05$).

The analysis of post-vaccine BCG scars showed that at patients with drug resistant tuberculosis the rate of post-vaccine scars with size under 2 mm was true higher (10,5%), than at the patients with the first revealed tuberculosis (1,4) (p,0,01). The results of tuberculin diagnosis at children and teenagers of both groups the true differences were not revealed (81,3% и 81,7% accordingly).

The feature “clinical tuberculosis form” was divided into seven categories according to modern clinical classification. From the clinical forms of tuberculosis in both examining groups the most often the infiltrate pulmonary tuberculosis occurred (56,9% and 84,8%) cases accordingly. Then by disease rate the primary tuberculosis complex (12,5% and 9,5%), exudative pleurisy (18,1% and 1,9%)were diagnosed. The pulmonary focal tuberculosis (5,6% and 1,0), disseminated pulmonary tuberculosis (2,8% и 1,0%) were less revealed, and, almost with the same frequency the tuberculosis of intra-thoracic lymphatic nodes (per 1,4% and 1,9% accordingly) was diagnosed, and, least of all were tuberculosis of peripheral lymphatic nodes(2,8%) at patients with primary diagnosed tuberculosis.

From seven clinical forms of tuberculosis the statistically meaning difference ($p<0,01$) between patients of the first and second groups was marked at reveal exudative pleurisy of tuberculosis etiology. Moreover, the exudative pleurisy was in ten times more diagnosed in the drug resistant tuberculosis patients than in persons with tuberculosis of lymphatic nodes (LN).

The cavities of decomposition at primary revealed patients were in 61,4%, and in patients with drug resistancy it was 67,3% ,and, there was no revealed true differency between groups ($p>0,05$).

At analysis feature “bacteriodischarge” it was marked the true ($p<0,01$) predominance of massive bacteriodischarge in patients with MDR(multi drug resistance. In the first group of examined patients the bacteriochargers were 8 (5,7 %), but in the second group the bacteriochargers were 82 (86,1%) people. By the method of bacteriological seeding in patients with primary revealed tuberculosis the MBT (mycobacterial tuberculosis) was sown only in 19 (13,7%) patients, and, in patients of the second group it was in 100% cases. Moreover, at the first revealed patients the process was characterized by benign and limited course, but the presence of massive bacteriodischarge supposed the possibility of development his drug resistant tuberculosis.

At clearing up tuberculosis contact at primary revealed children and teenagers in comparison with drug resistant tuberculosis patients there were true differences at contact with the family dead person (0% and 33,3% accordingly), with focus of TB MDR (multi drug resistance) (14% и 12,4% accordingly). Among the first revealed patients the contact in family with tuberculosis person without drug resistance occurred true more (30,6%), than in patients with drug resistant tuberculosis (6,7%) ($p<0,05$).

The dynamics of stopping bacteriodischarge was the most demonstrative in the first group of patients, where it was at all 8 sick persons under 4 months of treatment (at 6 patients it was at the first two months of treatment, at 2 patients it was at the first third and fourth months). In the second group of patients the conversion of sputum was for the first 4 months 70 (85,4%) patients. These data were in accordance with S.S. Okulovskaya’s studies who proved that phenomenon of drug resistancy in 56% was accompanied with increase growth intensity and bacteriodischarge massivity.

The prevalence study pathological changes in other organs revealed predominance of toxic changes in kidneys (1,4 and 34,4%) and in liver (9,4 and 21,0%) in patients with drug resistant forms of tuberculosis.

The bronchial damage rate had not small important fact in patients with DR(drug resistancy) (62,9% at patients with MDR against 33,3% in the first revealed persons), the differences in indices became high true($p<0,01$). The more often occurring

bronchus pathology as bronchial tuberculosis in patients with DR tuberculosis was diagnosed in 28,6% cases, the while it was not practically occurred in the first revealed patients.

The complications of tuberculosis process as pulmonary bleedings, exudative pleurisy, atelectasis, bronchus damages, cardiopulmonary and breathing inssufficiency more true occurred in patients with drug resistant tuberculosis than in primary revealed patients (47,7% and 14,1% accordingly) ($p<0,05$).

At clinical and general blood analysis the true differences on number of blood lymphocites and hemoglobine: at the first revealed patients the lymphopenia took place in 19,4% cases, hypochromic anemia was 73,6%, but when the lymphopenia in patients with DR tuberculosis occurred in 57,1%, and anemia was 100% relatively ($p<0,05$).

Thus, the risk factors were presence of contact with sick bacteriodischager, complications of tuberculosis process, changes in general blood analysis as as lymphopenia and hypochromic anemia, massive bacteryidischarges, presence of accompanied kidney and liver pathologies.

We draw a conclusion on measure detection index named after Kox & Shell and Nadelcerkes. As at linear regression they also showed that part dispersion which can be explained with help of logistic regression. The part of dispersion explained by logistic regression in our case was 45,2%.

Control significance of coefficient differences from the zero was carried out by A.Wald's statistics that presented relative square according coefficient to it's standard error.

With the help of suggested mathematical model the new possibilities of prediction drug-resistant tuberculosis development, which were more characteristic for such patients, were revealed. The prediction of DR-tuberculosis allows to start timely adequate therapy.

Thus, the clinical structure, presence tuberculosis contact, BCG-scars, associated pathology, complications of specific process, changes in clinical general analysis and bacteriodischarge in 105 patients with drug resistant tuberculosis were examined. For evaluation significance of clinical laboratory and social risk factors the diagnostic table with 14 features was worked out. For evaluation true category differences at comparisons in various groups the methods of binary logistic regression and criterion $X^2$ (for three parameters), for the the recognition method was chosen the analysis by A.Wald, where the detection measure was determined by Kox & Shell.

According to the model it is a patient with complicated course of tuberculosis process, massive bacteriodischarge, absence of conversion sputum smear at the first months of treatment, torpid clinical laboratory dynamics of process. At secondary study of patient's sputum the "low" level of BAC in a month of treatment with ATM was revealed. The great significance has presence of tuberculosis contact with MDR patient or family tuberculosis focus. At blood analysis study the lymphopenia and hypochromic anemia, and, at bronchoscopy the presence of specific broncus damage can be observed. The use of suggested methods allow to make prediction of GR development at early terms of examination and to manage adequate treatment.

The study revealed new possibilities of prediction DR-tuberculosis at children and teenagers connecting with clinical laboratory and social factors which were very essential as they allowed more fully to predict the disease course and to make influence on adequate therapy. On the base of factors study the mathematical model was created, which allows with 89,8% to determine the character of disease course.

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# PROTECTION OF THE WATER ENVIRONMENT FROM CONTAMINATION WITH DOMESTIC SEWAGE

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✓ ***Resume***

***The article is devoted to the study of the current state of the functioning of sewerage systems in Uzbekistan and the development of recommendations for the protection of the aquatic environment from pollution with domestic wastewater. It is established, that the provision of sewerage systems in the country as a whole in cities is 66.4%, in urban-type settlements 4.9% and in rural settlements 0.5%. The efficiency of the sewerage systems functioning in the whole country and in the context of regions is not satisfactory. Only 40.2% of domestic wastewater from the total amount entering the sewer network undergoes the cleaning process. A low level of coverage of the population with sewage systems, unsatisfactory efficiency of sewage treatment plants, disproportion in water consumption and wastewater disposal are noted.***

***Key words: protection of the aquatic environment, sewerage system, coverage of the population with sewerage, settlements, domestic wastewater, domestic wastewater treatment.***

# ОХРАНА ВОДНОЙ СРЕДЫ ОТ ЗАГРЯЗНЕНИЯ ХОЗЯЙСТВЕННО-БЫТОВЫМИ СТОКАМИ

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✓ ***Резюме,***

***Статья посвящена изучению современного состояния функционирования систем канализации в Узбекистане и разработке рекомендаций по охране водной среды от загрязнения бытовыми сточными водами. Установлено, что обеспеченность системами канализации в целом по республике в городах составляет 66,4%, в посёлках городского типа 4,9% и в сельских населенных пунктах 0,5%. Эффективность функционирования систем канализации в целом по республике и в разрезе областей не удовлетворительная. Процессу очистки подвергается всего лишь 40,2% хозяйственно-бытовых сточных вод от общего их количества, поступающих в канализационную сеть. Отмечаются: низкий уровень охвата населения системами канализации, неудовлетворительная эффективность работы канализационных очистных сооружений, диспропорция потребления воды и отводом сточных вод.***

***Ключевые слова: охрана водной среды, система канализации, охват населения канализацией, населенные пункты, хозяйственно-бытовые сточные воды, очистка бытовых сточных вод.***

# SUV MUHITINI OQAVA SUVLARI BILAN IFLOSLANISHINI MUHOFAZA QILISH

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✓ ***Rezyume***

***Maqola O'zbekistondagi kanalizatsiya tizimlari faoliyatining hozirgi holatini o'rganishga va suv muhitini oqava suv bilan ifloslanishidan himoya qilish bo'yicha tavsiyalar ishlab chiqishga bag'ishlangan. Kanalizatsiya tizimlari bilan ta'minlash mamlakatimiz bo'yicha umuman shaharlarda 66,4%, shahar tipidagi aholi punktlarida 4,9% va qishloq aholi punktlarida 0,5% tashkil etganligi aniqlandi. Umuman respublika va mintaqalar sharoitida kanalizatsiya tizimlarining ishlash samaradorligi qoniqarli emas. Kanalizatsiya tarmog'iga kiradigan umumiy miqdordan atigi 40,2% maishiy chiqindi suv tozalash jarayonidan o'tadi. Ta'kidlanganidek: aholini kanalizatsiya tizimlari bilan qamrab olishning past darajasi, kanalizatsiya tozalash inshootlarining qoniqarsiz samaradorligi, suv iste'molidagi nomutanosiblik va chiqindi suvlarni yo'q qilish.***

***Kalit so'zlar: suv muhitini muhofaza qilish, kanalizatsiya tizimi, aholini kanalizatsiya bilan qoplash, aholi punktlari, maishiy chiqindi suv, maishiy chiqindi suvlarni tozalash.***

## Introduction

Domestic wastewater is an important source of water pollution in the republic from an ecological point of view. They usually account for up to 30 percent of all wastewater discharged into water bodies [2, 3].

Literary sources indicate that the effectiveness of the currently used sewage treatment methods in terms of the total number of bacteria are: for sand traps 10-12%, for sedimentation tanks 25-75%, for biological filters 80-95%, for an aeration tank 90-98%, after chlorination up to 99% [4].

In Uzbekistan, the insufficient efficiency of sewage treatment plants is usually associated with technical defects made during construction or violations of the rules for their operation. In such cases, the absolute values of most biological contaminants after cleaning remain above the maximum permissible concentrations established for them [7]. With poor-quality disinfection, domestic wastewater is characterized by a high degree of microbiological contamination: coli-index 105-107, pathogenic enterobacteria and enteroviruses are found in the wastewater [1].

The provision of the population in rural areas with sewerage systems by 01/02/2017 is 5.1%, i.e. 94.9% of rural residents use yard cesspools for disposal of domestic wastewater (water from showers, kitchens, laundry and sewage). Wastewaters pollute surface and ground waters, which are sources of drinking water supply, contain organic, mineral substances, heavy metals, pathogenic intestinal microflora [5,6,9]. Pollution of the environment with household wastewater leads to the development of oncological and infectious diseases, the intensive rates of which in the rural population significantly exceed those of the urban population [8].

**The purpose of the research** was to assess the hygienic efficiency of the functioning of sewerage systems in Uzbekistan and develop recommendations for the protection of water bodies from pollution by domestic wastewater.

**Material and research methods.** The research included the study of materials for the sanitary and technical efficiency of the sewerage systems, carried out by the departments of the Ministry of Public Services of the Republic of Uzbekistan during the period 2014-2019, as well as the territorial bodies of sanitary and epidemiological supervision of the Ministry of Health of the Republic of Uzbekistan.

The evaluation of the sewerage systems was carried out in accordance with sanitary and epidemiological rules and norms (SanPiN)

2.04.03-97 "Sewerage, external networks and facilities"; SanPiN RUz No. 0129-02 "Hygienic requirements for sewerage systems in Uzbekistan."

**Research results.** It was established that in the Republic of Uzbekistan, by 01/02/2020, there are 12,216 settlements, of which 119 cities, 1085 urban-type settlements (UTS) and 11012 rural settlements (RS). Out of 119 cities, 79 have centralized sewerage systems, out of 1,085 urban-type settlements, 53 have sewerage systems, and out of 11012 rural settlements, 51 are sewerage. The provision with sewerage systems in the country as a whole in cities is 66.4 percent, in urban-type settlements 4.9 percent and in rural settlements 0.5 percent (Figure 1). In general, 17% of the population uses centralized sewage systems in the republic.

The population in the sewerage zones is 8,335 thousand people. Of these, 3990 thousand people are connected to sewerage systems, which is 47.9%.

It has been established that in the republic as a whole, only 132 out of 1204 cities and urban-type settlements are provided with sewerage systems.

In the best position are the Tashkent, Syrdarya, Namangan and Fergana regions. In the Tashkent region, 29 cities and urban-type settlements out of the total (113) are covered by centralized sewerage systems. In the Syrdarya region, this ratio is 13 out of 30, in the Namangan region 12 out of 128 and in the Fergana region 11 out of 206.

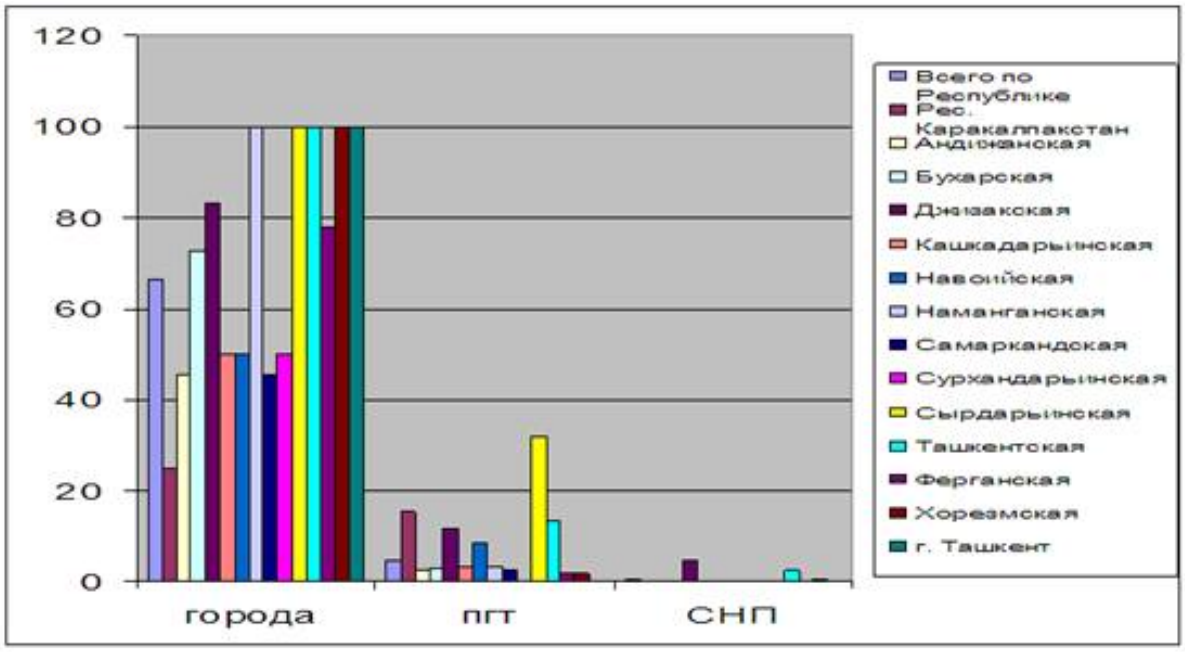


**Figure 1 - Provision of cities, UTS and RS with sewerage, %**

The Khorezm region is in the worst condition, where only 4 out of 61 cities and urban-type settlements have sewerage systems. The same situation is observed in the Surkhandarya region, where out of 122 cities and urban-type settlements, only four have sewerage systems.

Tashkent, the cities of the Tashkent region, Namangan, Syrdarya and Khorezm regions are fully covered by sewerage systems. The worst situation is in Karakalpakstan - 25% of the provision with sewerage, Andijan and Samarkand regions - 45.5%, Navoi region - 50% coverage.Rural settlements are in dire straits.Thus, the percentage of coverage of sewerage systems in rural areas throughout the republic is only 0.5%, including 4.6% in Jizzakh region, 2.5% in Tashkent region, 0.4% in Khorezm region, 0 in Kashkadarya region, 3%, and in other regions: Surkhandarya, Namangan, Andijan, Fergana, Navoi, Syrdarya, Bukhara, Samarkand and the Republic of Karakalpakstan, there are no sewerage systems.

It was established that in 2017, a total of 904.5 million m3 of wastewater was passed through the sewerage network in the republic, of which 897.6 million m3 in cities, 6.8 million m3 in villages (Table 1).

**Table 1 - Operation of sewerage systems in Uzbekistan, (million cubic meters / year)**

| No | Region | Wastewater missed | | | From the population | | | Percentage | |
|---|---|---|---|---|---|---|---|---|---|
| | | Total | City | Village | Total | City | Village | City | Village |
| | **All over the Republic** | **904,5** | **897,6** | **6,8** | **391,1** | **388,9** | **2,2** | **43,3** | **31,6** |
| 1 | Karakalpakstan | 6 | 6 | - | 2,2 | 2,2 | - | 36,6 | - |
| 2 | Andijan | 15,2 | 15,2 | | 0,1 | 0,1 | | 0.5 | |
| 3 | Bukhara | 13,3 | 13,3 | - | 8,8 | 8,8 | - | 66,8 | |
| 4 | Jizzakh | 4,4 | 4,4 | - | 2,8 | 2,8 | - | 63 | - |
| 5 | Kashkadarya | 7,3 | 7,1 | 0,1 | 6,8 | 6,6 | 0,1 | 92,9 | 100 |
| 6 | Navoi | 44,4 | 44,4 | - | 16,6 | 16,6 | - | 37,4 | - |
| 7 | Namangan | 23,1 | 23,1 | - | 9,3 | 9,3 | - | 40,2 | |
| 8 | Samarkand | 29,6 | 29,6 | - | 18,6 | 18,6 | - | 62,8 | - |
| 9 | Surkhandarya | 8,7 | 8,7 | - | 3,7 | 3,7 | - | 42,4 | - |
| 10 | Syrdarya | 10,1 | 10,1 | - | 8,2 | 8,2 | - | 80,6 | - |
| 11 | Tashkent | 79,1 | 72,4 | 6,7 | 28,6 | 26,6 | 2 | 36,7 | 30,2 |
| 12 | Fergana | 95,4 | 95,4 | - | 46,3 | 46,3 | - | 48,6 | - |
| 13 | Khorezm | 4,7 | 4,7 | - | 2,8 | 2,7 | - | 59 | 67,5 |
| 14 | Tashkent (city) | 563,2 | 563,2 | - | 236,4 | 236,4 | - | 42 | - |

At the same time, only 391.1 million m³ are generated from the population, of which 388.9 million m³ from cities, and 2.2 million m³ from villages.As a percentage of the total volume of wastewater discharged by the sewerage system, urban wastewaters account for 43.2%, and rural ones - 31.6%. In terms of regions, sewerage systems are used to the greatest extent in regional cities, where almost complete coverage takes place. The capacity of the sewerage systems is used on average in the republic at the level of 59%, in the city of Tashkent 81%, and in other cities

34%.

The analysis of the data obtained indicates that the work of the sewerage systems in the republic is unsatisfactory. The amount of wastewater entering the sewerage network throughout the republic is 2,107.3 million m³ / year, of which 1,758.8 million m³ / year enter the urban network, 348.7 million m³ / year in the villages. In the context of regions, the largest volume of wastewater enters the sewerage network in the city of Tashkent 811.8 million m3 / year and the Navoi region - 219.5 million m³ / year.

It has been established that the efficiency of sewerage systems in the republic and in the context of regions does not meet the hygienic requirements (Figure 2).

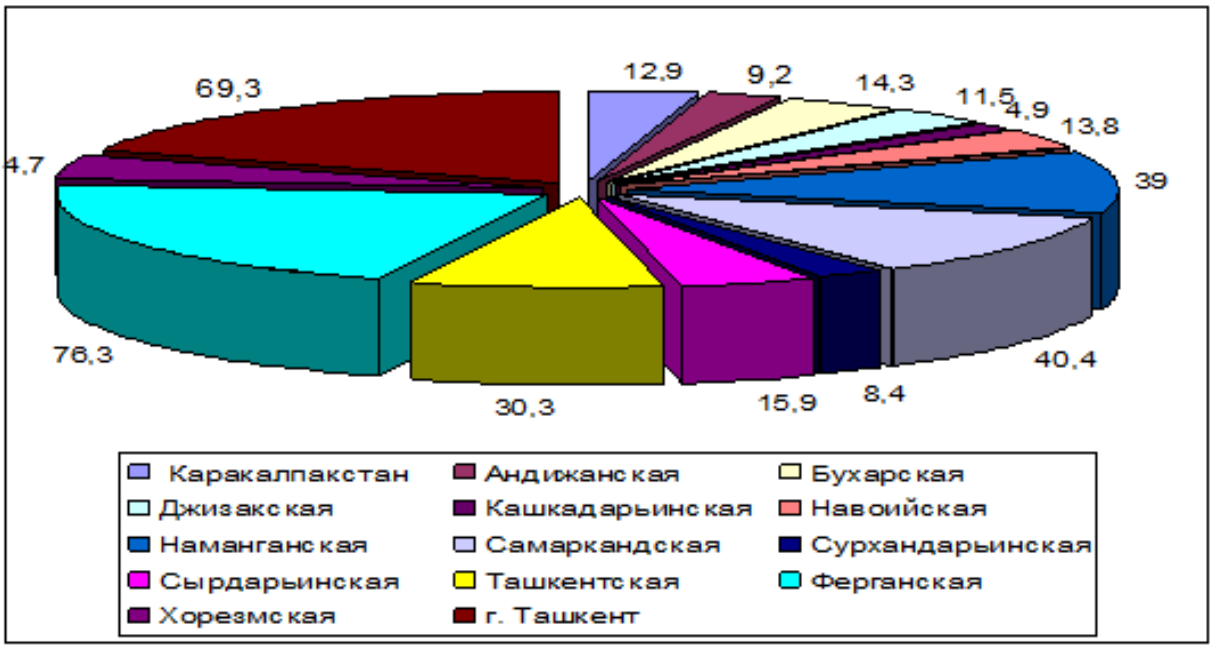


**Figure 2 - The amount of treated effluents at the TF (treatment facilities )%**

So, if the total volume of wastewater entering the sewerage network in the republic is 2107.3 million m³ / year, then only 846.9 million m³ / year is supplied to the treatment plant. A similar dynamics of a significant difference between the amount of wastewater entering the sewerage network and the volume of their treatment at treatment facilities of sewerage systems is observed in all regions, cities and especially villages of the republic. In general, in the republic, only 40.2% of wastewater from the total amount entering the sewer network undergoes the treatment process.

Analysis of materials on the drainage and discharge of wastewater from sewerage systems shows that only in the city of Tashkent there is a complete drainage of wastewater, while this indicator is unsatisfactory in other regions of the republic, especially in rural areas. The minimum level of wastewater disposal is set for the cities of Surkhandarya region and is 40.6%. In the Republic of Karakalpakstan, waste disposal is 93.5%.

The percentage of wastewater disposal in rural areas is 0.24% in the country as a whole, in the Kashkadarya region - 4.0% and in the Tashkent region - 26%. In rural settlements of other regions of the republic, wastewater is not diverted.

Based on the research results, recommendations were developed for assessing the conditions for the formation and treatment of domestic wastewater and the hygienic requirements for their disposal into environmental objects, sent for approval to the Ministry of Health of the Republic of Uzbekistan.

## Conclusion

1. It is established that in the Republic of Uzbekistan by 01/02/2020 there are 12,216 settlements, of which 119 cities, 1085 urban-type settlements and 11012 rural settlements. Of these, 25% needs the introduction of innovative technologies of central sewerage technology.

2. The ecological and hygienic efficiency of sewerage systems in the republic and in the context of regions requires innovative approaches. Only 40.2% (846.9 million cubic meters / year) of wastewater from the total amount (2107.3 million cubic meters / year) entering the sewerage network undergoes the treatment process.

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## PHYSICAL EDUCATION OF STUDENTS AT A MEDICAL UNIVERSITY

*Shokirov Kamol Fazlievich*

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✓ ***Resume***

***Modern methodological concept of training doctors significantly expands and specifies the requirements for the graduate medical university in the field of knowledge, abilities, skills in maintaining a healthy lifestyle, the use of means and methods for the prevention of various diseases, non-drug directions of rehabilitation activities, the correct use of physical culture and sports, taking into account the state of health, physical fitness, gender, age and characteristics of the profession Physical education of students of medical universities, which determines the effectiveness of teaching a profession, will be pedagogically expedient and productive if it is built taking into account the initial level of their physical development and physical fitness.***

***Key words: physical education, professionally applied physical training, physical exercises.***

## ФИЗИЧЕСКОЕ ВОСПИТАНИЕ СТУДЕНТОВ В МЕДИЦИНСКОМ ВУЗЕ

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✓ ***Резюме***

***Современная методическая концепция подготовки врачей значительно расширяет и конкретизирует требования к выпускнику медицинского вуза в области знаний, умений, навыков по ведению здорового образа жизни, использованию средств и методов профилактики различных заболеваний, немедикаментозных направлений реабилитационной деятельности, правильного применения средств физической культуры и спорта с учетом состояния здоровья, физической подготовленности, пола, возраста и особенностей профессии***

***Ключевые слова: физическое воспитание, профессионально-прикладной физической подготовка, физические упражнения.***

## ТИББИЁТ ИНСТИТУТИДА ТАЛАБАЛАРНИ ЖИСМОНИЙ ТАРБИЯЛАШ

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✓ ***Резюме***

***Врачларни тайёрлашнинг замонавий услубий консепцияси битирувчига қўйиладиган талабларни сезиларли даражада кенгайтиради ва аниқлайди. Соғликни сақлаш ҳолати, жисмоний тайёргарлиги, жинси, ёши ва касбининг хусусиятларини ҳисобга олган ҳолда соғлом турмуш тарзини сақлаш турли касаликларнинг олдини олиш учун воситалар ва усуллардан фойдаланиш реабилитация фаолиятининг гиёҳванд бўлмаган йўналишларида жисмоний тарбия ва спортдан фойдалинади.***

***Калит сузлар: жисмоний тарбия, касбий амалий жисмоний тарбия, жисмоний машқла***

### Relevance

The formation of the personality and professionalism of the future medical worker is carried out already from the university bench under the influence of the entire educational system. The practical implementation of the task of training and educating highly qualified specialists falls on the

shoulders of physical education teachers. For students of medical universities, the importance of a healthy lifestyle, a sports lifestyle, significantly increases due to the peculiarities of educational activities and the specifics of the future profession. The methodological concept of training doctors significantly expands and specifies the requirements for a graduate of a medical university in the field of knowledge, skills, and skills in maintaining a healthy lifestyle, the use of means and methods for the prevention of various diseases, non-drug directions of rehabilitation activities, the correct use of physical culture and sports, taking into account the state of health , physical fitness, gender, age and characteristics of the profession. It should be noted that the number of students with impaired health has increased, about 50-60% of students of medical universities cannot pass the standards provided for by the program due to their physical fitness. An analytical review of the literature has shown that the importance of physical culture education for specialists in the field of medicine is in contradiction with the relatively low activity of their inclusion in the continuous replenishment of their knowledge about physical culture. This contradiction prompted us to create a methodology for additional occupational training in the field of physical culture for medical students.

Object of research: the process of additional physical education of students of medical universities.

Subject of research: means, forms and methods of additional physical culture and educational process of students of medical universities.

The purpose of the study is to improve the process of physical education of students in higher educational institutions of a medical profile.

## Material and methods

The use of additional classes for medical students will allow:

• increase the level of their knowledge, skills and abilities in the field of physical culture;

• to provide them with the achievement of a higher quality of professionally applied physical fitness;

• promote health promotion.

The practical significance of the study lies in the possibility of using the results obtained to improve the process of physical education, increase the level of physical and functional readiness of students, strengthen their health in order to train qualified medical workers. Insufficient educational level of students of medical universities in the field of physical, culture negatively affects the physical condition of students and their attitude to the process of physical education.

## Result and discussion

The methodology of additional lessons in the field of physical culture contributes to the improvement of the process of physical education in a medical university and forms knowledge, skills and abilities for independent exercise in order to strengthen health and improve the physical fitness of students. For the successful professional activity of a future specialist in the field of medicine, it is advisable to organize additional physical education classes of a professionally applied orientation not only at the university, but also in secondary specialized medical institutions. The positive results of the conducted pedagogical research make it possible to recommend the developed experimental program on physical education within the framework of additional classes to familiarize students with physical culture classes, to form their conscious need to use physical culture for further successful professional activity, taking into account the working conditions and the specificity of the specialist's motor regime. The complex use of auxiliary and non-traditional means, specialized breathing exercises and adaptogens in the process of physical education of medical students provides an increase in the indicators of mental and physical performance and, ultimately, increases their physical fitness and health reserves.

## Findings

It has been established that in recent years there has been a steady trend of deteriorating students' health. So, the number of students enrolled in the 1st course for the period from 2019-2020, attributed to a special medical group for health reasons, increased by 6.6% ($P < 0.05$), the physical fitness of students has a negative trend.

It was revealed that a positive attitude to physical exercises is typical for older students who highly appreciate the importance of physical culture for future professional activity.

It was determined that the insufficient educational level of students of a medical university in the field of physical culture negatively affects the independent motor activity of students and health care professionals, which suggests the need to develop an experimental methodology for additional physical culture lessons of a professionally applied orientation.

The methodology of additional physical education classes for students of medical universities, the main components of which were

practical sections that contribute to the formation of special knowledge, skills and abilities in future healthcare professionals for organizing and conducting independent physical exercises.

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# FREQUENCY OF RISK FACTORS OF OVERWEIGHT AND OBESITY IN YOUNG PEOPLE (Literature review)

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✓ ***Resume***

***This review presents recent observations on the prevalence of overweight and obesity in different countries among young people, of different sex, social status and ethnicity. The article presents and analyzes the developmental risks for humans and concomitant diseases leading to disability and death according to the data of domestic and foreign researchers. Priority directions of overweight correction were determined, among them nutritional correction.***

***Key words: obesity, young age, overweight, risk factors***

# ЧАСТОТА ФАКТОРОВ РИСКА ИЗБЫТОЧНОГО ВЕСА И ОЖИРЕНИЯ У ЛИЦ МОЛОДОГО ВОЗРАСТА (Литературный обзор)

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✓ ***Резюме***

***В представленном обзоре приведены наблюдения последних лет о распространенности избыточного веса и ожирения в разных странах среди лиц молодого возраста, разного пола, социального статуса и этнической принадлежности. Приведены и проанализированы риски развития для человека и сопутствующие заболевания, приводящие к инвалидизации и смерти по данным отечественных и зарубежных исследователей. Определены приоритетные направления коррекции избыточной массы тела, среди них и коррекция питания.***

***Ключевые слова: ожирение, молодой возраст, избыточная масса тела, факторы риска***

# ЁШЛАРДА ОРТИҚЧА ВАЗН ВА СЕМИЗЛИК ХАВФ ОМИЛЛАРИНИНГ ЧАСТОТАСИ (Адабиёт шарҳи)

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✓ ***Резюме***

***Ушбу шарҳда сўнгги йилларда турли мамлакатларда ёшлар орасида ортиқча вазн ва семиришнинг тарқалиши, жинси, ижтимоий мавқеи ва миллати бўйича кузатувлар келтирилган. Мақолада маҳаллий ва хорижий тадқиқотчилар маълумотларига кўра инсон учун хатарлар ва ногиронлик, ўлимга олиб келадиган қўшма касалликлар келтирилган, таҳлил қилинган. Ортиқча вазнни тўғирлашнинг устувор йўналишлари аниқланди, улар орасида овқатланишни тўғирлаш ҳам бор.***

***Калит сўзлар: семириш, ёшлик, ортиқча вазн, хавф омиллари.***

**Relevance**

According to the WHO definition, obesity is considered "abnormal or excessive accumulation of fat that can adversely affect human health" [13]. The following are some recent global estimates from WHO:

**Overweight and obesity facts**

In 2016, more than 1.9 billion adults over 18 were overweight. Of these, over 650 million were obese [3,13].

• According to 2016 data, 39% of adults over 18 years of age (39% of men and 40% of women) were overweight.

• In 2016, about 13% of the world's adult population (11% of men and 15% of women) were obese.

• Between 1975 and 2016, the number of obese people worldwide more than tripled. It is estimated that in 2016, about 41 million children aged up to 5 years were overweight or obese. Overweight and obesity, previously thought to be common in high-income countries, are now becoming more prevalent in low- and middle-income countries, especially in cities. In Africa, the number of obese children under 5 years of age has grown by almost 50% since 2000. In 2016, almost half of overweight or obese children aged up to 5 years lived in Asia [3].

• Obesity was previously thought to be relevant in countries with high living standards, but the number of overweight and obese children is now on the rise in low- and middle-income countries, especially in urban settings. Currently, more than 30 million overweight children live in developing countries and 10 million in developed countries [15].

The World Health Organization has officially revised age standards. And now a young man is considered to be 44 years old [WHO]. In young people born in the 90s of this century, the risk of obesity is two to three times higher than that of the rest of their family members who were born in the period from the 50s to the 80s of the last century, including their older brothers and sisters. This was shown by a recent study of British scientists. Now this metabolic disorder, to one degree or another, is noted in an increasingly growing number of young people. Obesity is rapidly getting younger. Since many adolescents aged 12 to 17-18 years old suffer from this pathology [1,15]. In most developed European countries, obesity affects 15 to 25% of the adult population. Recently, there has been an increase in the incidence of obesity in children and adolescents around the world: in developed countries of the world, 25% of adolescents are overweight, and 15% are obese. Childhood overweight is a significant predictor of obesity in adulthood: 50% of children who were overweight at age 6 become obese in adulthood, and this probability increases to 80% in adolescence [14].

The epidemiology and incidence of many chronic diseases, including obesity, depend on racial and ethnic differences, as well as on the characteristics of geographic and socio-economic conditions of life.

A number of foreign researchers attribute overweight and obesity to complex, multifactorial, multigenic disorders, which are closely related to the characteristics of the psychosocial and cultural environment. In general, more people die from the effects of overweight and obesity worldwide than from the effects of abnormally low body weight. The number of obese people exceeds the number of people who are underweight; this case observed in all regions except some regions of Africa south of Sahara and Asia [10]

Therefore, the problem of obesity in our time is becoming more and more urgent and begins to pose a social threat to people's lives. This problem is relevant regardless of social and professional affiliation, area of residence, age and gender. The significance of the obesity problem is determined by the threat of disability in young patients and a decrease in the overall life expectancy due to the frequent development of severe concomitant diseases. These might include type 2 diabetes mellitus, arterial hypertension, dyslipidemia, atherosclerosis and related diseases, reproductive dysfunction, cholelithiasis, osteochondrosis. Obesity reduces resistance to colds and infectious diseases, in addition, dramatically increases the risk of complications during surgery and injury [10,13].

Obesity significantly reduces life expectancy on average from 3-5 years with a slight excess weight, up to 15 years with severe obesity. In almost two cases out of three, human death occurs from a disease associated with impaired fat metabolism and obesity. Obesity is a colossal social problem. Most of these individuals suffer from not only illness and limited mobility; they have low self-esteem, depression, emotional distress and other psychological problems due to prejudice, discrimination, and isolation in their society. In

society, the attitude towards sick obesity is often inadequate, at the everyday level, it is believed that obesity is a punished gluttony, punished laziness; therefore, the treatment of obesity is everyone's personal business. Indeed, the public consciousness is still far from the idea that obese people are sick people, and the cause of their illness is often not in an uncontrolled addiction to eating, but in complex metabolic disorders leading to an excess accumulation of fat and adipose tissue. The social significance of this problem is in the fact that people suffering from severe obesity can hardly get a job. Obese people experience discriminatory restrictions on promotion, everyday household inconveniences, restrictions on movement, in the choice of clothes, inconvenience in taking adequate hygiene measures; sexual dysfunction is often observed. Therefore, the society has not yet finally realized the need to create and implement programs to prevent obesity [10].

A healthy person contains 10-20 kg of pure fat (women have more than men do). Considering its high caloric content (9.3 kcal / g compared to 4.1 kcal / g for glucose), it can be calculated that people have a constant supply of "fuel" of about 100-180 thousand kilocalories. This is enough to provide the body's energy needs for 40 days. However, since fat is constantly consumed for various needs, its depot has to be replenished. In young and middle-aged men, the daily energy expenditure ranges from 2600 kcal for light work to 5000 kcal for hard physical labor. It is curious that even if a person does nothing, but rests in a comfortable chair, to maintain the so-called basic metabolism, he still “takes out and puts” 1600-1700 kcal [9,12].

## WHAT IS FAT AND WHERE IT COMES FROM

Simple fats are compounds of a trihydric alcohol of glycerol with three fatty acids and contain only three chemical elements - carbon, hydrogen and oxygen. It should be remembered that a person can synthesize fat from carbohydrates. This is especially true for beer drinkers; their distinguishing feature is "beer belly" (although beer does not contain fat) [12].

The fats found in the body of different animals differ in the length of the fatty acid chains and the presence of double bonds in them. The fewer double bonds, the tighter the fatty acid molecules are adjacent to one another, and the fat is firmer. Vegetable fats remain liquid even in the refrigerator. The body is able to build on and shorten chains, and therefore can be satisfied with any fat. Still, the consumption of animal fats, including butter, is mandatory for humans - only they contain vitamins A and D (carrots and yeast contain their precursors - carotene and ergosterol) [12].

Vegetable fats contain polyunsaturated fatty acids, which are essential for humans - linoleic and linolenic. They are so important to the body that they are considered vitamins (vitamin F). In addition, vegetable oils are source of vitamin E, which is found in animal products only in the liver [9,12]. It is curious that the heart can use fatty acids for work, but feed the brain with pure glucose. Muscles use glucose at low load, and at high load, they switch to fats. Consequently, the hustle and bustle of household and kitchen chores "eats" glucose without affecting fat stores [12].

In general, adipose tissue in the body performs, in addition to the above-mentioned, many useful functions. It serves as a heat insulator, participates in water exchange, processes of converting carbohydrates into fats and vice versa, passive neutralization (deposition) of harmful substances, accumulation of fat-soluble vitamins (A, D, E) take place in it. However, perhaps the least known to the public is the endocrine function of adipose tissue. But it is its disturbances that can contribute to the emergence or progression of obesity and related diseases [4,9].

An important stage in the metabolism (conversion) of male sex hormones (namely, testosterone) to female sex hormones (estrogens) occurs in fat cells. The rate of this transformation increases with the growth of fat accumulation, especially abdominal. Therefore, obese men can acquire some secondary female sexual characteristics and disorders in the male genital area [4,9,12].

*Leptin*, a hormone that signals to the hypothalamus (part of the brain) about the amount of fat depots, is also produced mainly by fat cells. It is part of a complex system that regulates eating behavior and energy expenditure in the body, i.e., ultimately, body weight. The effects of leptin extend to other endocrine organs - the thyroid gland, adrenal glands, gonads, possibly the immune and autonomic nervous systems [4,8].

Hormonal regulation of fat usage.

Seven hormones have a strong regulatory effect on fat metabolism:

1) Epinephrine and norepinephrine are two hormones that work under stressful reactions. Short-term and severe stress, heavy physical

activity cause the mobilization of fat from the depot.

2) ACTH. The release of the hormone also increases under stress, while under the influence of ACTH, the release of cortisol increases. Cortisol is a planned stress hormone unlike adrenaline and norepinephrine. Cortisol has a ketogenic effect on fat mobilization. If stress is of a long-term nature, then a prolonged and persistent increase in cortisol leads to obesity, which is accompanied by Itsenko-Cushing's syndrome / disease.

3) Growth hormone. It activates lipolysis and thus increases fat breakdown. With obesity, the concentration of the hormone decreases due to an increase in the concentration of free fatty acids and insulin.

4) Thyroid hormones. They stimulate the mobilization of fats, as they increase the basal metabolism in cells. With a deficiency of triiodothyronine, thyroxine, hypothyroidism, obesity is observed, since the level of basal metabolism in cells decreases.

5) Insulin. Activates the process of synthesis and storage of fat - lipolysis. [4] The development of obesity can follow two scenarios. In the first case, the number of fat cells (adipocytes) remains constant, but fat accumulates in each of them. The normal volume of an adipocyte is 0.3 microliter; the limiting one is 1 microliter. Consequently, no matter how much fat is stored, the depot will not increase more than 3-4 times. This form of obesity is called hypertrophic and usually develops in adulthood [12]

In the second option, fat cells multiply and their number increases. New cells release a substance that increases appetite. The number of cells, and at the same time the excess body weight, increases to exorbitant values.
This type of obesity (called hyperplastic) is more often associated with a hereditary predisposition and begins much earlier. The greatest risk for the development of this kind of obesity occurs in adolescence, during pregnancy and in menopause [12]. According to the location of fatty accumulations, two types of simple obesity are distinguished: android (male) and gynoid (female). The gynoid type of obesity is also called pear-shaped, since fat is deposited mainly on the thigh and buttocks. By analogy, the android type, in which fat deposits are mainly on the abdomen and chest is called apple shaped.

By the way, cells that form deposits of the gynoid type are able to synthesize and accumulate female sex hormones, which support sexuality in women in the postmenopausal period and protect against atherosclerosis. Therefore, a small fat layer in the thigh is necessary for women.

The android type gives more complications than the gynoid type. Fat deposits in the abdomen are often located not under the skin, but around the internal organs (visceral, or "internal" obesity). In general, hyperplastic, android and visceral obesity is considered more dangerous, and hypertrophic, gynoid and subcutaneous obesity is considered less dangerous. The first combination brings a whole bunch of troubles, the second - only minor problems. This bouquet, in addition to simple inconveniences, includes atherosclerosis, ischemic heart disease, cerebrovascular thrombosis, fatty liver, varicose veins, diabetes, gout, arthrosis, chondrosis and cancer [12].

**Reasons for the increased incidence of obesity among young people**

Sedentary lifestyle: The motor activity of the current adolescent is much less than his peer, living 1-2 generations ago. A fundamental role in this is played by the introduction of various scientific and technical innovations into everyday life.

The overwhelming majority of young people today prefer to sit for a long time at a computer, tablet or laptop to live communication, dancing, hiking, sports games. A certain role in the formation of excess weight was played by the way of life itself, which has radically changed over the past decades. Many young men and women today live in urban conditions. Moreover, they do not need to help their parents with the housework - chopping wood, looking after domestic animals, working in the field. [4,7]

**Unhealthy food**

Nutrition, like lifestyle, has also changed dramatically. Indeed - not for the better. Thanks to intrusive advertising, fast food is very popular among young people. Hamburgers, cheeseburgers, hot dogs, shaurma include transfats, synthetic additives, and easily digestible carbohydrates. The physiological value of these components is not that minimal - zero. Without bringing any benefit, but only harm, they are quickly deposited in soft tissues in the form of fatty accumulations. The same is true for the rest of the seemingly harmless offal - crackers, bars, and even soft drinks. Moreover, complete food, containing in optimal quantities everything that is needed for a young organism, can be found less and less on store

shelves. In addition, some parents, in their care, lose all sense of proportion and reality - a son or daughter with a normal weight seems overly thin to them. There is a banal overfeeding.

**Hormonal imbalance**

The period of puberty is accompanied by changes in the level of various hormones. Moreover, these changes do not occur smoothly, but abruptly. At a certain stage, dyshormonal disorders can manifest themselves as overweight.

**Accelerating life rhythm.**

The overwhelming majority of adolescents are not characterized by a measured lifestyle. They are in a hurry; they have many things to do. In a constant rush, there is no time to even eat normally. However, eating should be regular and unhurried. Eating small meals frequently on the go also does not help you lose weight.

**Stress, disturbances in sleep and rest**

Teenage maximalism, emotional lability - all these are reasons for negative emotional manifestations. Young people can experience nervous stress and strong feelings even where there is no objective reason for this. Frequent sleep disturbances are also characteristic, in particular, lack of sleep [4,7].

WHO has also developed the Global Action Plan for the Prevention and Control of Noncommunicable Diseases for 2013–2020 as part of the implementation of the commitments made in the UN Political Declaration on Noncommunicable Diseases (NCDs), endorsed by Heads of State and Government in September 2011. The Global Plan of Action will contribute to progress towards the achievement of nine global targets for noncommunicable diseases by 2025, including a 25% reduction in premature deaths from NCDs and a stabilization of the global number of obesity cases at the 2010 level [11].

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# NEW ONE-STAGE OPERATING METHOD APPLIED IN CHILDREN IN THE PENIAL FORM OF HYPOSPADIA

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✓ ***Resume***

***Purpose. Improving the method of surgery in the penile form of hypospadias and improving postoperative outcomes.***

***Materials and methods. In 2011-2017, 215 patients aged 3 months to 18 years with distal and middle body forms of hypospadias were operated at the Children's Surgical Clinical Hospital No. 2 in Tashkent. They performed basically two different surgical procedures: Matthew and single-stage neouretraplasty operations developed in the clinic. Of the 170 patients who underwent surgery with a penile form of pelvic curvature without hypospadias, 42 (24.7%) underwent urethraplasty using the Matthew method, and 128 (75.3%) underwent surgery using the new single-stage glanspenial neurotroplasty method we developed.***

***Keywords: penile form of hypospadias in children, one-stage surgical method, Matthew method.***

# БОЛАЛАРДА ГИПОСПАДИЯНИНГ ПЕНИАЛ ШАКЛИДА ҚЎЛЛАНИЛГАН БИР БОСҚИЧЛИ ЯНГИ ОПЕРАЦИЯ УСУЛИ

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Фарғона вилоят болалар кўп тармоқли тиббиёт маркази,
Наманган давлат университетет тиббиёт кафедраси

✓ ***Резюме***

***Мақсад. Гипоспадиянинг пениал шаклида операция усулини такомиллаштириш ва операциядан кейинги натижаларни яхшилаш.***

***Материал ва услублар. Тошкент шаҳар 2-сон болалар жарроҳлик клиник шифохонасида 2011-2017 йилларда 3 ойликдан 18 ёшгача бўлган 215 та бемор гипоспадиянинг дистал ва ўрта тана шакллари билан операция қилинди. Уларда асосан икки хил операция усули ўтказилган: Матью ва клиникада ишлаб чиқилган бир босқичли неоуретрапластика операциялари. Гипоспадиянинг олат эгрилигисиз пениал шакли билан операция бўлган 170 та бемордан 42 (24,7%) таси Матью усулида уретрапластика қилинган, 128 (75,3%) таси биз ишлаб чиққан янги бир босқичли гланспениал неоуретрапластика усулида операцияси қилинган.***

***Калит сўзлар: болаларда гипоспадиянинг пениал шакли, бир босқичли операция усули, Матью усули.***

# НОВЫЙ ОДНОЭТАПНЫЙ ОПЕРАЦИОННЫЙ МЕТОД У ДЕТЕЙ ПРИ ПЕНАЛЬНОЙ ФОРМЕ ГИПОСПАДИИ

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✓ ***Резюме***

***Цель. Совершенствование методики хирургического лечения половой формы гипоспадии и улучшение послеоперационных исходов.***

***Материалы и методы. В 2011-2017 гг. В Детской хирургической клинической больнице № 2 г. Ташкента прооперировано 215 пациентов в возрасте от 3 месяцев до 18 лет с дистальной и средней формами гипоспадии. Они выполнили в основном две разные хирургические процедуры: операцию Матфея и одномоментную неуретрапластику, разработанную в клинике. Из 170 пациентов, перенесших операцию по поводу искривления полового члена без гипоспадии, 42 (24,7%) перенесли пластику уретры по методу Мэтью, а 128 (75,3%) - операцию с использованием нового разработанного нами метода одномоментной нейротропластики головки полового члена.***

***Ключевые слова: половая форма гипоспадии у детей, одноэтапный хирургический метод, метод Мэтью.***

**Relevance**

Hypospadias is a congenital malformation of the penis that is more common in boys. Over the last 30 years, the number of children born with the disease has increased from 1: 450-500 to 1: 125-150 [3]. Due to the increased incidence of this disease in children and the fact that postoperative complications reach 50%, surgical removal of the disease is in the focus of scientists around the world, and this trend continues to this day [1,2,4].

To date, almost all of the single-stage surgeries used to treat hypospadias have been performed using shears for the neouretra. Because the blades are located on the body of the penis, its mobility is extremely high, which helps to keep the skin of the penis from tightening. It is also the closest in structure to the urethra in terms of the skin structure of the urethral leaves [4,5].

At present, multi-stage surgeries of hypospadias are not used by pediatric surgeons and urologists in developed countries, and they have only become of historical significance. Nowadays, for the treatment of this disease, regardless of its form, surgical methods are performed successfully in patients with small head of the penis. Prospective urethral permeability is free, mainly the fact that the distal part is wide enough to determine the outcome of urethroplasty [5].

In severe forms of hypospadias, a significant reduction in postoperative complications was achieved using the buccal urethroplasty method [6]. In proportion to the proximal location of the meatus, the size of the prostate gland and the size of the penile hollow body decrease [7]. The absence of hair follicles in the urethra prevents, firstly, the formation of stones and stones in the newly formed urethra in the future, and secondly, causes very few scars after surgery [8].

However, this alone is not sufficient to reduce complications, as suturing of neouretra sutures in various surgical procedures, circulatory failure due to vascular injury in a piece of skin obtained, and multiple head injuries lead to an increase in postoperative complications [9].

Usually the width of the incised urethral area is insufficient for neouretaplasty. Prolonged holding of the catheter in the bladder after surgery can result in skin-urethral leakage after catheter removal due to scarring in the incised urethral area. In patients with a small head of the penis, a single-stage surgical procedure was performed using an additional piece of skin taken from the incision to enlarge the incised urethral area. Reduced complications from 18% to 5.1% [10].

The reason for such emphasis on kertmak sheets is that kertmak sheets have been fully used for plastics in cases of recurrence of complications after one or more surgeries to eliminate hypospadias [11].

The main cause of postoperative complications was observed in patients with a small head of the penis, regardless of the method of urethroplasty. In the TIP method, the urethral site cut at the head of the penis resulted in neouretra stenosis due to the subsequent development of scarring. Although this method is popular among pediatric urologists around the world for its simplicity, convenience, and cosmeticity, it has been analyzed that it cannot be used in patients with a small penis head. As a result of implantation of a free piece obtained from the penile incision in the GTIP method, the head of the penis was enlarged and complications were reduced.

Mathieu noted in his findings that hypospadias could not be used in moderate body shapes due to circulatory disturbances in the skin fragment obtained by the method and the sutures in the head of the penis [10,12].

In the ectopic meatus, the blood supply to the skin layers is not fully formed. Regardless of the degree of androgen-determined genesis of the genital system, in patients undergoing androgen stimulation in the preoperative period, the size of the penis increases, the deep layer of skin, as well as the development of subepidermal blood vessels reduces postoperative opening of the neouretra [13].

In distal body forms of hypospadias, atransverse skin fragment taken from the incision was used for single-stage surgery. Subsequent improvements to these methods have resulted in high functional and aesthetic results using the proximal form [14].

**Purpose.** Improving the method of surgery in the penile form of hypospadias and improving postoperative outcomes.

### Materials and methods

In 2011-2017, 215 patients aged 3 months to 18 years were operated on with distal and middle forms of hypospadias at the Children's Surgical Clinical Hospital No. 2 in Tashkent. They performed basically two different surgical procedures: Matthew and single-stage neouretraplasty operations developed in the clinic.

Of the 170 patients who underwent surgery with a penile form of pelvic curvature without hypospadias, 42 (24.7%) underwent urethraplasty using the Matthew method, and 128 (75.3%) underwent surgery using the new single-stage glanspenial neurotroplasty method we developed. Before surgery, all patients underwent general blood and urine analysis, blood biochemical analysis, ultrasound examination.

The method of glanspenial neurotraplasty developed in our clinic (patent for invention № IAP 05305, 2016) is performed as follows.

128 (75.3%) children underwent surgery by glanpenial neurotraplasty, in which the external opening of the urethra was located in the body part of the penis. After appropriate cleaning of the operating area with antiseptic solution, the outer hole of the urethra at the head of the penis is cut parallel, leaving 0.2-0.3 cm by the lateral. The parallel incision should form a future neouretra to the proximal side and correspond to the length that reaches the crown when sewn back.

The diameter of the incision corresponds to the size of the urethra at the age of the patient (Fig. 1a). An age-appropriate tube is placed in the bladder and secured to the apical part of the head of the penis. From the hypospadias hole to the proximal side, the blood vessels are carefully separated along with the subcutaneous soft tissue without injury (Fig. 1b). A piece of skin is formed. On the inner edge of the parallel incisions, a piece of skin formed over the urethra is sutured to the skin with nodular sutures. The second layer is knotted on top (Fig. 1c). The neouretra is then checked for leaks. The remaining piece of skin is pulled back over the neourethra and sutured to the border of the head (Fig. 1g).

The skin is cut in a circle between the skin and the mucous membrane, and the skin is cut along the midline in the area of the penis. The resulting two skins are taken to the scalp, examined for hemostasis and transferred to the ventral surface of the penis. (Figure 1d). With these two skin cuts, the wound is closed by suturing with nodular sutures (Fig. 1e). The wound is treated with 3% iodine solution. Non-traumatic atraumatic Vikril 6/0 thread is used during the operation. An aseptic bandage with glycerin is placed on the wound for 5 days and a diamond blue is applied for 3 days. The tube is removed on the 8th day of surgery and urinated.

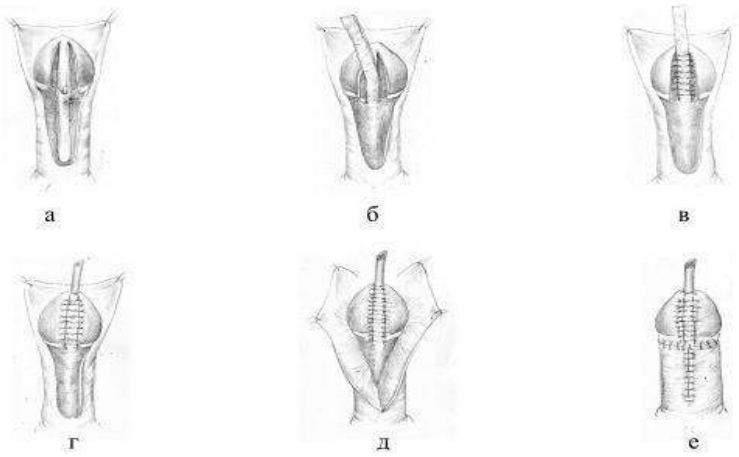


*Figure 1. Glanspenial neouretraplasty scales (a- incision line; b- formed piece of skin; c- appearance of neouretra; g- incision of skin sewn back over the neouretra; d- incision of the ventral surface; e- final appearance of the operation).*

In Matthew's operation, two parallel incisions are made in the urethral area to the apex of the head. The cut is cut to the hollow body, but the hollow body is not cut. The piece of skin is the length of the future neourethra, and the incision is turned to the top and sutured to the inner edge-urethral plate. The incision is made at the head of the penis on the lateral side, separated from the hollow body, and the head of the penis is sewn together to form a conical shape, joining the outer edges of the incision.

**Conclusion and discussion**

Complications of postoperative cutaneous urethral effusion were observed in the early postoperative period (1 month) in 7 (5.5%) of the 128 patients who underwent single-stage glanspenial neouretraplasty. Of the 42 patients who underwent urethroplasty using the Matthew method, 21 (50%) had the following complications: neomeatus retraction in the early postoperative period (1 month) - 5 (11.9%); in the evening, meatostenosis was observed in 3 (7.1%) patients and skin-urethral effusion in 13 (31%) patients. The type and number of postoperative complications are given in full in the table below (Table 1).

**Table 1 Complications after surgery for penile hypospadias in children**

| | Type of surgery | Urethral effusion | | Meatostenosis | | Retraction | | Total | |
|---|---|---|---|---|---|---|---|---|---|
| | | **Abs.** | **%** | **Abs.** | **%** | **Abs.** | **%** | **Abs.** | **%** |
| **1** | Glaspenial neouretra-plastic - clinical method | **7** | **5,5** | | | | | **7** | **5,5** |
| **2** | Matthew method | **13** | **31** | **3** | **7,1** | **5** | **11,9** | **21** | **50** |

Patients were followed for 1 month to 2 years after surgery. Seven complications occurred within 1 month after single-stage glanspenial neurotroplasty surgery. Follow-up for up to 2 years was performed to determine urethral diverticulum formation. If diverticulum is suspected (swelling of the base of the penis during urination, dripping after urination), we recommend an ascending urethrogram. However, the above symptoms and penile curvature, pain in erection, neomeatus stenosis, urinary incontinence after urination, discomfort during and after urination, scarring on the ventral surface of the penis were not observed during follow-up.

The following postoperative complications in the Matthew method were caused by: vascular injury and disruption of blood circulation in the piece of skin obtained for neouretra, which slows down the regeneration process; the risk of opening the seams increases as the edges of the skin sections are pulled and sewn; meatostenosis is observed after surgery due to multiple injuries around the neomeatus.

In the piece of skin obtained for the neouretra in the method we have proposed, the blood vessels are removed without injury and the blood circulation is not disturbed, which enhances the regeneration process. Since the edges of the skin incisions are sutured without pulling, the opening of the sutures is not observed, and meatostenosis does not occur at all when the neomeatus is less injured.

**Conclusion**

Postoperative complications with single-stage glanspenial neurotroplasty were reduced by 44.5% compared with the traditional Matthew method.

The absence of vascular injury in the skin fragment obtained for the neouretra by the glanspenial neouretraplasty method enhanced the regeneration process, reducing the risk of leakage because the edges of the skin incisions were sutured without pulling.

The lack of complications in the glanspenial neurotroplasty method we proposed in the body type without hypospadias curvature has led to the fact that this method serves as a surgical choice.

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## PROBLEMS OF AGRICULTURAL LABOUR HYGIENE

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Bukhara State Medical Institute named after Abu Ali ibn Sino

✓ ***Resume***

***In the state programs of the President of the Republic of Uzbekistan on agricultural reform, an integrated approach to the development of this industry, the acceleration and deepening of the progress of related industries and the achievement of the most effective outcomes are emphasized. The solution of these issues is directly related to the improvement of working and living conditions in rural areas. The development of agricultural production at a new level in the country where we live requires constant attention to rural workers, improving their working conditions, recreation, life, and strengthening their health. It should be noted that unprecedented reforms are being carried out in the agriculture of the Republic of Uzbekistan, improving the working and living conditions of agricultural workers. Remote rural settlements are developing not only economically, but also socially. At the same time, new, important and urgent problems have emerged in the field of hygienic science and sanitary practice in the agricultural sector. At this stage, a timely analysis of scientific achievements, automation, mechanization and occupational health of agricultural production over the past decades is important.***

***Key words: occupational health, agricultural production, seasonality, temperature factor, dust, biological factors, pesticides, zooanthroponoses.***

## ПРОБЛЕМЫ ГИГИЕНЫ СЕЛЬСКОХОЗЯЙСТВЕННОГО ТРУДА

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✓ ***Резюме***

***В государственных программах Президента Республики Узбекистан по реформе сельского хозяйства делается упор на комплексный подход к развитию этой отрасли, ускорению и углублению прогресса смежных отраслей, и достижения максимально эффективных конечных результатов. Решение этих вопросов напрямую связано с улучшением условий труда и жизни в сельской местности. Развитие сельскохозяйственного производства на новом уровне в стране, где мы живем, требует постоянного внимания к сельским труженикам, улучшения их условий труда, отдыха, быта, укрепления их здоровья. Следует отметить, что в сельском хозяйстве Республики Узбекистан проводятся беспрецедентные реформы, улучшающие условия труда и быта сельскохозяйственных работников. Отдаленные сельские поселения развиваются не только экономически, но и социально. Вместе с тем, возникли новые, важные и актуальные проблемы в области гигиенической науки и санитарной практики сельскохозяйственной сферы. Важным, на данном этапе, является своевременный анализ научных достижений, автоматизации, механизации и гигиены труда сельскохозяйственного производства за последние десятилетия.***

***Ключевые слова: гигиена труда, сельскохозяйственное производство, сезонность, температурный фактор, пыль, биологические факторы, пестициды, зооантропонозы.***

# ҚИШЛОҚ ХЎЖАЛИГИ МЕҲНАТ ГИГИЕНАСИНИНГ МУАММОЛАРИ

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✓ ***Резюме***

***Ўзбекистон Республикаси Президентининг қишлоқ хўжалигини ислоҳ қилиш бўйича давлат дастурларида мазкур соҳани ривожлантиришга интеграциялашган ёндашув, тегишли тармоқлар тараққиётини жадаллаштириш ва чуқурлаштириш ҳамда энг самарали якуний натижаларга эришиш алоҳида таъкидланади. Бу масалаларни ҳал этиш қишлоқ жойларда меҳнат ва турмуш шароитини яхшилаш билан бевосита боғлиқ. Биз яшаётган мамлакатда қишлоқ хўжалиги ишлаб чиқаришининг янги даражада ривожланиши қишлоқ меҳнаткашларига доимий эътибор беришни, уларнинг меҳнат шароитини, дам олишини, ҳаётини яхшилашни, саломатлигини мустаҳкамлашни талаб этади. Таъкидлаш лозимки, Ўзбекистон Республикаси қишлоқ хўжалигида қишлоқ хўжалиги ходимларининг меҳнат ва турмуш шароитини яхшилайдиган мисли кўрилмаган ислоҳотлар амалга оширилмоқда. Олис қишлоқ аҳоли манзилгоҳлари нафақат иқтисодий, балки ижтимоий жиҳатдан ҳам ривожланмоқда. Шу билан бирга қишлоқ хўжалиги соҳасида гигиеник фан ва санитария амалиёти соҳасида янги, муҳим ва долзарб муаммолар пайдо бўлди. Муҳим, бу босқичда, ўтган ўн йиллар давомида қишлоқ хўжалиги ишлаб чиқариш илмий ютуқлари, автоматлаштириш, механизациялаш ва касб-ҳунар саломатлигини ўз вақтида таҳлил қилиш.***

***Калит сўзлар: касбий саломатлик, қишлоқ хўжалиги ишлаб чиқариши, мавсумийлик, ҳарорат омили, чанг, биологик омиллар, пестицидлар, зооантропонозлар.***

## Relevance

The agricultural worker spends most of his life doing socially useful work in production or agriculture. In recent decades, thanks to the introduction of new methods and modern technologies in various areas of production and agriculture, the negative impact of many harmful factors on the body of workers has decreased. In particular, this is facilitated by the use of multi-stage mechanisms for heavy physical work, comprehensive automation of production processes, equipment sealing, the use of closed and returnable technological cycles at chemical and raw material enterprises, remote control and monitoring.

The complex of widely used technological, sanitary preventive and curative activities reduce the number of occupational diseases at enterprises and changes their structure. Currently, some professional pathologies practically do not occur in practice due to the removal of hazardous and toxic compounds (for example, benzene and other organic solvents) from the production process. Occupational illnesses are often mild with mild symptoms.

At the same time, many new harmful factors appear in modern manufacturing enterprises. These include, for example, physically harmful factors such as laser beams, plasma processes, infra- and ultrasound, as well as ionizing beams. New chemicals are being used. They have carcinogenic, mutagenic, allergenic and other types of negative effects on the human body. In connection with the widespread use of computer technologies, harmful psychophysiological factors are becoming increasingly important. Since computer operators are often physically inactive, they experience hypodynamics and its consequences. Creating a healthy and safe work environment is a key challenge for health care, hygiene science and sanitation.

## Agrotechnical and sanitary-hygienic foundations of agricultural production.

Agricultural hygiene is a separate branch of occupational health. This scientific section studies the influence of labor processes and factors arising in agricultural production on the human body and on this basis develops measures to improve working conditions. The following features characterize agricultural labor:

**The first feature**: seasonality, extreme weather intensity at a specific time of year. This feature is more typical for the southern republics, with a sharply continental climate.

**The second feature**: work is carried out mainly in the field (outdoors), and work begins in early spring and continues until late autumn, and even in winter. This situation depends on the impact of complex meteorological factors on agricultural workers, on the climatic conditions of the area where agricultural work is taking place, on the season, etc.

**The third feature** is the frequent change of types of labor in agricultural production, which is more associated with manual labor.

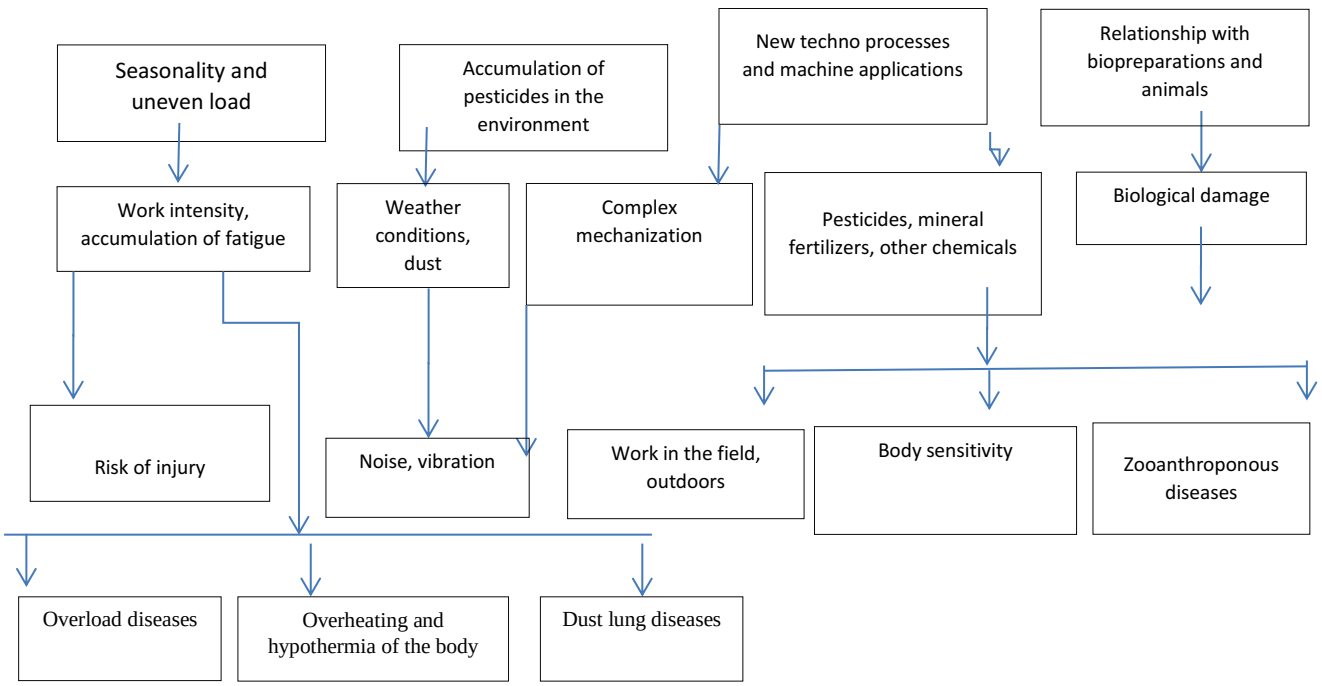
**The fourth feature** is that the workplace is, as a rule, far from the place of residence. The hygienic significance of this is that the worker spends more energy on work. 25-30 years ago, considering the remoteness of the place of work, sheds were arranged in the fields, and the workers changed their place of residence seasonally. Today, due to the development of transport, there is no need for field sheds, which are used as temporary resting places for workers, and in some farms
(Bukhara, Jizzakh, Samarkand, Andijan, Fergana regions) - as temporary medical centers to protect the health of field workers, especially machine operators.

**Fifth feature:** agriculture is characterized by the fact that many chemicals (pesticides) are used in the processing of crops. In turn, they irreversibly pollute not only workplaces, but also the entire biosphere [4, 5, 6, 13, 23]. Today, agriculture uses many biologically active substances, biofertilizers, plant growth stimulants, minerals, etc. [1, 10, 15, 35].

Advances in science and technology have changed the biological infectious risk in agriculture. At this stage, the risk of spreading diseases exists mainly from animals (livestock, poultry farms) to people (livestock, poultry, etc.) [8, 11, 15, 21]. It is also worth noting that the development of livestock and poultry farming leads to an increase in the production of a large number of various biological and chemical preparations (antibiotics, fungicides, yeast, amino acids, vitamins, etc.). This, in turn, increases the direct contact of agricultural workers with these substances [18, 19, 21, 22, 28].

Information on the characteristics of agricultural labor and the factors influencing them is presented in **Figure 1.**

Problems and their causes of modern agriculture:



Most agricultural work is done outdoors. In Uzbekistan, the climate is the main factor affecting the body of workers working in the open air. In the summer (non-calendar) months of the year (May-September), agricultural work is carried out in conditions of high air temperature. High air temperature and sunlight cause overheating of the body (hyperthermia) [4, 5, 7, 9, 13, 16].

According to the research of many scientists (T.I. Iskandarov, 2001, G.T. Iskandarova, 2003), when performing agricultural work in summer, workers are exposed to an air temperature of + 45 + 50 ºC. In addition to the high temperatures in summer, the air finally becomes extremely dry, with high temperatures, a lot of dust, and other unfavorable natural factors.

Such climatic conditions have a very negative effect on the organism of agricultural workers. The machine operators are personally exposed to special temperature influences. The leakproofness of the cabins of some agricultural machines protects them to a certain extent from adverse weather conditions. However, the absorption of high temperatures by the roof and metal walls of the cabins causes the temperature inside the cab to rise above the outside temperature. In spring-autumn (March-November), agricultural work is carried out at a temperature of + 15 + 25 ºC. In such climatic conditions, the air speed is 5-10 m / s, relative humidity 40-80% (our observations). It should be noted that in the spring and autumn months, the temperature in the morning drops to + 5 + 8 ºC, and the wind speed is 12 m/sec.

Based on the above, it should be noted that during the summer months, the body of agricultural workers is exposed to high temperatures that cause it to overheat. In early spring and late autumn, under the influence of low temperatures the opposite process, cooling is observed. This, in turn, has a negative effect on the heat exchange process of the body [12, 27]. Another way to protect the tractor driver from the heat is to properly organize the work and rest mode. In our hot climate, work should be continued from 5:30 am to 11:00 am and 4:00 pm. until 20:00. At the same time, it is important to provide agricultural workers with cotton fiber work clothing. This fabric is sweat-wicking, breathable and dries quickly. Proper drinking management is essential to protect workers from the heat. For this, it is advisable to organize green tea, various tinctures, liquids enriched with vitamins (A, B, PP, C) for workers engaged in outdoor work [40, 41].

For operators of agricultural machinery, it is advisable to create facilities on farms for outdoor activities, food and showers. It is also important to create heated (30-32C) rest rooms in the autumn-winter and spring periods [39, 41].

Most agrotechnical activities are carried out in spring (preparation of land for crops, sowing crops, etc.), in autumn (harvesting, clearing land from plant residues) and in winter (plowing, leveling, flushing of saline soils). At this time of the year, under the influence of low temperatures (as a rule, 5-10 ºC), the body of workers is cooled [20, 24, 27].

It should be noted that cooling the body reflexively leads to contraction of blood vessels in any organ or part of the body, which leads to pathological changes in this organ [12, 15, 20, 26].

According to I.P. Pavlova, cold and humidity have a short-term stimulating effect on the human body. With long-term action, the activity of certain organs, for example, the lungs and kidneys, is weakened. As a result, the infectious agents present in the body cause bronchitis, nephritis, pneumonia and other diseases. The onset and development of colds is based on the reflex process of vascular movement, which occurs as a result of the difference between the cooled part of the body and the temperature of the outside air. Based on the foregoing, the implementation of measures to protect agricultural workers from meteorological environmental factors throughout the year is the basis for preventing heat stroke (overheating) and freezing of the body.

Dust is one of the factors of production that occurs in the process of farming in the fields (plowing, planting, growing seedlings, harvesting, livestock farming, vegetable growing, etc.). Dust can cause laryngitis, pharyngitis, chronic bronchitis and pneumoconiosis in the body of agricultural workers through the respiratory system [2, 13, 15, 26, 30, 33]. The main constituents of dust generated during agricultural production is a mixture that includes plant and animal parts (mixed dust), this dust contains strong allergens for the human body [36,37]. Organic components of dust, which contains mineral and metallic impurities, are a good breeding ground for fungi and bacteria. For them, growth and reproduction in conditions of moderate temperature and humidity can become an additional harmful factor for the organism of agricultural workers [16, 26, 31].

According to V.M. Perelegin (1992), V.P. Small (1993), 59-98.9% of agricultural dust is a fine dispersion up to 4 microns in size and penetrates deep into the upper and lower respiratory tract. Therefore, they pose a threat to human health at high concentrations in the air, and the permissible level of such powders based on

silica II should not exceed 2 mg / m³ (cotton fiber, animal dust).

In agriculture, soil dust is generated during plowing, row spacing, harvesting, storing animals and birds, as well as clearing land. Soil dust contains $Al_2O_3$, $Fe_2O_3$, $K_2O$, $Na_2O_2$, MgO, and CaO. In addition, soil dust contains pesticides from chemical soil treatment.

Soil dust also contains vegetable and mineral salts, as well as many different types of bacteria, helminth eggs and molds. Fungi are present on the soil surface [28, 32, 36, 38].

In agricultural production, plant dust also affects the body of agricultural workers. Plant dust is formed as a result of plant life and processing of industrial plants. The cultivation and processing of raw cotton in our republic is increasing every year. This, in turn, increases the exposure of workers to plant dust. According to (T.I. Iskandarov-1998), N.I. Smetanina (1997), V.M. Perelegin et al. (1992), plant dust containing cotton fiber leads to diffuse sclerotic and nodular changes in the lungs. According to the scientific research of V.M. Perelegin (1998), fibrous plant dust from organic and cotton-processing plants does not have allergic effects.

Plant dust from cotton processing plants retains most bacteria and molds. Experts from the World Health Organization (1999) have proven that prolonged exposure to plant dust causes the pathology of byssinosis.

Byssinosis disease is mainly caused by the formation of histamine (with a very weak development of connective tissue), as the primary reaction of the body during its production (pathogenesis), in response to the irritating effect of fibrous plant dust [1, 11, 14, 26]. S.A. Provernitsyna et al. (1996) found that workers with prolonged contact with dust accumulate a large amount of cholesterol in the blood and produce a large amount of glycoproteins in the blood serum, as well as excreted vitamins B1 and B2 in the urine.

Based on the foregoing, it is extremely important to develop and implement measures to protect workers' health from dust generated in agricultural production.

The industrial organization of livestock and poultry farms and the increase in the number of livestock and poultry in them led to the emergence of biological factors in agricultural production. The production of biological nutrients (mixtures) for livestock and poultry is developing. Areas for food and industrial crops are also expanding. At the same time, biological agents are widely used to protect crops from pests (instead of pesticides).

Thus, in livestock, poultry and vegetable farming, the interaction of workers with biological factors is enhanced [29, 31, 34].

Biological factors can be conditionally divided into:

1. Various organic components (plant fiber, wool, fluff, leather, extracted ether, oil, etc.) from plant and animal parts.
2. Essential oils containing aromatic compounds of plants.
3. Saprophytic opportunistic microbes, pathogenic microflora, viruses, fungi contained in the air, on the surface of objects, in food, etc.
4. Microorganisms causing zooanthroponoses.
5. Biologically active substances obtained from various organic components, as well as biological protection agents, etc.

Biologically harmful factors that have to be faced in the process of agricultural production are allergens, pathogens of infectious and fungal diseases, as well as toxic substances. Biological factors include microorganisms that cause zooanthroponous (occupational) diseases that can occur in people engaged in agricultural production.

Zooanthroponoses are a group of infectious and invasive diseases common in animals and humans. Zooanthroponoses include about 100 diseases of various etiologies. The source of the causative agents of zooanthroponoses for human are, first of all, those animals with which a person often comes into contact in the course of economic activity and in everyday life: agricultural and indoor animals, rodents, as well as wild animals hunting objects. Due to the development of globalization processes, the deterioration of the ecological situation, close contacts between human beings and various animal species occur much more often than before.

The control of plant pests, diseases and ectoparasites of livestock plays an important role in agricultural technology. This important agronomic process is carried out through the use of pesticides in agriculture.

Pesticides are internationally recognized plant protection products, consisting of two Latin words: "pestis" - infection, "caedo" - to kill. Globally, the use of pesticides in agriculture is 4.5-5 billion dollars per year. However, the use of pesticides in agriculture not only destroys pests, but can also cause significant damage to the environment and human health.

In agricultural technology, the use of pesticides is the basis for protecting plants from pests and diseases. It should be noted that in our country it is prohibited to use chemical preparations in agriculture until they pass a thorough

toxicological and sanitary-hygienic examination [4, 12, 18]. In addition, today, in agricultural practice, low toxic and environmentally friendly chemicals are used [5, 21, 25]. Recently, the amount of pesticides used in the agriculture of the republic, including the Bukhara region, has been decreasing from year to year (in 2018 - 14 drugs were used in the country, in the region - 6). However, with the decrease in the amount of pesticides used in agriculture, these biologically active substances remain a factor that negatively affects the health of field workers. Many pesticide preparations are highly toxic, resistant to degradation under natural conditions, poorly soluble in water, exhibit bioaccumulative properties in adipose tissue, mobility in food links and a pronounced ability to accumulate in living organisms. All these properties make pesticides dangerous substances that pose a threat to health not only for humans, but also for many types of other organisms. Many pesticides are very persistent and spread far from the application site. So, for example, in the mid-1960s. DDT has been found in the liver of penguins in Antarctica, far from where the chemical was used [3, 4, 7, 18].

Among other things, various toxic substances contained in pesticides, for example, non-ferrous metals invariably end up in different water sources. Thus, when using the water of contaminated reservoirs for irrigation, non-ferrous metals are carried to the fields and concentrated in the upper most fertile humus-containing soil layer. The concentration of metals in this layer leads to a decrease in the nitrogen-fixing capacity of the soil and the yield of agricultural crops, the accumulation of metals above the permissible concentrations in feed and other products [17]. In the second half of the 20th century, another problem became relevant: a decrease in the content of vitamins and microelements in crop production and the accumulation of harmful substances (nitrates, pesticides, hormones, antibiotics, etc.) in both crop and livestock products. As a consequence, pesticides and other harmful substances accumulated in various foodstuffs strongly affect the immune system, especially the immune system of children, which leads to a higher incidence of various diseases. Thus, children with frequent illnesses are a problem that has not only a medical but also a socio-economic aspect, which requires an integrated approach to its solution in the implementation of therapeutic, rehabilitation and preventive measures [42].

The reason for the decrease in the content of vitamins and microelements in crop production is soil degradation and the intensification of production, especially in animal husbandry. There are certain methods and technologies of farming that mitigate or completely eliminate negative factors, for example, precision farming technologies.

Agricultural production in Uzbekistan occupies 44 percent of the labor force and covers 17.6% of the country's GDP. In this regard, hygiene science constantly pays attention to the problems that people working in agricultural production may face. Moreover, the main goal of agricultural hygiene is to eliminate the negative factors that affect the health of agricultural workers.The latest scientific advances and the experience of advanced agriculture are aimed at making it easier for workers in agricultural production and to achieve high productivity in agriculture. Advances in biology, chemistry and other fundamental sciences make it possible to effectively care for and grow various agricultural crops, develop livestock, invent new methods of farming, create new chemical and biological means of protecting plants from pests, etc. The rapid introduction of such innovations and technologies into agriculture will reduce the probability that inappropriate agricultural inputs will affect workers' health and the environment.

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# USING BRAINSTORMING AND CASE-STUDY METHOD IN PRACTICAL CLASSES OF MICROBIOLOGY

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✓ ***Resume***

***According to some researchers, if the students are interviewed immediately after the lecture, they can reproduce 65-70% of the educational lecture material, after 3-5 days this figure is 45% at best. After a week, only a third of the students (34%) can recall the teaching material. After 2 weeks, this figure drops to 30%. These points indicate the role of passive perception of information, and its influence on the duration of memorization. In the case of teaching medical students, it is especially important to convey the meaning of the educational material. The information must be conveyed in such a form so that the students could remember it, and in the current, real clinical situation, do not get confused and show the theoretical knowledge gained in practice.***

***Keywords: Brainstorming, case study, idea generation, cascade modification, electronic brainstorming, situational assignments, evaluation cases.***

# ПРИМЕНЕНИЕ МЕТОДОВ «МОЗГОВОГО ШТУРМА» И «CASE STUDY» НА ПРАКТИЧЕСКИХ ЗАНЯТИЯХ ПО МИКРОБИОЛОГИИ

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✓ ***Резюме***

***По данным некоторых исследователей, было выяснено, что если сразу же после лекции опросить студентов, то они могли воспроизвести 65-70% учебного лекционного материала, спустя 3-5 дней этот показатель равнялся в лучшем случае 45%. Через неделю вспомнить учебный материал могли только треть учащихся (34%). Через 2 недели эта цифра снижалась до 30%. Это свидетельствует о роли пассивного восприятия информации, и его влияния на длительность запоминания. В случае обучения студентов медицинских ВУЗов особенно важно донести смысл учебного материала. Информацию надо донести в такой форме, чтобы обучающиеся смогли бы запомнить её, и в сложившийся, реальной клинической ситуации не растеряться и проявить полученные теоретические знания на практике.***

***Ключевые слова: Мозговой штурм, case study, генерация идей, каскадная модификация, электронный мозговой штурм, ситуационные задания, оценочные кейсы.***

# “МИЯГА ЖАДАЛ ҲУЖУМ” ВА «CASE STUDY» УСУЛЛАРИНИ МИКРОБИОЛОГИЯ ФАНИНИНГ АМАЛИЙ МАШҒУЛОТЛАРИГА ҚЎЛЛАШ

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✓ ***Резюме***

***Баъзи тадқиқотчиларнинг фикрига кўра, талабалар маърузадан сўнг дарҳол интервью олишса, ўқув маъруза материалининг 65-70% ини айтиб бериши мумкин экан, 3-5 кундан сўнг бу кўрсаткич энг яхши 45% ни ташкил этди. Бир ҳафтадан сўнг талабаларнинг учдан бир қисми (34%) ўқув материалини эслаб қолиши мумкин эди. 2 ҳафтадан сўнг бу кўрсаткич 30% га тушиб кетди. Бу эса ахборотни пассив идрок этиш ролини ва уни эслаб қолиш давомийлигига таъсирини кўрсатади. Тиббиёт талабаларига таълим беришда ўқув материалининг маъносини етказиш айниқса муҳимдир. Маълумот шундай шаклда етказилиши керакки, ўқувчилар уни***

***эслаб қолишлари мумкин, ҳозирги, ҳақиқий клиник вазиятда эса йўқолиб кетмаслиги ва олган назарий билимларини амалда кўрсатишлари керак.***

***Калит сўзлар: Мия штурми, кейс-стади, фикрлар генерацияси, каскад модификацияси, электрон мия штурми, вазиятли вазифалар, бахолаш кейси.***

**Relevance**

It is no secret that a man learns the basic information visually. Since 85% of the content is acquired through the vision, it is necessary to develop visualization in teaching. It is imperative to provide students with one or another graphic information. These can be presentations, films, tables, cards, etc.

The next important aspect is informational dosage, i.e. it is necessary to select the optimal amount of information without overloading with facts, evidence, conclusions, hypotheses, etc.

At the same time, it is very important that there is feedback between the teacher and students, which leads to figurative live communication and, as a result, memorization. Gyorgy Poya, American mathematician and popularizer of science said, "The best way to learn something is to discover it." Therefore, it is necessary to remember that the best form of education is when the student participates in the educational process independently and actively. There are many different techniques designed to involve people in a fun way in solving certain issues. We will analyze two teaching methods, the brainstorming and the case study method.

The brainstorming and the case method originated at about the same time in the early 20th century in the United States. During brainstorming, participants discuss the current problem and put forward the maximum number of options for solving the problem. At the same time, one can put forward the most fantastic and ridiculous hypotheses. From the obtained options, the best solutions are selected that can be used in practice. This method takes into account the efficiency and synchronicity of finding the answer to the task. The term "brainstorming" comes from two English words: brain - brain, storming - storm, storm, strong excitement. It is sometimes called the technology of deferred idea evaluating. This type of group discussion was developed in the late 30-s of the XX th century, by copywriter Alex Osborne, who revealed that the expectation of a negative assessment inhibits the process of proposing hypotheses during the discussion.

In the brainstorming process, as a rule, the solutions are not distinguished by high originality at the beginning, but after some time, typical, stereotyped solutions are exhausted, and the participants begin to have unusual ideas. The facilitator writes down or registers all the occurred ideas during the brainstorming session [8].

**The goal of brainstorming** is to stimulate the creative and intellectual activity of students. This is an operational method for solving a problem, in which the participants are asked to express as many solutions as possible, including the most fantastic ones. From the total number of ideas expressed, the most science based ones are selected that can be used in practice.

A well-organized brainstorming session includes three mandatory items. They differ in the organization and the rules for their implementation:

1. Problem formulation. Preliminary stage. At the beginning of this stage, the problem should be clearly formulated. The participants are selected, the leader is determined and the other roles of the participants are assigned, depending on the problem and the chosen method of conducting the storm.

2. Idea generation. The success of the entire brainstorming largely depends on this main stage. Therefore, it is very important to follow the rules for this stage:

1) The main thing is the number of ideas. Do not make any restrictions.

2) A complete ban on criticism and any (including positive) evaluation of the ideas expressed, since the assessment distracts from the main task and knocks down the creative mood.

3) Unusual and even absurd ideas are welcome.

4) Combine and improve any ideas.

3) Grouping, selection and evaluation of ideas. This stage is often overlooked, but it is he who allows you to highlight the most valuable ideas and give the result of the brainstorming session. At this stage, unlike the second, the assessment is not limited, but on the contrary, is encouraged. The methods for analyzing and evaluating ideas can be very different. The success of this stage directly depends on how "equally" the participants understand the criteria for selecting and evaluating ideas [10].

For brainstorming, the participants can be divided into several teams:

- generators of ideas who express various proposals aimed at solving the problem;
- critics who are trying to find negative sides in the proposed ideas;

- analysts who will link the developed proposals to specific real conditions, taking into account critical remarks, etc.

The basic rules of any brainstorming are the following provisions. It is necessary not to remember the order in which the participants express their opinions and not interrupting each other and to give time to tell one or another idea [6].

The key position of "brainstorming" is the possibility of putting forward any, the most phantasmagoric hypothesis.

You cannot criticize other participants, for their sometimes-ridiculous statements, on the contrary, any idea should only be welcomed. Despite the number of ideas, you need to keep thinking, even if you believe that your fantasy is exhausted.

An example proposed for use in practical classes in microbiology at a medical school, by students of the medical faculty. 5 minutes are allocated for the brainstorming session.

When considering the topic "Methods of sterilization", students may be asked the task: Explain the essence of the method of tyndalization, proposed by the English physicist John Tyndall. **Why liquids are heated fractionally (from three to five times) for an hour and the intervals between heating are 24 hours with this method?** 5 minutes are allocated for the brainstorming session.

Within one minute, students write down the answer options in their notebooks.

The answers can be following:

- because thereby it is more reliable to destroy thermophile microorganisms, i.e. those bacteria that can withstand high temperatures;

- because it will be clear whether any microflora has started up on the substrate, if so, the heating is continued again.

- because at intervals in the heated material, the "fermenting" microflora, which is antagonistic to pathogenic microorganisms, will populate.

At the end of the "storm", all the proposed ideas are analyzed, in which the whole group participates.

The students are told the correct answer: during the long intervals between fractional heating, bacterial spores that survived at 100 ° C germinate, and the vegetative bacterial cells released from them die during subsequent heating. In addition, there is tantalization at 56 ° C. This tantalization is used for substances that are easily destroyed and denatured at a temperature of 60 ° C (for example, protein liquids).

If the students are passive in proposing ideas, the teacher is recommended to use the methods of activating thinking, the creative abilities of the participants. You need to read the proposed ideas and start combining them in a variety of ways. Remember, that the cornerstone of a brainstorming session is any crazy idea.

For example, you can draw a fantastic analogy in the situation discussed. Invite the participants to formulate the main unremovable obstacle to the solution of the problem, and then to “cancel” it for a while. In the above example with the tantalization method, the main factor is the presence of various microorganisms in the external environment. It is possible to assume for some time the existence of a magical substance in nature, which disinfects all objects from microbes within a radius of 7 kilometers without any temperature effect, etc. Proceeding from this, it is possible to develop new theories, in which, over time, a rational kernel will necessarily appear.

Brainstorming is used in the absence or minimal, insufficient amount of information. The use of brainstorming is advisable when identifying new alternative directions for solving the problem.

The "brainstorming" method allows you to involve the maximum number of students in active activities. The application of this method is possible at various stages of a practical lesson: for the introduction of new knowledge, intermediate quality control of the assimilation of knowledge, consolidation of the acquired knowledge (in a generalizing lesson on a specific topic of the course).

In higher education, it is imperative to introduce innovative teaching methods that enhance students' creative and independent thinking. In our informative age, when the volume of information is growing exponentially, under conditions of limited time, great hopes are placed on innovative teaching methods. Due to innovative pedagogical technologies, all necessary skills and abilities are formed for future specialists in various fields of science [9].

"Brainstorming" is also an innovative and effective method of stimulating cognitive activity, the formation of creative skills of students in both small and large groups. Moreover, thanks to this method, skills are formed to express their point of view, listen to opponents, and reflexive skills.

**The disadvantages of brainstorming** include the fact that this technology is not applicable to discussions on moral and ethical topics. There is also no guarantee of finding best ideas with this method. However, the advantages of brainstorming technology clearly outweigh the disadvantages.

**The advantages of brainstorming** include the simplicity of use of this method. To master "brainstorming" no preliminary training is required, high-tech equipment, the results are obvious and easy to assess. Thus, this method is good for aspiring teachers. At the same time, the

brainstorming method has a wide range of applications. It allows you to search for solutions to problems in the study of different disciplines. The resulting brainstorming skill can be useful in the future in various areas - from professional activity to personal life. Brainstorming does not require high competence of participants, which is very important for pulling up lagging students, involving them in an active learning process. The time spent on brainstorming is acceptable from 10 minutes to 3 hours. However, the most important point of the method is to go beyond the standard ways of solving problems. This is very important for students of medical universities, who will often face emergency situations in future in their practice. This method develops independent, creative thinking and focuses on the development of original ideas, new approaches to the researching problem.

**The case study method** was developed and first applied at Harvard Business School in 1924, whose faculty quickly realized that there was no textbook suitable for a graduate program in business. Their first solution to this problem was interviewing leading business practitioners and writing detailed reports on what these managers were doing and the factors affecting their performance. The listeners were given descriptions of a certain situation that a real organization faced in its activities in order to get acquainted with the problem and find a solution themselves and in the course of collective discussion [3].

**Case study or the method of specific situations** is a teaching technique that uses a description of real economic, social and other various situations. Students should investigate the situation, understand the essence of the problem, suggest possible solutions, and choose the best one. Cases are based on real factual material or are close to a real situation.

The name of the case method comes from the Latin **casus** - confusing unusual case; as well as from the English **case** - a briefcase, a suitcase. The origin of the terms reflects the essence of the technology. A “case” is a spatially limited phenomenon observed at a particular moment or for a certain time.

Another interpretation of case method, given by Professor R. Murry from Harvard, should also be noted: "By the case method, I mean the study of a subject by students by considering a large number of cases in certain combinations. Such training and attempts to manage various administrative situations develop in the student, often unconsciously, understanding and the ability to think in terms of the main problems faced by a manager in a particular field of activity. " The case method includes two complementary approaches. The first involves a detailed study of one specific example to identify the typical properties of a whole class of phenomena or, say, the patterns of a particular process (actually a case study). The second approach is associated with the study of a small number of examples (cross-case study - the method of "cross cases") [2].

Students receive an assignment (case) from the teacher, with the help of which they either identify the problem and ways to solve it, or develop options for getting out of a difficult situation when the problem is identified. This is a teaching technique using descriptions of real-life situations. Students should analyze the situation, understand the essence of the problem, suggest possible solutions and choose the best one. The central concept of the method of learning specific situations is the concept of "situation", that is, a set of variables when the choice of any of them decisively affects the result.

The possibilities for using this method are wide enough, practically endless. The case technology realizes its potential only if the appropriate methodological support has been created - good quality cases have been developed and the structure of their application in each lesson. The cases developed for the training of medical laboratory technicians have their own specifics - they are not as voluminous as the classical ones, at the same time, all the situations presented in them are taken from laboratory practice [4].

The existence of the only correct solution is denied in principle. The student has to make decisions and justify it himself with this method of teaching.

Cases, usually prepared in writing and based on real facts, are read, studied and discussed by students. Cases form the basis of a teacher-led classroom conversation. Consequently, the case study method simultaneously includes a special type of educational material and special ways of using this material in the educational process. Situations analysis acts as a different way of thinking of the teacher, his special paradigm, which allows him to think and act differently. Thus, the teacher renews his creative potential.

For a student, the emphasis in study needs to be shifted not to mastering ready-made knowledge, but to developing it, to the co-creation of a student and a teacher, where the fundamental differences between the Case study and traditional teaching methods.

The technology of the case method is quite simple, but at the same time, it requires a restructuring of the existing traditional actions, both for the teacher and the student. In a medical school the case study method is a teaching method that takes into account all properties of the subject and

forms the necessary knowledge, skills and abilities. In addition, the case method has the potential to implement integrated learning. This method is aimed at solving a certain problem; however, this problem is not given in a finished form, but is formulated by the teacher, based on the conditions of a real educational situation. The point is that students are offered to comprehend a real-life situation, the description of which reflects not only any practical problem, but also actualizes a certain set of knowledge that must be learned when solving this problem simultaneously. The solutions proposed by students can be assessed by the degree of effectiveness, by the validity of the decision, the cost of resources, but at the same time a variety of solutions will be correct, corresponding to the task. Thus, educational material is presented to students in the form of situations (cases), and knowledge is acquired as a result of active and creative work: independent implementation of goal-setting, collecting the necessary information, analyzing it from different points of view, proposing hypothesis, conclusions, self-control of the process of acquiring knowledge and its results.

The case should contain:

• A problem with several options for its solution;

• Supporting information;

•The task;

Working with a case (situational task) has its own specifics and involves a variety of technological approaches. The specific way of creating, a problem situation and the organization of independent work depend on a number of factors: the degree of complexity of the teaching material, the available time, the characteristics of a specific contingent of students, etc. Application of the case method performs several functions - teaching, educating, organizing and research. In practice, these functions are quite often implemented separately; their organic unity is observed in the process of using [1].

The situational technique teaches not only the student, but also the teacher. Using the situational method in practical lesson the teacher learns to select the appropriate real material for methodological developments with cases. At the same time, the teacher learns to write a case himself, laying in its basis several possible solutions of current problem. During the lesson, the task of the facilitator is to help students to reason, argue, debate, but not to impose his/her own opinion on the problem [11].

The work on creating a case and questions for its analysis is creative. It is carried out outside the classroom and includes research, methodological and constructive activities of the teacher. You can take a specific situation from real life (medical history, complex clinical case, production problem).

The situation is prepared by the teacher in advance, then that part which is an incident, is read out. Students ask questions. Each subgroup makes its own decision, and only then, its aspects are discussed in an open discussion.

Work on a case as a situational text begins with the identification of individual content elements, the search for the essence of the problem, contradictions, their causes and possible negative consequences. Practicing the skills of systemic, correlation, factorial, statistical and other types of analysis allows you to come to your own conclusions and solutions from a problem situation.

When conducting a lesson with case study, additional options for student work can be applied. The teacher tells the students about the technology of situation analysis by the "incident" method, 15 - 20 minutes is given, and each team works out its own version of the situation (from a book, practical activities of enterprises, etc.). After the situations for all teams have been developed, the procedure for collecting information begins: "incident" ("It was happened ..."); Questions and answers; decision-making; presentation of the solution and its analysis by the authors of the situation. Then another command proceeds in the same order.

The procedure with the situation work is following: having read the description of the problem (case) the student analyzes the situation independently, diagnoses the problem and presents his ideas and solutions in the process of discussion with other students. If the acquaintance with the problem occurs in the classroom, it usually takes from 10 to 30 minutes to analysis individually depending on the volume of the material. During the analysis of the situation, students learn to act "in a team", to carry out multidimensional analysis and make decisions. Typically, it takes from 30 minutes to 2 hours of study time for considering the situations.

The teacher controls the situation and acts as a coordinator and leader of the discussion, and, as an opponent and critic, activating and guiding the discussion if necessary. It is most expedient to organize a preliminary discussion by brainstorming between the participants of the analysis.

The facilitator monitors the progress of the educational game, strictly controls every action of the participants. In cases of deviations from the rules, he carefully corrects them. In the course of the learning environment that has arisen, he often introduces additional information that complicates the clinical situation. During the educational game, the participants are allowed to discuss the role of each symptom in the diagnosis of an infectious

agent of the disease, discuss the plan for the upcoming examination of patients. Summing up the results of the practical lesson, the teacher gives an objective assessment of the actions of each participant in the game, comments on the answers and corrects the survey plan. Acting as an arbiter, he dwells in detail on the mistakes of students ("players") and gives advice on how to eliminate them [7].

Assessment cases are traditionally used in teaching medical students at the stages of midterm and final control.

An example of a case study on the topic “Microorganisms and the environment. Chemotherapy drugs and antibiotics. "

In July 2018 a culture of a sanitary indicative microorganism was isolated from a liquid dosage form during the production control at the enterprise " APTEKA",.

The laboratory assistant described the following properties of the isolated microorganism: bacteria were isolated on meat-peptone agar, giving mucous-pigmented colonies that stain the medium green. On microscopy, these were to be gram-negative rods. The enterprise uses a water supply for distilled water, which was used to prepare this dosage form.

- What kind of bacteria can we think of? Is it acceptable in this in the preparation?
- How could these bacteria get into the antibiotic emulsion?
- How could the source of microbial contamination of a preparation be identified?

Response standards are not provided, since the specification of the response is not possible.

The experience of using the case study method in the practice of teaching students of medical universities has shown its high efficiency, especially for developing structuring information skills and identifying problems.

In the course of teaching students of Bukhara State Medical Institute by case study method, the following results were obtained. It had been found that interactive teaching methods, in contrast to traditional ones, generally more effectively influence the process of mastering a complex of clinical knowledge. In addition, they were clearly distinguished by the individual nature of the impact on the formation of generally known levels of knowledge. So, if traditional teaching methods influenced the development of mainly initial I (knowledge - acquaintance) and II (knowledge - copy) levels, then interactive methods of teaching to more advanced III (knowledge - skill) and IV (knowledge - creativity) their forms.

It should be mentioned, that the successful implementation of the educational clinical game "case study" requires a large amount of knowledge in fundamental medical disciplines, as well as mastery of a wide range of manipulations. This was due to the condition of collecting subjective and objective information, which is the closest to the real clinical setting. It should be noted that the educational clinical game "case study" aroused increased interest of all participants. The knowledge gained with the help of this type of educational game was much perfect and corresponded to level III (knowledge - skill), and even IV (knowledge - transformation). More than half of the participants in the game clearly developed elements of III (knowledge-skill), and the rest of the IV level (knowledge-creativity) knowledge. At the same time, the bank of clinical knowledge was enriched much faster, which is an important and distinctive advantage of this method of teaching [5].

In the holy book of King Solomon, there are words that explain the benefits of cooperation and mutual assistance: “Two are better than one; their hard work is worthily rewarded. If one falls, the other will help him to rise ... Two will defeat the one with whom none of them can cope alone. «The main idea of technologies, both brainstorming and case study, is to create conditions for active joint activities of students in various educational and practical situations. At the same time, the methods of work are joint activity, search for an answer (solution of a practical problem), a teacher and students. All this contributes to the development of effective communications in the process of collective search and justification for solving practical problems. Thus, this will affect productively on the training of creatively thinking specialists who will stay relevant in future, due to their preparedness, for a quick and high-quality solution of the problems they will have to face in their professional practice.

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# THE ANALYSIS OF PRIMARY DISABILITY STRUCTURE OF POPULATION OF FERGANA REGION

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✓ ***Resume***

***This article analyzed the structure of primary disability of the population in Fergana region. The research work drew special attention to the main causes of primary disabilities by places of residence, age and gender groups. The main causes of disabilities have been explored by classes of diseases.***

***Key words: disability, level, specific position, the analysis of the classes of diseases, dynamics, structure.***

# АНАЛИЗ ПЕРВИЧНОЙ СТРУКТУРЫ ИНВАЛИДНОСТИ НАСЕЛЕНИЯ ФЕРГАНСКОЙ ОБЛАСТИ

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✓ ***Резюме***

***В статье проанализирована структура первичной инвалидности населения Ферганской области. В ходе исследования особое внимание было уделено основным причинам первичной инвалидности по месту жительства, возрастным и гендерным группам. Были изучены основные причины инвалидности по классам болезней.***

***Ключевые слова: инвалидность, уровень, специфическое положение, анализ классов болезней, динамика, структура.***

# FARG'ONA VILOYATI AHOLISI NOGIRONLIGIK ASOSIY SABALARI TAHLILI

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✓ ***Rezyume***

***Ushbu maqolada Farg'ona viloyatida aholining birlamchi nogironligi tarkibi tahlil qilindi. Tadqiqot ishida yashash joylari, yoshi va jinsi guruhlari bo'yicha birlamchi nogironlikning asosiy sabablariga alohida e'tibor qaratildi. Nogironlikning asosiy sabablarini kasalliklar sinflari o'rganib chiqdi.***

***Kalit so'zlar: nogironlik, daraja, o'ziga xos holat, kasalliklar sinflarini tahlil qilish, dinamikasi, tuzilishi.***

## Introduction

The actuality of the problem of disability and disabled people is determined by a large number of people in this category in the social structure of society [1, 3, 4, 7, 8]. According to UN experts, people with disabilities account for 10% of the total population of the Earth [2].

Many researchers have noted, the disability indicator characterizes social ill-being of population, reflects social maturity, economic viability, moral development of society and violation of relationship between disabled person and society [5, 6, 9, 10, 11, 12].

Consequently, the decrease in the population's disability rate in the region can be instrumental in implementing scientifically based approaches to the study and identification of removable causes of primary disability. In turn, this can serve as the basis for the formation of targeted regional programs with an impact on the most important factors determining the level of health status, including the specific causes of disability.

Thus, this issue is one of the main characteristics of the country's public health and social well-being. Therefore, studying disability of the population is important and actual.

All of the above determined the research and its purpose.

**The aim of the research is** to study the structure of primary disability in Fergana region.

## Materials and methods

The object of the research is a set of newly recognized disabled people in Fergana area.

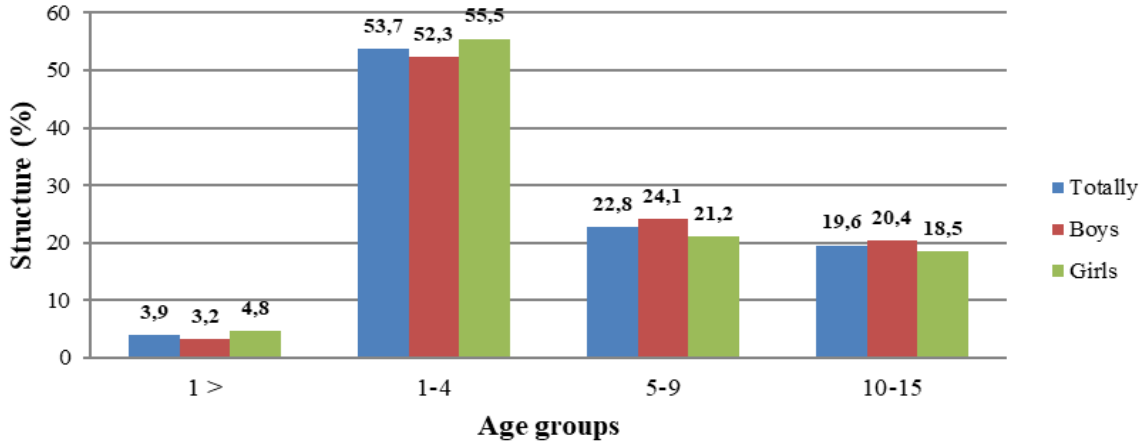
The study is continuous. The materials for the study was the official statistical data of the Republican Inspectorate of Medical and Social Expertise under the Ministry of Healthcare and the reports of the State Statistics Committee of the Republic of Uzbekistan.

The observation unit is the first recognized disabled child, disabled person of employable age and disabled person of retirement age.

## Results and discussion

The distribution of primary disability by age groups of childhood contingent observed as follows: the highest proportion is observed in the age groups of 1-4 - 1018 (53.7%) boys are 52.3% and girls are 55.5%; second position is children in the age of 5-9 - 440 (22.8%), boys are 24.1% and girls are 21.2%; children in the age of 10-15 - 378 (19.6%), boys are 20.4% and girls are 18.5% and children under 1 - 76 (3.9%) 3.2% are boys 3.2% and girls are 4.8% (Figure 1).

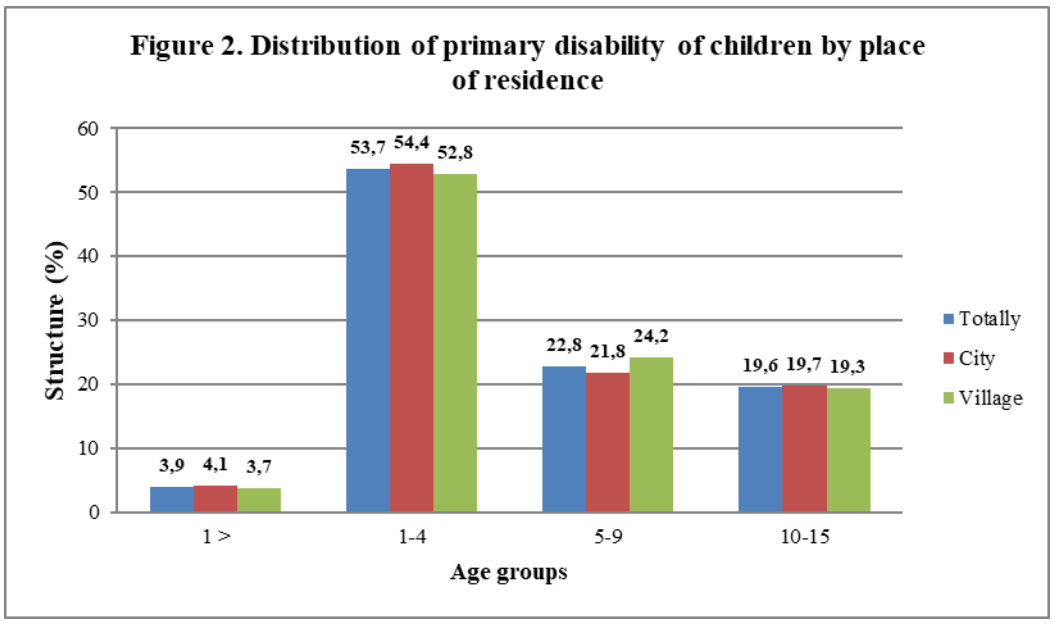
**Figure 1. Distribution of primary disability child population by age group**




The presented data indicates, in the structure of Primary Recognized Disabled (PRD), the highest specific position is observed in the age group of 1-4 - 53.7% (boys 52.3% and girls 55.5%); the second place is children in the age of 5-9 - 22.8% (boys 24.1% and girls 21.2%); children aged 10-15 - 19.6% (boys 20.4% and girls 18.5%) and next t children under 1 3.9% (boys 3.2% and girls 4.8%).

It should be noted that in each age group, the difference between the indicators of boys and girls has not been observed.

This case is also characteristic of child population by place of residence (urban and rural areas) in Fergana region (Figure 2).

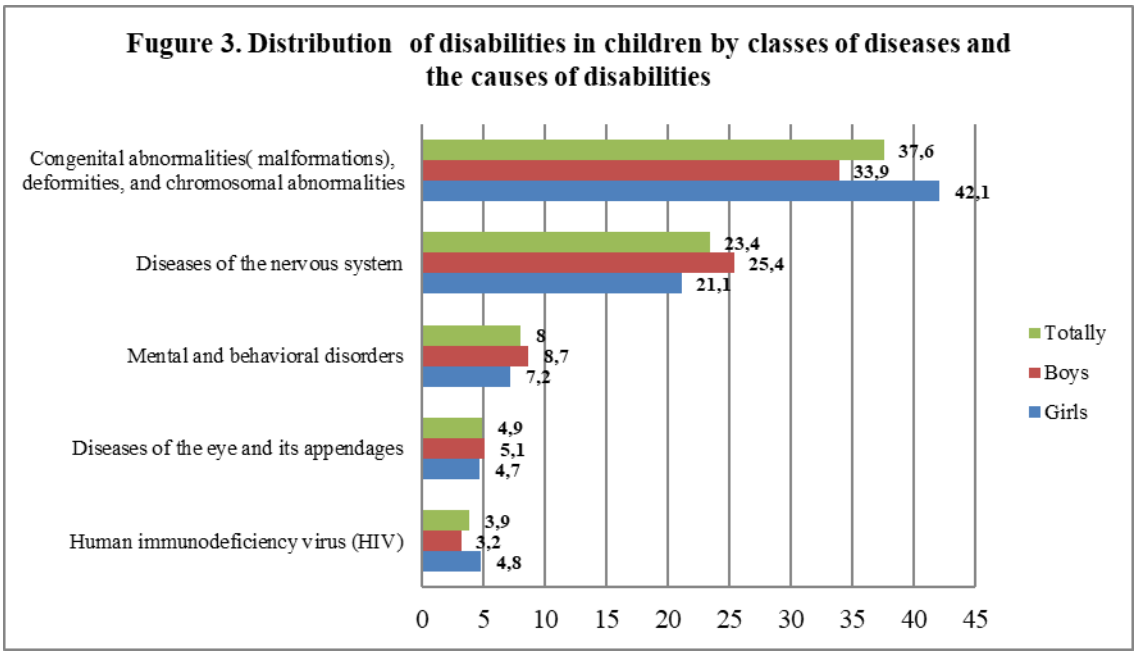



The analysis of the distribution of disabled people by classes of diseases, which caused to disability arose particular interest.

The analysis of the proportion of children with disabilities in 2017 showed, disability is a problem for this population, especially for 5 classes of diseases, with high proportion of children with disabilities makes up 1,506 (77.8%) for all reasons.

The contingents ranking of disabled people caused by various classes of diseases for 2017 showed: the first rank is congenital anomalies (malformations), deformations and chromosomal abnormalities -727 (37.6%), the second rank are the diseases of nervous system- 453 (23.4% ), the third position are mental and behavioral disorders - 155 (8.0%), fourth position are the diseases of eyes and its appendages- 95 (4.9%), in fifth position is - HIV (Human Immunodeficiency Virus), 76 (3.9%).

The analysis of the distribution of disabled people by class of diseases, which caused to disability, shows the insignificant difference between the indicators of boys and girls (Figure 3).




As mentioned above, congenital malformations (malformations), deformations and chromosomal abnormalities were 727 (37.6%); 52 (7.2%) the infants under age 1, children between the ages of 1-4 are 498 (68.5%), children between the ages of 5-9 are

102 (14.0%), and children between the ages of 10-15 are 75 (10.3%).

Nervous system diseases are 453 (23.4%); infants under 1 made up 10 (2.2%), children between the ages of 1-4 are 288 (63.6%), children between the ages of 5-9 are 102 (22.5%) and children between the ages of 10-15 are 53 (11.7%).

Mental illness and behavioral disorders were only 155 (8.0%); infants under are 3 (1.9%), children aged 1-4 are 28 (18.1%), children aged 5-9 are 76 (49.0%) and children between the ages of 10-15 are 48 (31.0%).

The analysis of the distribution of disabled people by classes of diseases and their causes shows that the largest first and third ranking positions were congenital anomalies (malformations), deformations and chromosomal abnormalities, and the diseases of nervous system, the largest share was children of 1-4 age groups, 68.5% and 63.6%, and the largest share was mental disorders and behavioral disorders, mainly children aged of 5–9 showed 49%.

The distribution of primary disability by age groups of employable age population is as follows: the number of primary disabled people in the age group of 15-16 was 562 people (14.0%); in the age group of 17-19 was 70 people (1.7%); in the age group of 20-24 was people 173 (4.3%); in the age group of 25-29 was 280 people (7.0%); in the age group of 30-34 was 380 people (9.5%); in the age group of 35-39 was 410 people (10.2%); in the age group of 40-44 was 446 people (11.1%); in the age group of 45-49 was 501 people (12.6%); in the age group of 50-54 was 652 people (16.2%); in the age group of 55-59 was 539 people (13.4%) (Figure 4).

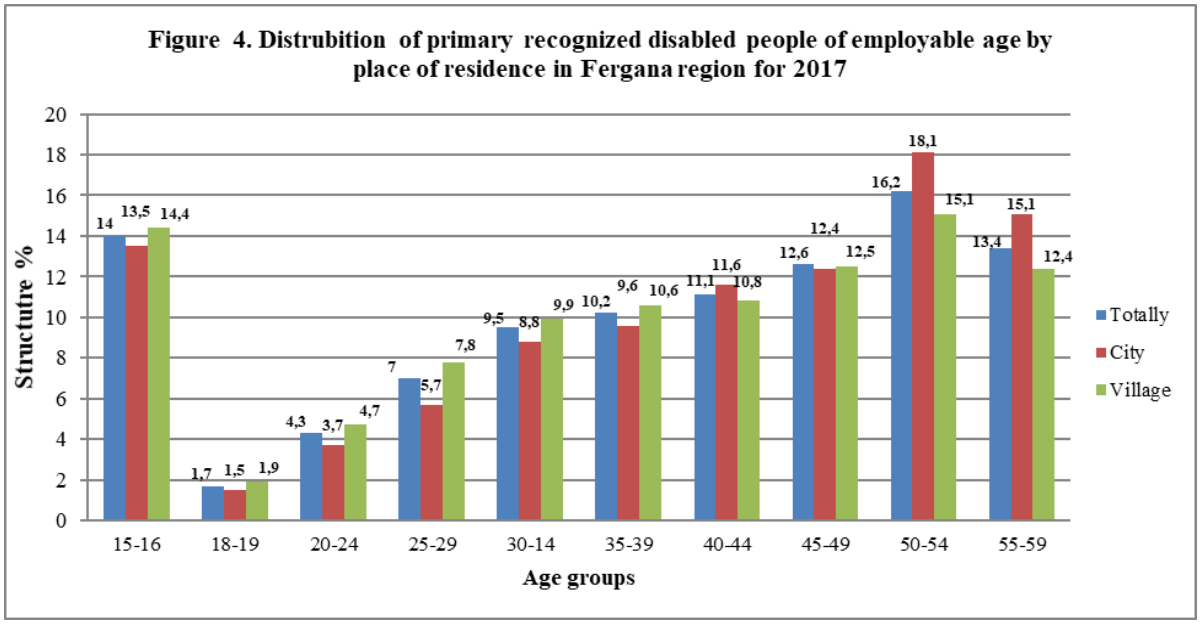
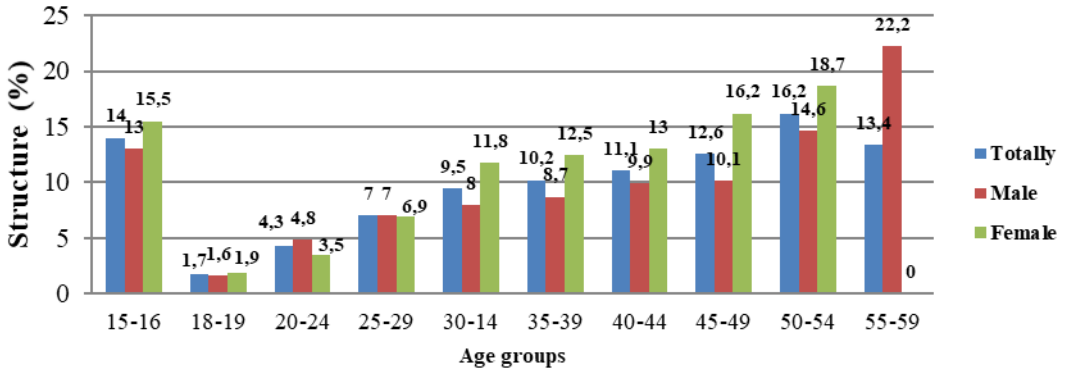



Figure 4 shows, in the age group of 16-17, the number of primary disabled people among the whole employable population was 562 people (14.0%), and in subsequent age group of 18-19 we can see a sharp decrease in the proportion of primary disability 70 people (1.7%). In our opinion, an increase in the proportion of disabilities in the age group of 16-17 may be due to the prevalence of subjective factors, because disabled children under 15 receive benefits according to disability groups. The disability groups are taken into account from the age 16 for receiving benefits.

Thus, the appeal to medical re-examination is sharply increased between children in the age of 16-17 for receiving disability benefit by levels.

Consequently, in the age period of 18-19, the proportion of people with disabilities sharply decreased, as the majority of the population of this age group had already undergone medical re-examination for disability when they were 16-17, and in subsequent age groups up to 50-54 the extensive indicator of disability gradually tends to increase (Figure 5).

**Figure 5. Distribution of primary recognized disabled people by age and gender in Fergana region for 2017**



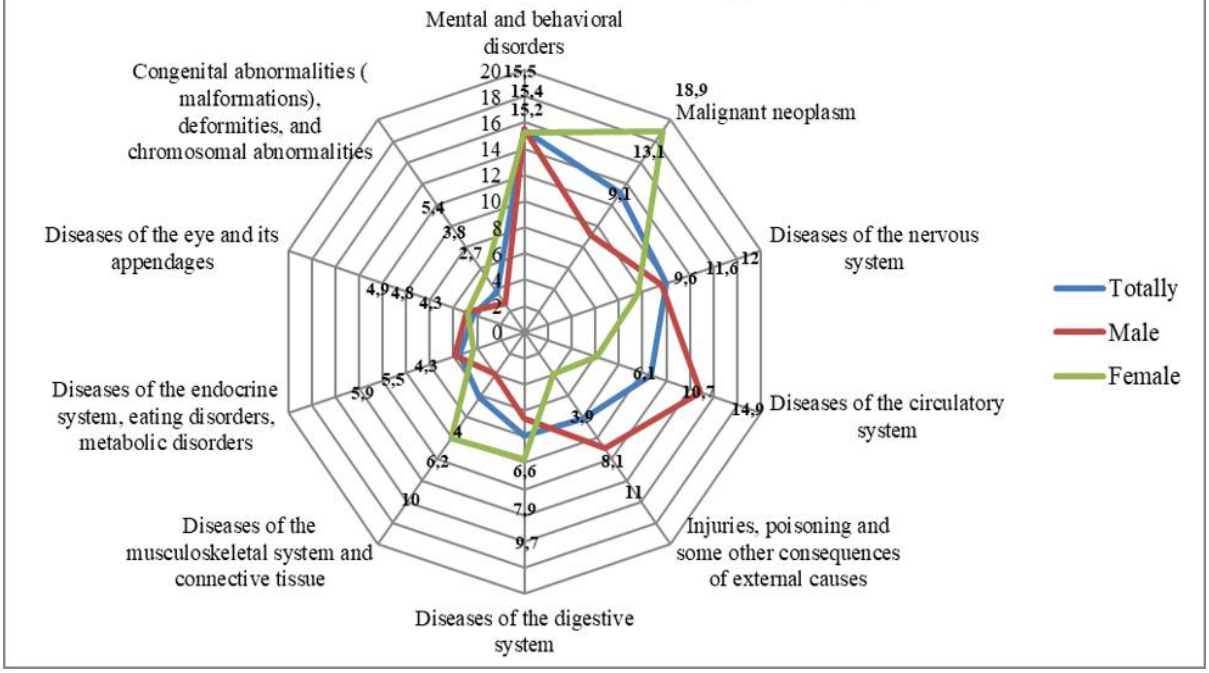

The highest proportion of primary disability among employed population is the disabled people aged 50-54 and 55-59, correspondingly 16.2% and 13.4%. This may be explained by the intend to get disability benefit according to the disability levels on the eve of retirement age.

It should be noted, this objective law is also characteristic of the population by place of residence (urban and rural areas) and gender characteristics of the population in Fergana region.

The analysis of the distribution of disabled people by classes of diseases and the causes of disabilities have been of particular interest.

The structure of primary disability of employable age in Fergana region for 2017 was studied (Figure 6).

**Figure 6. Structure of primary disability in the people of retirement age by classes of diseases for 2017 in terms of ranking position (%)**




The first ranking position is the diseases of mental and behavioral disorders - 15.4%, in the second ranking order is disabled people with malignant neoplasms - 13.1%. Then the third ranking order is disabled people with the diseases of nervous system, the specific proportion of which is 12.0%. The fourth rank is disabled people with the diseases of circulatory system and their specific proportion is 10.7%.

The disable people with traumas, poisoning and some other consequences of external factors make up 8.1% and on the 5th rank. The sixth

rank is the disabilities caused by digestive diseases: their share is 7.9%.

The diseases of musculoskeletal system and connective tissue showed 6.2%, this contingent is ranked 7th and the eighth rank is disabled people with the diseases of endocrine system, nutritional disorders, metabolic disorders, the specific proportion is 5.5%.

In the ninth rank is disabled people with the diseases of eye and its appendages; their share is 4.5% of the total.

The tenth rank is disable people with congenital malformations (deformities), deformations and chromosomal abnormalities; the specific proportion is 3.8% of the total.

The eleventh rank is disable people with tuberculosis diseases; the specific proportion is 2.8%. The twelfth rank is disabled people with the diseases of genitourinary system, the proportion is 2.7%.

The thirteenth rank is the disable people with respiratory diseases, their specific position is 2.6% and the fourteenth rank place is disable people with the diseases of ear and mastoid process and blood diseases, blood-forming organs and individual disorders, their specific weight is 1.0% of the total.

Among the male disabled people of the employable age, the first rank is the diseases of mental disorders and behavioral disorders - 15.5%, the second position is disabilities caused by circulatory system disease - 14.9%, the third rank is the disable people with the diseases of nervous system: their share is- 11.4%.

Among the female disabled people of the employable age, the first rank is malignant neoplasms - 18.9%, the diseases of mental disorders and behavioral disorders - 15.2%, the diseases of musculoskeletal system and connective tissue - 10.0%.

The distribution of primary disability by retirement age groups is as follows: the highest proportion is observed in the age groups of 60-64 - 111 (33.5%), 82 are men (49.1%) and women are 29 (17.7%) ); in the second position - women retirees in the age of 55-59 - 77 (46.9%); in the third rank is pensioners in the age of 65-69 - 51 (15.4%), including men 31 (18.6%) and women 20 (12.2%); next pensioners in the age of 70-74 are 34 (10.3%) men - 20 (12.0%) and women - 14 (8.5%); the pensioners in the age of 75-79 are 35 (10.6%) and men - 20 (12%) and women - 15 (9.1%); the retirees in age of 85-89 are 4 (1.2%), men - 3 (1.8%) and women - 1 (0.6%); the retirees in the age of 85-89 are 4 (1.2%), including men - 3 (1.8%) and women - 1 (0.6%); the pensioners in the age of 90-94 are 2 (0.6%), men - 1 (0.6%) and women - 1 (0.6%). Figure 7.

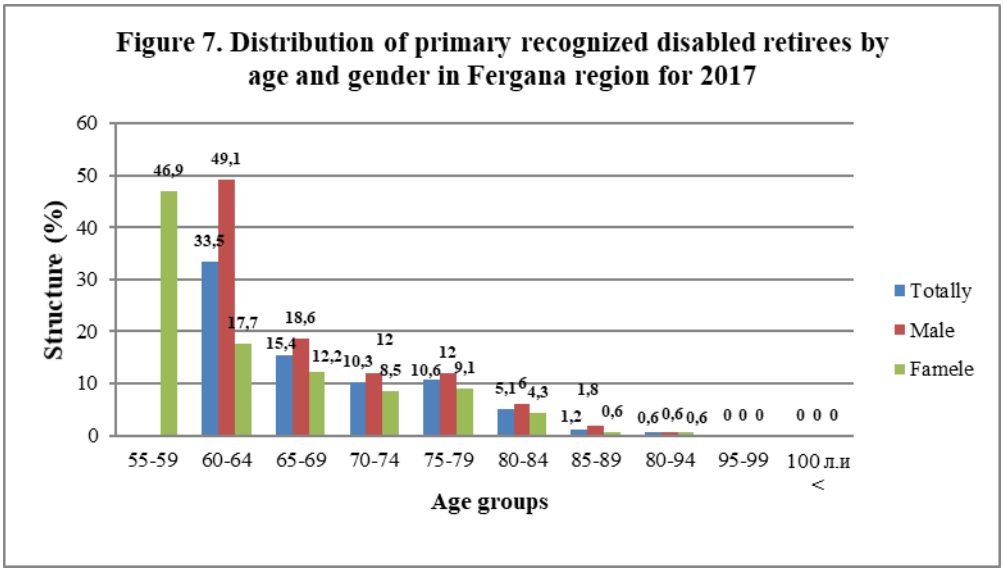



**Figure 7. Distribution of primary recognized disabled retirees by age and gender in Fergana region for 2017**

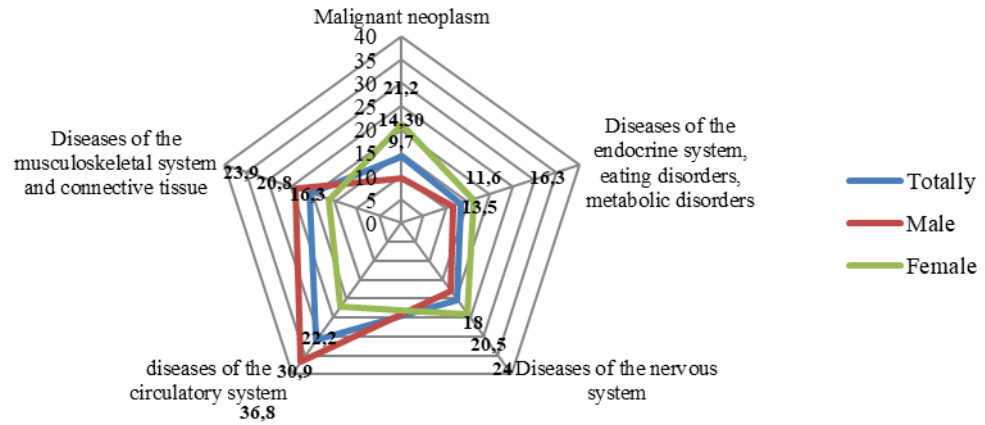
It should be noted that in the age group of pensioners of 95 and older, first recognized disabled people were not observed.

The analysis of the distribution of disabled people by classes of diseases and their causes arose interest.

In the first rank is the diseases of circulatory system - 30.9%; the second position is the disabilities caused by the diseases of the musculoskeletal system and connective tissue - 20.8% and the third position is the disabilities caused by the diseases of nervous system, their

specific proportion is 20.5% ; the fourth ranking position is the disabled people with malignant neoplasms - their specific proportion is 14.3%, the fifth place is the diseases of endocrine system, nutritional disorders, metabolic disorders - 13.5% (Figure 8).

**Figure 8. Structure of primary disability in the people of retirement age by classes of diseases for 2017 in terms of ranking position (%)**




The diagram shows, among the male disabled population of retirement age, the first ranking order is the diseases of circulatory system - 36.8%, the second rank is the diseases of musculoskeletal system and connective tissue - 23.9%, the third ranking order is the disabilities caused by the diseases of nervous system, their specific proportion is 18.0%., the fourth ranking order is the diseases of endocrine system, nutritional disorders, metabolic disorders, their specific proportion is 11.6%, the fifth place is malignant neoplasms - 9.7%.

Among the female disabled population of retirement age, the first ranking order is the diseases of nervous system - 24.0%, the second rank is the disabilities caused by circulatory system disease - 22.4%, the third rank is malignant neoplasms - 21.2%, then the fourth ranking order is the diseases of endocrine system, nutritional disorders, metabolic disorders and diseases of musculoskeletal system and connective tissue, their specific proportion is 16.3% of each.

## Conclusions

1. The distribution of primary disability by age groups among children is as following: the number of primary disabled people under 1 was 3.9%, in the age group of 1-4, 53.7%, in the age group of 5-9, 22.8% in the age group of 10-15 - 19.6%.
2. The analysis of distribution of disabled children by classes of diseases and their causes showed, the first ranking order is congenital anomalies (malformations), deformations and chromosomal abnormalities - 37.6%, the second ranking order is the diseases of nervous system - 23.4%, third ranking order is mental disorders and behavioral disorders - 8.0%, the fourth rank is the diseases of eye and its appendages - 4.9%, in fifth rank is HIV (Human Immunodeficiency Virus) 3.9%).
3. It was established that in the age group of 16-17, the number of primary disabled people is 562 people (12.9%), and in the age group of 18-19 we can see a sharp decrease in the proportion of primary disabilities and equals to 70 people (1.6%), in subsequent age groups, gradually increasing to 50-54 years the extensive disability rate reaches 14.9%.
4. The distributional analysis of the disabled people of employable age by classes of diseases and diseases caused to disability showed that more than half of the percent (51.2%) in the structure was the disabilities caused by mental and behavioral disorders, malignant neoplasms, diseases of the circulatory system and nervous system.
5. Primary disability by age groups of retirement age shows that the highest proportion is observed in the age groups of 60-64 - 33.5%, in second position is women pensioners in the age group of 55-59 - 46.9%; in third place are pensioners 65-69 years old - 15.4%; next are the pensioners in the age group of 70-74 - 10.3%; pensioners in the age group of 75-79 - 10.6%; pensioners in the age group of 85-89 -

1.2%; then retirees 85-89 years - 1.2%; pensioners in the age group of 90-94 - 0.6%.

6. Among the first recognized invalids of retirement age, the first rank is the diseases of circulatory system - 30.9%, the second position is the disabilities caused by diseases of musculoskeletal system and connective tissue - 20.8% and the third position is the disabilities caused by the diseases of nervous system, the specific proportion is 20.5%., the fourth rank is disabled people with malignant neoplasms; their specific proportion is 14.3%, the fifth position is the diseases of endocrine system, nutritional disorders, and metabolic disorders 13.5%.

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## QUALITY OF LIFE IN PATIENTS WITH BRONCHIAL ASTHMA AND THE ROLE OF THE ASTHMA SCHOOL IN ITS PREVENTION

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Center for Advanced Training of Medical Personnel

✓ ***Resume***

***In patients with bronchial asthma, the quality of life deteriorates because of physical activity, depression and negative social impacts. In these cases, the system of training and retraining of personnel in this area does not meet modern requirements; there is a need to organize asthma schools in medical institutions with the involvement of qualified allergists and nurses at the asthma school. Bronchial asthma plays an important role in patient self-management and patient-centered approach to nursing. To improve the quality of life of patients, it is necessary to establish an asthma school in primary health care facilities.***

***Key words: bronchial asthma, risk factors, prevention, nurses, primary health care***

## BRONXIAL ASTMA BILAN KASALLANGAN BEMORLARDA HAYOT SIFATI VA UNING OLDINI OLISHDA ASTMA MAKTABI ROLI

*Solixodjaeva R. K., Aliqulova D. Ya.*

Tibbiy xodimlar malakasini oshirish Markazi

✓ ***Rezyume***

***Bronxial astma bilan og'rigan bemorlarda jismoniy faoliyat, ruhiy tushkunlik va salbiy ijtimoiy ta'sir tufayli hayot sifati yomonlashadi. Ushbu holatlarda ushbu sohada kadrlarni tayyorlash va qayta tayyorlash tizimi zamonaviy talablarga javob bermaydi; tibbiy muassasalarda astma maktabida malakali allergistlar va hamshiralarni jalb qilgan holda astma maktablarini tashkil etish zarurati mavjud. Bronxial astma bemorning o'zini o'zi boshqarishida va hamshiralikka bemorga yo'naltirilgan yondashuvda muhim rol o'ynaydi. Bemorlarning hayot sifatini yaxshilash uchun birlamchi tibbiy-profilaktika muassasalarida astma maktabini tashkil etish zarur.***

***Kalit so'zlar: bronxial astma, xavf omillari, profilaktika, hamshiralar, birlamchi tibbiy yordam***

## КАЧЕСТВО ЖИЗНИ БОЛЬНЫХ БРОНХИАЛЬНОЙ АСТМОЙ И РОЛЬ ШКОЛЫ АСТМЫ В ЕЕ ПРОФИЛАКТИКЕ

*Солиходжаева Р. К., Аликулова Д.Я.*

Центр повышения квалификации медицинских кадров

✓ ***Резюме***

***У пациентов с бронхиальной астмой качество жизни ухудшается из-за физической активности, депрессии и негативных социальных воздействий. В этих случаях система подготовки и переподготовки кадров в данной сфере не отвечает современным требованиям; необходимо организовать школы астмы при медицинских учреждениях с привлечением квалифицированных аллергологов и медсестер в школе астмы. Бронхиальная астма играет важную роль в самоуправлении пациентов и подходе к уходу, ориентированному на пациента. Для улучшения качества жизни пациентов необходимо создать школу астмы в учреждениях первичной медико-санитарной помощи.***

***Ключевые слова: бронхиальная астма, факторы риска, профилактика, медсестры, первичная медико-санитарная помощь.***

## Relevance

Bronchial asthma is a disease that reduces the quality of life of patients, causing disability and disability of the population, progressing like other chronic diseases, lambing period, important conditions for human life: permanent limitation of physical, mental and social conditions. In this case, the reduction of symptoms and the normalization of clinical and laboratory parameters are among the main tasks of the doctor. Improving the quality of life of patients through improvement in the dynamics of the disease clinic is the main goal of disease treatment [1,2,3,4].

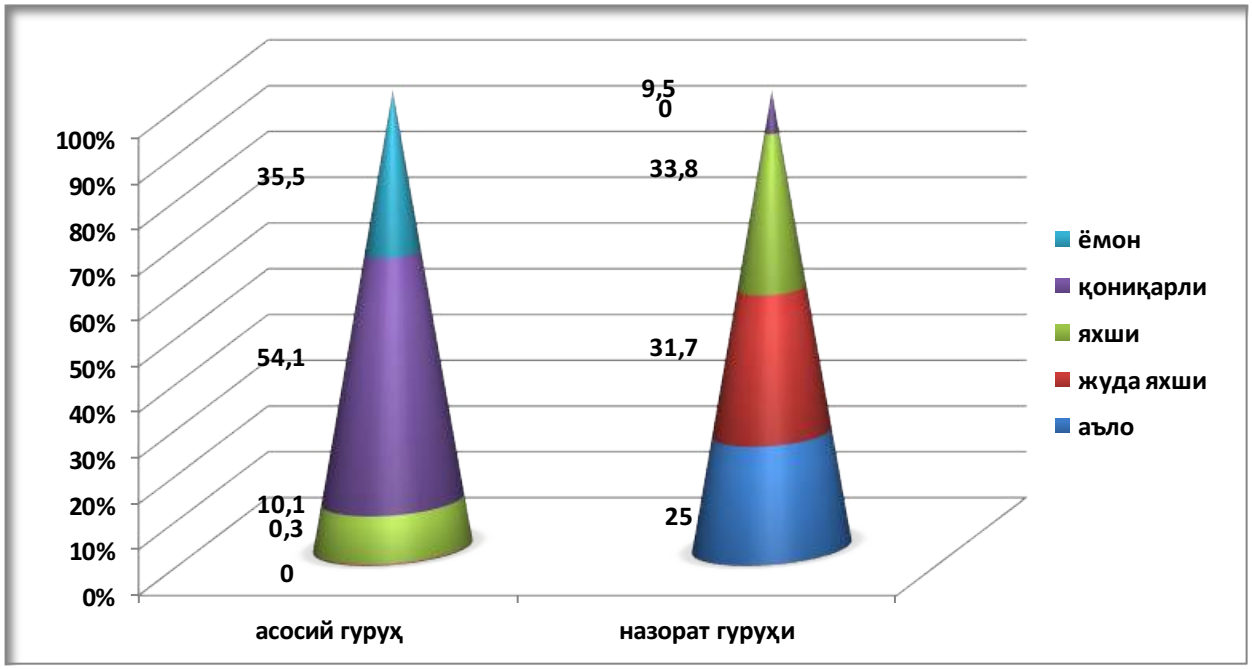
**The purpose of the work.** To study the quality of life of patients with bronchial asthma and to substantiate the role of asthma schools in improving the quality of life of patients.

## Materials and methods

A total of 400 patients with bronchial asthma (case group) and 420 individuals living in analogous conditions but not with bronchial asthma (control group) were randomly selected to study the quality of life of patients with bronchial asthma. Patients included in the sociological study accounted for 16% of the total average number of patients. The SF-36 questionnaire proposed by the World Health Organization was used to determine the quality of life of the respondents involved in the study. During the survey, special attention was paid to criteria such as physical activity of patients, general health, pain, the impact of mental and physical conditions on life activities. The survey questions provided information on the presence of bronchial asthma according to the patient's complaint, anamnesis, feature of allergological status, the presence of hereditary predisposition. Thus, a total of 1,090 individuals were screened. The survey consisted of the following sections: general information, lifestyle and conditions, work activities, daily routine, harmful habits and family attitudes, quality of life, medical knowledge and activity

## Result and discussion

The health status of asthmatics living in Tashkent was found to be relatively satisfactory (picture). In particular, 35.5% of respondents assessed the state of health as unsatisfactory (bad), satisfactory 54.1%, good 10.1%, very good 0.3%. Respondents who rated their health as excellent were not observed at all. There were no respondents in the control group who considered their health condition to be poor.




*Note: The difference between the main and control groups was r <0.001*

**Picture. The rate of self-assessment of the health status of the main and control groups (%).**

When we compared the health status of the previous year with the survey, 23.2% of patients reported a slight deterioration in their health and

2.0% a significant deterioration. In these patients, the clinical signs characteristic of bronchial asthma increased, the number of suffocation attacks increased, and the interval between attacks decreased.

Compared to the previous year, the number of patients whose health status remained unchanged was 51.2%. Compared to the previous year, the health status of patients improved by 4.0%. 6.8% of those in the control group said that their health was much better than last year, and 16.2% said that it was slightly better.

**Table 1.**

**Attitude of health status to physical exertion in the main and control groups (%)**

| Gradations | yes, it is quite disturbing | | yes, it disturbs significantly | | no, it does not disturb at all | |
|---|---|---|---|---|---|---|
| | main group | control group | main group | control group | main group | control group |
| Running, strenuous exercise | 51,6±3,2 | 5,4±1,3 | 38,8±3,1 | 16,9±2,2 | 9,6±1,9 | 77,7±2,4 |
| Some light types of exercise | 24,8±2,7 | - | 61,6±3,1 | 12,2±1,9 | 13,6±2,2 | 87,8±1,9 |
| Lighter exercises | 24,0±2,7 | 1,0±0,6 | 46.8±3,1 | 12,2± 1,9 | 29,2±2,9 | 86,8±1,9 |
| Climb up a few sections of the stairs | 27,6±2,8 | 9,5±1,7 | 59,2±3,1 | 22,6±2,4 | 13,2±2,1 | 67,9±2,7 |
| Climb to the 1st section of the stairs | 25,2±2,7 | 2,0±0,6 | 61,6±3,1 | 17,9±2,2 | 13,2±2,1 | 80,1±3,3 |
| Bending, sitting on your knees | 26,4±2,8 | - | 47,6±3,1 | 14,5±2,0 | 26,0±2,8 | 85,5±2,0 |
| Walking a distance of more than 1km | 32,0±2,9 | 8,1±1,6 | 47,6±3,1 | 27,0±2,6 | 20,4±2.5 | 64,9±2,8 |
| Walk a few quarter away | 50,4±3,2 | 2,4±0,9 | 31,2±2,9 | 15,2±2,1 | 18,4±2,4 | 82,4±2,2 |
| Walk a quarter distance | 29,6±2,9 | 1,7±0,7 | 41,6±3,1 | 15,5±2,1 | 28,8±2,9 | 82,8±2,2 |
| Independent dressing, washing | 20,4±2,5 | - | 49,2±3,2 | 9,8±1,7 | 30,4±2,9 | 90,2±1,7 |

*Note: The difference between patients and control groups was r <0.01 in all cases; r <0.001.*

The health status of the patients had a negative impact on their ability to perform tasks that required some physical effort (Table 1). As can be seen from the table, in the majority of patients some physical exertion: running, engaging in certain sports, walking long distances, climbing several steps, etc., caused significant difficulty. The ability of patients with bronchial asthma to perform certain types of exercise was 25% lower than that of the control group respondents who did not do the exercises. The physical condition of patients with bronchial asthma had a negative effect on their performance over the next 4 weeks (Table 2). As a result, in the main group, 83.2% of patients were forced to reduce the time spent on work, 76.8% did less work than they wanted, 80.8% had difficulty doing certain tasks, and 76.4% had limited physical activity. The results of the study show that the health status of patients has a negative impact on their physical activity. In particular, it was found to be more pronounced in patients with a severe course of the disease and was observed 1.6 times more often than in patients with a mild course.

According to the survey, the emotional state of the patients also made it difficult for them to perform some physical tasks.

**Table 2.**

**The negative impact of patients' physical and emotional state on their performance (%).**

| Parameters | | Physical condition | | Emotional state | |
|---|---|---|---|---|---|
| | | the main group | control group | the main group | control group |
| Reduced time spent at work | yes | 83,2±2,4 | 10,8±1,8 | 74,8±2,7 | 8,4 ± 1,6 |
| | no | 16,8±2,4 | 89,2±1,8 | 25,2±2,7 | 91,6±1,6 |
| He did less than expected | yes | 76,8±2,7 | 9,8 ± 1,7 | 42,7±3,1 | 11,8±1,9 |
| | no | 23,2±2,7 | 90,2±1,7 | 57,3±3,1 | 88,2± 19 |
| He could not do his job as he wanted | yes | 80,8±2,5 | 10,8±1,8 | 48,4±3,2 | 11,1±1,8 |
| | no | 19,2±2,5 | 89,2±1,8 | 51,6±3,2 | 88,9±1,8 |

***Note:*** *The difference between patients and control groups was r <0.01*

As a result of the emotional state, most patients were forced to reduce the time they spent working. This was observed in the main group 8.0 times more than in the control group. The emotional state of patients also had a negative impact on their relationships with those around them: family, relatives, friends. In particular, in 46.7% of patients the condition was significant, in 8.2% it was strong, in 2.4% it was very strong, in which 76% of the control group the emotional state did not affect the relationship with others, in 19.6% it was slightly adversely affected. Physical pain was one of the most common cases in bronchial asthma, with 3.2% of such patients experiencing severe pain within the next 4 weeks. Also, in 22.8% of patients from Bukhara the pain was strong, in 45.6% moderate, in 17.6% slightly weak, and in 6.4% the pain was very weak. 5% of patients did not feel any physical pain at all for the next 4 weeks. In the control group, the feeling of not feeling physical pain at all was 57.8%. In the rest, the pain was noted to be in some cases and very mild in nature.

The disease also affected the mood of patients. Depressed mood was observed in the majority of patients due to frequent outbreaks of the disease (Table 3). In particular, 78.2% of the patients in the study did not feel well at all during the next 4 weeks in the main group, and 79% in the control group.

**Table 3.**

**Distribution of health of main and control groups according to their effect on mood (%).**

| Gradations | Mostly | | Sometimes | | Once | |
|---|---|---|---|---|---|---|
| | the main group | control group | the main group | control group | the main group | control group |
| to feel refreshed | 2,4 | 79,0 | 19,4 | 20,2 | 78,2 | 0,8 |
| strong nervousness | 49,2 | 25,1 | 49,2 | 37,1 | 1,6 | 37,8 |
| feeling very depressed | 42,8 | 12,6 | 54,4 | 39,8 | 2,8 | 47,6 |
| to feel calm, at peace | 27,8 | 74,3 | 62,4 | 25,7 | 9,8 | 0 |
| a sense of fullness of power | 1,8 | 75,4 | 32,8 | 19,9 | 65,4 | 4,7 |
| feeling sad | 41,2 | 10,1 | 52,0 | 62,8 | 6,8 | 27,0 |
| feeling of pain | 35,6 | 15,9 | 58,4 | 55,4 | 6,0 | 28.7 |
| feeling of happiness | 31,6 | 79,0 | 62,8 | 19,6 | 5,6 | 1,4 |
| feeling tiredness | 49,2 | 24,4 | 43,2 | 58,8 | 7,6 | 16,8 |

***Note:*** *The difference between patients and control groups was r <0.01*

It was also found that feelings of pain, fatigue, and extreme depression were 60% more common in the main group. Among the patients in the main group, the feeling of happiness, the feeling of fullness of strength, the feeling of feeling refreshed were recorded at very low rates compared to the control group. These cases, of course, indicate that patients'quality of life is not good. After the survey, patients came to the following conclusions about their health. 45.2% of patients consider themselves more susceptible to the disease than others. 40.4% said their health was not worse than others. 44.8% of patients are concerned about the possibility of deteriorating health. 80,7% of those in the control group said they were in good health after the survey. An

analysis of the study results showed that physical and social activity was higher in the control group (individuals without bronchial asthma).

In order to further improve allergology services and increase the physical and social activity of the population, increase the level of knowledge of specialists in this field, the Ministry of Health of the Republic of Uzbekistan on September 3, 2008 adopted Order No. 393 "On further improvement of allergology services", "School of Allergy and Asthma" was established. The center has developed legal regulations and, based on the approved program, conducts trainings on the quality of life and prevention of patients with bronchial asthma, helping clients to master the skills that allow them to work on themselves, to fully control the disease.

Classes at this asthma school are conducted individually and in groups, and lectures are given by leading scientists and researchers in the field. This allows each client who attends the session to receive important medical information and share ideas with others.

"Asthma School" – implementation of anti-disease measures in cooperation with doctors, nurses, patients and clients, continuous cooperation with the attached medical staff, knowledge of the doctor about his client, ability to help him in cases of depression and anxiety, effective treatment of the disease in treatment helps the client and his relatives to achieve the intended goal by having medical knowledge about the disease. At the same time, the "Asthma School" helps to teach patients with bronchial asthma the skills of self-care, self-assessment and prevention of complications during a stroke. Bronchial asthma requires clients to approach a drug program long, sometimes without breaks, and responsibly.

"Asthma School" classes are designed to keep patients and clients from becoming overwhelmed by their own problems and depression, and to ensure that their lives are not judged to the last day, but are a way of life.

**Conclusions**

1. The health status of patients with bronchial asthma suggests a negative impact on their physical activity. In the majority of patients, some physical exertion: running, engaging in certain sports, walking long distances, climbing several steps, etc., caused significant difficulty.

**2.** The disease has affected the mood and emotional state of patients. 78.2% of patients in Tashkent did not feel refreshed at all for the next 4 weeks. As a result of the emotional state, most patients were forced to reduce the time they spent working.

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# MODERN FEATURES OF EPIZOOTOLOGY AND EPIDEMIOLOGY RABIES INFECTION

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✓ ***Resume***

***There are given results of modern epidemiological and epizootological characteristics of Rabies in Uzbekistan. As revealed, range of infecting and unhealthy points spreaded unequally by regions. It was high in Tashkentcity, Samarkand, Kashkadarya, Tashkent region and Karakalpagistan Republic.***

***Key words: rabis infection, hydrophobia, epizootiology, epidemiology***

# СОВРЕМЕННЫЕ ОСОБЕННОСТИ ЭПИЗООТОЛОГИИ И ЭПИДЕМИОЛОГИИ БЕШЕНСТВО

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✓ ***Резюме***

***Приведены результаты анализа изучении современных эпидемиологических и эпизоотологических характеристик бешенства в Узбекистане. Отмечено, неравномерное распределение уровня заболеваемости бешенством и числа неблагополучных по бешенству пунктов. Эпидемиологические наиболее неблагополучными регионами являются г. Ташкент, Самаркандская, Кашкадарьинская, Ташкентская области и Республика Каракалпакстан.***

***Ключевые слова: бешенство, гидрофобия, эпизоотология, эпидемиология***

# ҚУТУРИШ ЭПИЗООТОЛОГИЯСИ ВА ЭПИДЕМИОЛОГИЯСИНИНГ ЗАМОНАВИЙ ХУСУСИЯТЛАРИ

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✓ ***Резюме***

***Ўзбекистонда қутуришнинг замонавий эпидемиологик ва эпизоотологик хусусиятларининг натижалари келтирилган. Тадқиқот натижаларига кўра, республикамиз вилоятларида касалланиш даражасини нотекис тарқалганлигини кўрсатди. Тошент шаҳри, Самарқанд, Қашқадарё, Тошкент вилоятлари ва Қорақалпоғистон Республикаси эпидемик даражаси юқори худудларга киритилди.***

***Калит сўзлар: қутуриш, гидрофобия, эпизоотология, эпидемиология***

## Relevance

Rabies is a viral encephalitis with the highest mortality rate of any infectious disease. The pathogens belong to the Lyssavirus family, which is closely related in genome structure and phylogeny. In recent years, new genetically independent lyssaviruses have been identified: Aravan (ARAV), Khujand (KNUV), Western Caucasus (WCBV), Irkut (IRKV), Lleid (LLBV) and Africa (Ikoma (IKOV)) in the Eurasian region., but their epidemiological significance in the transmission of diseases is not fully understood [1,2].

Rabies exists as two epidemiological types: the urban type of rabies is spread by unvaccinated domestic animals, dogs and cats, and the natural

type is spread mainly by wild animals - foxes, wolves, bats, rodents and other animals [3,4].

The susceptibility of all types of domestic and wild animals to diseases, their extreme danger to humans determine the social and economic significance of rabies and attract the attention of veterinary, medical science and practice [5,6]. Despite the fact that rabies has been closely monitored by researchers for a fairly long period of time and significant progress has been made in the study of its nature over the past decade, it still remains a serious problem for many countries of the world.

According to the World Health Organization (WHO, 2010), rabies is still one of the most dangerous infectious diseases, in 85 countries of the world more than 3 billion people are at high risk of contracting rabies, and 50,000 to 55,000 people die each year . in a world 8 million people are treated with post-exposure therapy (PED). Of these, 35,000-45,000 (over 90%) are in the Asian continent, mainly in India. (WHO, 2013). Child mortality is 30-50% of the total. In addition, due to the high cost of such measures as post-exposure treatment, diagnostic and epidemiological surveillance of humans, vaccination of domestic animals and management of wildlife populations, rabies is a serious economic loss for many countries of the world [5,6,7]. JSST (2009) reports that rabies ranks fifth among infectious diseases in terms of economic damage [7].

The polymorphic parasitic system is unique to survival theory based on modern ecological concepts. The rabies virus (rabies virus) is found almost everywhere in the wild. The main host in the circulatory system of the pathogen is the participation of wild carnivores: the red fox ( Vulpes vulpes ) in Europe, the arctic fox ( Alopex lagopus ) as the main source in the northern regions; Potential new sources in Europe are amphibians - hematophages - vampires - nocturnal mountain lizards ( Eptesicus serotinus ) or city dogs ( Canis familis ) [7,8,9]. In all cases of rabies in non- carnivores and humans, the infectious disease has a biologically “closed street” [8].

The risk of this zoonotic disease to humans and animals has not decreased, and in recent years it has become more common in wild and domestic populations in various geographic areas. Worldwide, rabies kills more than 2 million animals per year [8,9]. Active human intervention in the development of natural resources, the development of agriculture and the process of urbanization have made significant changes in the area of natural foci of infectious diseases, the composition and number of animal species involved in epizootics. These processes lead to qualitative changes in natural and anthropogenic foci of the disease, which in turn affects the modern epidemiological and epizootic characteristics of rabies.

Wild animals are the main source of rabies infection. According to [10,11], in the last decade, the source of the pathogen in many economically developed countries was mainly foxes, and rabies among foxes’ spreads from the central part of the European continent [9,10].

Today, the region with the highest rates of rabies among the so-called " super reality " foxes in central Europe stretching from the Baltic Sea coast up to Yugoslavia and Bulgaria, the length of 2000 km and 400 km wide (mainly Poland, Slovakia and Hungary) [9, 10.11].

The epizootological situation in the " super real " and adjacent territories is characterized by the following indicators: in 2002, 10 051 cases of rabies were registered in Europe, of which 809 were in Belarus, 1549 were in Ukraine, 1854 were in the Baltic States, and 3089 were in Russia. ; Of the 2501 cases (24.9%) observed in the rest of Europe (excluding Turkey), 113 were reported in Slovakia, 160 in Hungary, 501 in Croatia and 1,188 in Poland (78.4%).

The current situation with rabies infection in the Americas is very complex and constantly changing. Rabies epizootics are mainly observed among raccoons, foxes, lizards and coyotes. In the United States, bats play an important role in the transmission of rabies.

In recent years, the United States has seen an increase in rabies epizootics among raccoons. In 2005, there were 7,881 cases of rabies in animals in the United States, according to the CDC, of which 92% were naturally occurring rabies, of which 50% were in raccoons. In 2007, the incidence of rabies in the United States increased by 19.4% compared to 2006. Epizootics among raccoons continued to expand, with epizootics reaching 19 states and the District of Columbia to date. There is also an increase in the incidence of rabies in bats (an increase of 29.3% compared to 2006) [11]. Currently, the most difficult rabies situation in the world remains in Asia, where dogs are the main source of rabies. In Asia, rabies is the most common cause of death in the world. The annual death rate in Asia is about 40,000, the majority of whom are in India [11,12]. When 869 animal-injured patients were analyzed, the proportion of cows, horses, pigs, camels and monkeys, other than dogs and cats, among people bitten by humans increased. In fact, these animals can also carry rabies infection [12].

Epizootic among dogs persists in a number of countries in Asia, Africa and Latin America. According to the World Health Organization (WHO, 2002), rabies virus is still present in dogs in more than 80 countries around the world. In these countries, more than 4 million people are exposed to rabies protection every year, and more than 30,000 people die from dog bites.

In Latin America, 70% of animals infected with rabies are dogs. Canine rabies is prevalent in Argentina, Bolivia, Brazil, Venezuela, Guatemala, Honduras, Costa Rica and Chile. Between 2009 and 2011, 3,500 people sought medical attention for animal bites in São Bernardo do Campo, Brazil. Of these, 87.6% are bites, 4.5% are cats and 7.9% are injuries from other animals [12].

On the African continent, rabies infection is especially common in the northern, western and central regions. In countries such as Algeria, Egypt, Mauritania, Morocco, Mali, Nigeria and South Africa, dog bites accounted for more than 80% of local population access to rabies care. For example, in the city of Bangui (JAR) in 2009, rabies virus was isolated from 62 dogs, and 1,320 people reported an outbreak of rabies due to dog bites [11,12].

In the past, China was a country with a high incidence of rabies. An estimated 108,412 people died of rabies in China between 1950 and 2004. Outbreaks of rabies in this condition recur every 10 years due to the increasing population of dogs and extremely low rates of vaccination against them (Wu X. et al. 2009).

Currently, the rabies situation in the Commonwealth of Independent States (CIS) is described as a natural epizootic. New foci of rabies infection have arisen due to the increased migration of wild animals. Russia, Ukraine, Belarus, Kazakhstan, Kyrgyzstan and Uzbekistan are currently involved in natural rabies epizootics [11,12].

In Central Asia and the Caucasus, as well as in the southern regions of Kazakhstan, along with natural foci, anthropogenic foci of canine rabies have been identified [13].

Every year in the Russian Federation, the veterinary service detects rabies in 3-5 thousand animals. In addition, more than 15,000 foxes, wolves, raccoon dogs and other predators die in natural foci of infection without any fear. Every year more than 400,000 people in the country need rabies vaccination due to animal injuries [12,13].

Foxes remain the main source of the virus in almost all affected areas of the country, accounting for 90% of wildlife rabies cases in 2009. In 2008, 85 epizootic foci, 1168 cases of disease and death of animals were registered on the territory of the Russian Federation. Apparently, outbreaks are concentrated in the Urals, the Volga region and the Central Black Earth region. In 2009, the number of epizootic outbreaks in these epidermarkets increased to 1240, and the incidence - to 1879. In 2010, there was a decrease in rabies epizootics in the Volga and Urals regions, which is associated with a three-year frequency of natural epizootics [13].

According to industry experts, 26 people were diagnosed with rabies in the Russian Federation in 2005–2007, and between 2,000 and 5,000 cases of rabies were reported among wild and domestic animals. Since the infection is widespread, it is a serious problem for the country's health system [13].

Large stationary furnaces are being formed in southwestern Russia. Over a 25-year period (1992-2017), 163 laboratory-confirmed foxes were registered in the Moscow region of the Russian Federation, which indicates the superiority of the epizootic significance of these animals.

The incidence of farm animals in 2006-2011 It was 740 cases, in 2012 - 401, in 2014 - 298 cases.

The high incidence of persistent diseases in animals and the increase in the number of people seeking help for rabies control indicate that inadequate organizational and preventive measures against this very dangerous zoonosis are not being taken properly.

According to many authors [14], 2008-2011. In the Russian Federation, there is a very difficult situation with rabies among animals. In recent years, the number of outbreaks of unhealthy rabies has increased significantly. In 2012 alone, the incidence of rabies among animals in the Moscow region increased from 240 to 253. According to the authors, in 2008-2012, 6 people died from rabies in the Moscow region.

The epizootic situation in the republics of Buryatia and Tyva is of particular interest. For example, in the Republic of Buryatia, where rabies has not been observed at all since 1981, 13 cases of wild and domestic diseases were registered in 2011. In February 2012, 5 cases of the disease were detected among cattle. It was found that the isolated virus isolates are genetically related to the Mongol strains, which, in turn, indicates that the virus was introduced from Mongolia by wild animals [14].

In the Ural region of the Russian Federation, especially in the districts of the Orenburg region bordering Kazakhstan, natural rabies is widespread , mainly in foxes and corsac. The epizootic and epidemiological situation of rabies is deteriorating in the Russian Republic of Bashkortostan. For example, from 1992 to 2006, 850 cases of wildlife diseases were identified in the country. While foxes, raccoon dogs, wolves, badgers and corsacs were most commonly involved in rabies epizootics, foxes were the main

source of the rabies virus [41; with. 98-100]. In Belarus, carriers of the disease are mainly wild animals, which account for 49.8% of all reported cases of rabies. Of these, 86.8% were foxes, 13.2% were raccoon dogs, as well as wolves and badgers [14].

Along with the republics of the Caucasus, an increase in the incidence of rabies was observed in the republics of Central Asia and the Republic of Kazakhstan, which accounted for from 41% to 53% of all registered cases.

Natural outbreaks of rabies, mainly among foxes and stray dogs, have been reported in the Chita region of Russia, Eastern Siberia and the Far East [14], in Uzbekistan, Tajikistan and Turkmenistan, but anthropogenic outbreaks remain active in the Central Asian republics.

In recent years, the incidence of rabies among the residents of Kazakhstan in the Central Asian republics has been growing due to an increase in epizootics of wild, agricultural and domestic animals. In the South Kazakhstan region, 65% of all cases registered in the Republic of Kazakhstan over the past 7 years were registered [16]. According to other sources, more than 40,000 animal bite victims seek rabies treatment annually, with 54 deaths from rabies between 1994 and 2000. In 2000-2005, 14 cases of the disease were detected in humans, and in 2006-2013 - 60 cases. According to the authors, 65% of cases occurred in the South Kazakhstan region. The growth of rabies among wild animals and the spread of stray dogs and cats in settlements led to a sharp deterioration in the situation [16].

The latest scientific research on rabies in the Republic of Uzbekistan was carried out in the late 90s of the last century. It was between 1994 and 2000, when R. While Sultanov studied the modern features of the organization of medical care for rabies in 1985-1994 and the state of epidemiological control, U.M. Usmanov (2001) in the field of social hygiene conducted a study of the socio-economic aspects of the epidemic process in rabies and the coordination of measures to combat it (on the example of the city of Tashkent and the Tashkent region) [13, 17]. After 1996, this topic was not considered at all in the field of epidemiology.

According to available data, the incidence of rabies in large horned animals and dogs in the Republic of Uzbekistan is mainly recorded in mountainous, foothill, semi-desert regions and reed thickets [13,17]. In the population of foxes living on the territory of the republic, there is a constant increase in the incidence once every 3-4 years. Rabies was found in 18 species of wild mammals - 7 species in predators, 8 species in rodents and 3 species in bats. The intensification of rabies epizootic in gray rats in some areas has led to an increase in morbidity among large horned animals. In recent years, there has been an increase in natural rabies foci. Against this background, the formation of anthropogenic foci, supported by dogs and cats, is associated with the impact of the growing process of urbanization. [17].

V. P. According to Sergius, the experience of the developed capitals and cities today, shows the need to ensure the removal of homeless and stray dogs in the cities [18]. Cats are also involved in the cycle of infectious diseases only sporadically, do not participate in the circulation of the pathogen, serve as a biological "closed street" and have a low epidemiological significance. However, among other animals prone to the disease, cats are the second most important risk group after dogs.

In turn, in the republics of Central Asia, the main disease occurs in certain regions. For example, in Uzbekistan, the highest rates of human rabies are in the Kashkadarya region and Karakalpakstan; In Kyrgyzstan - in the Osh region; In Tajikistan - in the Kurgan-Tepe region; In Kazakhstan, it was recorded in the South Kazakhstan region. An acute rabies epidemiological situation has been reported in neighboring Tajikistan. For example, in 2004 there were 15 patients in the republic, and in 2005 - 12 (0.2 per 100 thousand of the population) [18, 19].

According to the data, in 1991-2002, 329 cases of human infection were registered on the territory of the Republic of Uzbekistan. According to the authors, most of them are epidemiologically unfavorable territories for rabies - Samarkand, Kashkadarya, Surkhandarya, Jizzakh, Tashkent regions and the Republic of Karakalpakstan.

The main reason people get rabies is because they do not have enough information about the high risk of contracting the disease after animal injuries and that the disease always ends in tragedy.

One of the reasons for which rabies is still endemic in many parts of the world, lies in the fact that the majority of wild and domestic animals are infected with the rabies virus. The spread of rabies infection is also influenced by its constant transformation.

It should be noted that over the past almost 20 years, scientific research on the epidemiology of rabies in the Republic of Uzbekistan has not been carried out, and the epizootological and epidemiological analysis of the disease has no scientific basis.

Economic problems impede effective rabies control in almost all countries, including Uzbekistan, but there are also a number of scientific problems that need to be addressed in the near future. First of all, it is the development of cheap and effective vaccines for the successful fight

against rabies not only in domestic animals, but also in wild animals. There is also a need to better understand the mechanism by which different strains of rabies virus spread and survive in different animal populations.

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# STUDIES OF HELMINTHOSIS IN CHILDREN WITH HERPETIC STOMATITIS

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✓ ***Resume***

***The in the work under study analyzes helminthosis in children with herpetic stomatitis according to the data of the children's dental clinic and determines the relationship of oral cavity diseases with intestinal helminthic invasion. During the study period, 106 sick children with mild and moderate forms of acute herpetic stomatitis were treated.***

***Keywords: herpetic stomatitis, helminthiases, children***

# ИЗУЧЕНИЯ ГЕЛЬМИНТОНОСИТЕЛЬСТВА ПРИ ГЕРПЕТИЧЕСКОМ СТОМАТИТЕ У ДЕТЕЙ

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✓ ***Резюме***

***В работе анализируется гельминтоз у детей с герпетическим стоматитом по данным детской стоматологической поликлиники и определяется взаимосвязь заболеваний полости рта с кишечной глистной инвазией. За исследуемый период пролечено 106 больных детей с легкой и среднетяжелой формами острого герпетического стоматита.***

***Ключевые слова: герпетический стоматит, гельминтозы, дети.***

# БОЛАЛАРДА ГЕРПЕТИК СТОМАТИТДА ИЧАК ГИЖЖА КАСАЛЛИГИНИ УЧРАШИ

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✓ ***Резюме***

***Илмий изланиш давомида болаларнинг стоматология клиникасида герпетик стоматит билан касалланган беморларда гельментоз таҳлиллари олиб борилиб, оғиз бўшлиги касалликларининг ичак гелментик инвазияси билан алоқаси аниқланади. Илмий ўрганиниш даврида ўткир герпетик стоматитнинг енгил ва ўртача шакллари бўлган 106 та бемор бола даволанади.***

***Калит сўзлар: герпетик стоматит, ичак гижжа касаллиги, болалар.***

## Relevance

One of the most widespread human infectious diseases is herpesvirus infection. Its clinical manifestations are extremely diverse. Primary infection with herpes simplex virus (HSV) is usually seen in early-age children and is most often asymptomatic. As a result of primary infection, by the $4^{th}$ - $7^{th}$ day, virus-neutralizing and complement-binding antibodies appear in the blood serum, reaching maximum values after 2-3 weeks, but they are not able to eliminate the virus from the body. Here takes place "colonization" of neurons of sensitive cranial or spinal ganglia by viruses, which determines lifelong persistence of viruses in the body. Henceforth, it is possible to develop recurrence of infection with frequency depending on state of immunity and presence of factors that activate HSV.

Manifestation of primary herpetic infection is more often acute herpetic stomatitis (AHS). The virus remains in the body for the whole life. Children who have undergone AHS become carriers of the virus or suffer from recurrent herpetic stomatitis. Acute herpetic stomatitis is one of the most widespread clinical forms of herpetic infection in children. This disease is widespread in children from 6-month up to 3-year-old age, which is associated with disappearance of antibodies received from their mother through placenta at this age, and immaturity of their own immunity. Anatomical and physiological features of mucous membrane during this age period

(abundant vascularization, thin epithelium, deficiency of secretory IgA, lysozyme, etc.) play important role in development of herpes infection with localization in the oral cavity. Herpetic stomatitis, like other diseases in children with reduced immunity, may be accompanied by helminthiases or can be more severe against their background [1,2,6].

At the present day, we know about 300 helminthiases, but the leading place - up to 90% in the invasion is occupied by enterobiasis, ascariasis - 7.4%, trichocephalosis - 1.5%, toxocariasis, etc. Most of the infested are children, to be more correctly children at the age of 2 to 7 years old. This is due to re-infection (reinvasion) because of unstable personal hygiene habits, as well as protective barriers not formed in the child and with low-level stomach acidity. In combination with other mechanisms of pathogenic effect of protozoa and helminths, including mechanical damage to the mucous membranes of gastrointestinal tract, impaired digestion, absorption, development of intestinal dysbiosis, decreased IgA secretion, increased permeability of mucous membranes for macromolecules and allergens, etc [3].

Data of recent studies show high prevalence of parasitosis among children with allergic dermatosis (up to 69.1%), leading place among which is giardiasis (78.5% of all) invasions. Giardiasis in a child can proceed under the guise of numerous diseases, therefore its detection and prevention distribution is a complex problem in pediatrics [4, 5].

**Objective of this research** is to analyze infection with intestinal helminths (helminthosis) and pathogenic protozoa as concomitant disease in children with acute and recurrent herpetic stomatitis, as well as to assess clinical response to etiotropic therapy.

## Materials and methods

During our research, we did an analyzis helminton carriage as a concomitant disease in children with acute herpetic stomatitis who had outpatient treatment in a children's dental clinic. During the research period there were treated 206 children with mild and moderate forms of acute herpetic stomatitis. To identify helminths, we used traditional macro and microhelminthological methods. Parasitological examination included three coprovations with an interval of 2-3 days. Stool samples were collected in Turdyev's preservative. In case of negative coproscopy results, a modified Ritchie el al concentration method was used. Additional examination was performed in patients 4 and 8 weeks after completion of etiotropic therapy prescribed after the diagnosis of parasites. Additional examination was performed in patients 8 weeks after completion of etiotropic therapy prescribed after the diagnos is of parasites. By age, children of the younger age group, under 3-year-old age children were more ill with acute herpetic stomatitis. In a laboratory study of feces for eggs of worms and in lamblia, in 88 cases, there were found various types of worm infestations, amount of which reached up to 83% of all treated children. Patients under medical supervision are divided into two groups. Groups I-II included children at the age of 1 to 3 years old (43 patients with mono and 45 sick children with mixed invasion). Among the patients, male children prevailed, i.e., 62% and 71% respectively. Diagnosis was based on the detailed research of outpatient medical history and results of clinical examination. Complex method of treatment was carried out after receiving results of examination, including antiviral therapy in combination with anthelmintic therapy. Treatment efficiency was assessed by repeated examination after completion of course of therapy. Patients and their parents were informed about the routes of intestinal parasite infection and the importance of hygiene. All patients received information leaflets about prevention of intestinal helminthiasis. Evaluation of clinical efficacy of antiviral treatment and elimination of parasites was carried out after the completion of etiotropic therapy, as well as dispensary observation 4 and 8 weeks after therapy. Clinical effectiveness of therapy in children with herpes infection was assessed by the complete disappearance of inflammatory changes in the oral cavity. There were observed no negative clinical effects.

## Result and discussion

Results and discussion from the anamnesis revealed the frequent and long-term course. Herpetic stomatitis in patients of 2nd group was higher than in group 1. As a result of the study of helminthosis in children, following were most often found: enterobiasis (66.7%), ascariasis (12.2%), giardiasis (11%), hymenolepiasis (7%), including mixed invasions (51%).

Etiotropic therapy led to the elimination of parasites in all sick children, groups I and II. Apparently, certain role was played by: strict

adherence to the drug use regimen, as well as familiarizing each infected person with the ways of infection with intestinal parasites and herpetic stomatitis.

Also, elimination of parasites gave the best results in patients infected with hymenolipedosis and giardiasis: complete recovery was noted, respectively, in children with most acute sickness, as well as absence of recurrence of herpetic recurrent stomatitis. As a result, positive clinical effect with concomitant hymenolepiasis and giardiasis was observed in 94% and 82% of patients. Results of our research allow us to conclude that there is a relationship between diseases of oral cavity with disorders of various parts of gastrointestinal tract, which is due to morphofunctional unity of digestive system.

Results obtained indicate a positive clinical response to antiparasitic therapy, infected with parasites, indicates the role of helminths and G. lamblia in development and course of acute stomatitis. Based on the data obtained, it is possible to recommend inclusion of parasitological examination in acute stomatitis. Despite the progress of medical science, we see prevalence of parasitic helminthic diseases until now. Diagnostic difficulties contribute to the long-term persistence of helminthiases and parasitoses in the body, which lead to non-specific manifestations.

**Conclusion**

In order to increase effectiveness against the background of treatment of acute herpetic stomatitis in detection of intestinal helminthiasis, antiparasitic therapy contributes to get a positive result.

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# NON-INVASIVE LUNG VENTILATION IN ACUTE RESPIRATORY FAILURE CAUSED BY NEW CORONAVIRUS INFECTION COVID-19

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✓ ***Resume***

***Relevance. Treatment of acute respiratory distress syndrome caused by coronavirus infection remains an urgent problem in the world community.***

***Objective of the study: Improving the results of treatment of patients with acute respiratory failure by differentiated use of non-invasive ventilation methods.***

***Material and methods: In the intensive care unit of the Zangiot infectious diseases hospital No. 1 from 08.2020 to 11.2020, 124 patients with COVID-19 and complicated acute respiratory failure were examined, of which 68 were men and 56 women. The male to female ratio was 4: 3. The patients' age is from 67 to 87 years. (average age 60.8 ± 4.8).***

***The patients were divided into three groups depending on the type of respiratory therapy.***

***As a result of the study, the tidal volume (TO) was 319.59 ± 7.74 ml in the CPAP mode and 329.47 ± 7.15 ml in the DUAL-LEVEL mode. On the third day, DO increased by 18.8% in CPAP mode and by 23.2% in DUAL-LEVEL mode. In phase III of the study, DO increased in both groups and increased to 521.31 ± 13.83 ml in the CPAP mode and to 583.77 ± 15.37 ml in the DUAL-LEVEL mode, that is, in the DUAL-LEVEL mode, the DO was by 10 , 6% higher than in CPAP mode.***

***Conclusion: Both modes of non-invasive pulmonary ventilation give positive clinical results, improve indicators of central hemodynamics, normalize blood gas composition and parameters of external respiration. In this case, DUAL-LEVEL mode is much more effective than CPAP mode.***

***Key words: COVID-19, acute respiratory failure, non-invasive ventilation, external respiration.***

# НЕИНВАЗИВНАЯ ВЕНТИЛЯЦИЯ ЛЕГКИХ ПРИ ОСТРОЙ ДЫХАТЕЛЬНОЙ НЕДОСТАТОЧНОСТИ, ОБУСЛОВЛЕННОЙ НОВОЙ КОРОНАВИРУСНОЙ ИНФЕКЦИЕЙ COVID-19

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✓ ***Резюме***

***Актуальность. Лечение острого респираторного дистресс-синдрома, вызванного коронавирусной инфекцией, остается актуальной проблемой в мировом сообществе.***

***Цель исследования: Улучшение результатов лечения больных с острой дыхательной недостаточности путём дифференцированного применения неинвазивных методов вентиляции.***

***Материал и методы: В отделении реанимации инфекционной больницы Зангиота №1 с 08.2020 по 11.2020 года обследовано 124 пациента с COVID-19 и осложненным острой дыхательной недостаточностью, из них 68 мужчин и 56 женщин. Соотношение мужчин и женщин было 4:3. Возраст пациентов от 67 до 87 лет. (средний возраст 60,8 ± 4,8).***

***Пациенты были разделены на три группы в зависимости от вида респираторной терапии.***

***В результате исследования дыхательный объем (ДО) составил 319,59 ± 7,74 мл в режиме CPAP и 329,47 ± 7,15 мл в режиме DUAL-LEVEL. На третий день ДО увеличился на 18,8% в режиме CPAP и на 23,2% в режиме DUAL-LEVEL. В фазе III исследования ДО увеличился в обеих группах и увеличился до 521,31 ± 13,83 мл в режиме CPAP и до 583,77 ± 15,37 мл в режиме DUAL-LEVEL, то есть в режиме DUAL-LEVEL ДО был на 10,6% выше, чем в режиме CPAP.***

***Вывод: Оба режима неинвазивной легочной вентиляции дают положительные клинические результаты, улучшают показатели центральной гемодинамики, нормализуют газовый состав крови и параметры внешнего дыхания. В этом случае режим DUAL-LEVEL намного эффективнее, чем режим CPAP.***

***Ключевые слова: COVID-19, острая дыхательная недостаточность, неинвазивная вентиляция легких, объем дыхания, внешнее дыхание.***

# ЎТКИР НАФАС ЕТИШМОВЧИЛИГИ БИЛАН АСОРАТЛАНГАН ЯНГИ КОРОНАВИРУС ИНФЕКЦИЯСИ COVID-19да НОИНВАЗИВ ЎПКА ВЕНТИЛЯЦИЯСИ

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✓ ***Резюме***

***Долзарблик. Дунё ҳамжамиятида коронавирус инфекцияси оқибатида келиб чиққан ўткир респиратор дистесс синдромини даволаш долзарб муаммо бўлиб қолмоқда.***

***Тадқиқотнинг мақсади: ноинвазив ўпка вентиляциясини қиёсий қўллаш орқали ўткир нафас етишмовчилиги бўлган беморларни даволаш натижаларини яхшилаш.***

***Материаллар ва усуллар: 1- сонли Зангиота юқумли касалликлар шифохонасининг реанимация бўлимида 08. 2020 дан 11. 2020 йилгача COVID-19га чалинган ва ўткир нафас етишмовчилиги билан асоратланган 124 та беморда илмий тадқиқот олиб борилди, улардан 68 нафари эркаклар ва 56 нафари аёллар. Эркаклар ва аёлларнинг нисбати 4:3 ни ташкил қилди. Беморлар 67 ёшдан 87 ёшгача эди. (ўртача ёш 60,8±4,8 ни ташкил қилди).***

***Хулоса: Ноинвазив ўпка вентиляциясининг ҳар иккала режими ижобий клиник натижалар беради, марказий гемодинамика кўрсаткичларини яхшилайди, қоннинг газ таркиби ва ташқи нафас олиш кўрсаткичларини меёрлаштиради. Бунда DUAL-LEVEL режими CPAP режимига қараганда анча самаралироқдир.***

***Калит сўзлар: COVID-19, ўткир нафас етишмовчилиги, ноинвазив ўпка вентиляцияси, нафас ҳажми, ташқи нафас.***

## Relevance

The number of patients with infection complicated by severe acute respiratory syndrome caused by coronavirus-2 (SARS-CoV-2) is growing steadily all over the world [1,2], including in Uzbekistan. The new coronavirus infection, dubbed COVID-19, is characterized by a severe course and a high mortality rate [3, 4]. The most common complication of COVID-19 is viral pneumonia, which leads to the development of acute respiratory distress syndrome and acute respiratory failure (ARF), which in most cases requires the appointment of oxygen therapy and respiratory support [5,6].

The study in recent decades of generally accepted methods of artificial respiration has revealed their adverse effects on some vital functions of the body, in particular on central hemodynamics, pulmonary and peripheral circulation.

The most important task in the treatment of ARF is to ensure adequate tissue oxygenation to prevent tissue dysfunction and the development of multiple organ failure. For this it is extremely important to maintain the partial pressure of oxygen in arterial blood (PaO2) within the normal range (95 - 98%). In this regard, it seems significant to use non-invasive ventilation (NVL), which allows RP without tracheal intubation [7].

NVL allows you to safely and effectively achieve unloading of the respiratory muscles, restoring gas exchange and reducing dyspnea. During NVL, the patient-respirator relationship is carried out using nasal or face masks, the patient is conscious and, as a rule, the use of sedative and muscle relaxants is not required. Mask ventilation allows to reduce to a minimum the number of infectious and "mechanical" complications of RP and at the same time to effectively improve gas exchange and reduce the load on the respiratory apparatus [7,8].

NVL is not expensive, is well tolerated by patients and is a more comfortable procedure than conventional ventilation. However, attempts to determine the role and place of NVL in patients with ARF are very few. The results obtained are very contradictory; moreover, in the literature there are various opinions about the effect of NLV on hemodynamics, blood gas composition and external respiration in patients with ARDS, depending on the clinical course of the disease.

**Objective of the study:** To improve the results of treatment of patients with acute respiratory failure by differentiated use of non-invasive ventilation methods.

## Material and methods

In the intensive care unit of ZIB No. 1 from 08.2020 to 11.2020. under our supervision there were 124 patients with COVID-19 complicated by ARF, of which 68 were men and 56 were

women. The ratio of men and women was 4: 3. Patients were aged 67 to 87 years. (average age 60.8 ± 4.8 years).

The patients were divided into three groups depending on the ventilation mode. Group 1 consisted of 40 atients who underwent traditional methods of treating patients with COVID-19, oxygen therapy through Venturi masks. Group 2 included 42 patients who, together with traditional methods of treatment, underwent non-invasive ventilation in (Constant Positive Airway Pressure – CPAP) mode. 42 patients of group 3, in contrast to the second, underwent DUAL-LEVEL mode, i.e. generally recognized Bilevel positive airway pressure - BiPAP regimen.

All three groups were representative in terms of key indicators. Group 1 included 21 (52.5%) men and 19 (47.5%) women, group 2 included 29 (69%) men and 13 (30.9%) women, and third group 30 (71.4%) men and 12 (28.5%) women ($p > 0.05$).

At the age of 40 to 50 there were 20 (16.1%) patients, from 51 to 60 years - 35 (28.2%), from 61 to 70 years - 43 (34.6%), over 71 years 38 (30.6%). Most of the patients were between 61 and 70 years of age. The average age of patients in the main group was 60.8 ± 4.83 years, in the control group - 60.3 ± 3.28 years, $p > 0.05$ ($t = 0.11$, $p > 0.05$).

The diagnosis of COVID-19 in all patients was made based on the results of general clinical and laboratory-instrumental research methods (fever, cough, fatigue, shortness of breath, headaches, palpitations, sore throat, runny nose, decreased sense of smell and taste, confirmation of PCR analysis of COVID- 19.). On admission, all patients studied the level of D-dimer, CRP, ALT, AST, coogulograms and, indicators of CHD, blood saturation and external respiration.

Clinical manifestations of ARF were: shortness of breath, diffuse diffuse cyanosis and acrocyanosis, tachycardia, fever.

Treatment included antibiotics, anticoagulants, antiplatelet agents, proton pump inhibitors, and symptomatic therapy. Oxygen therapy was carried out using Venturi masks under the control of SatO2 (SatO2> 90%) and arterial blood gas composition.

The function of external respiration was determined by the apparatus for respiratory support Aventa-M "Ural Instrument-Making Plant", Russia, intended for both invasive and non-invasive ventilation of the lungs (Fig. 1).

Figure: one. External view of the Aventa-M artificial ventilation apparatus and the face mask for NVL.

Respiratory volume (VT), frequency (f), minute ventilation (MV), mean airway pressure (P medium), positive airway pressure (PEEP), compliance (C), airway resistance (R), oxygen fraction were determined in the inhaled mixture (FiO2). The parameters of external respiration were recorded at the beginning of the NVL and at the stages of the study.

NVL technique: Non-invasive ventilation of the lungs was carried out using a face mask with the same Aventa-M apparatus in CPAP and DUAL-LEVEL modes, i.e. generally recognized BiPAP regimen. (fig. 2).

The parameters of the positive airway pressure were set taking into account the generally accepted norms: in the CPAP mode, the constant positive airway pressure was from 7 to 25 cmH2O; in the DUAL-LEVEL mode, inspiration was maintained with a pressure of 25 cmH2O. Art., and a positive end-expiratory pressure (PEEP) 5-15 cm H2O. FiO2 in the inhaled mixture was selected so as to provide sufficient oxygenation of arterial blood above 94-95%. On average, FiO2 was 70%.

Inspiratory and expiratory triggers were individually selected to maximize patient respiratory comfort.

Fig. 2 General view of the patient during non-invasive ventilation.

From the moment of admission and during treatment, continuous non-invasive monitoring of systolic blood pressure (SisBP), mean arterial pressure (MAP), diastolic arterial pressure (DiasBP), HR, RR, SatO2 was carried out, and continuous ECG monitoring was performed using a heart monitor.

The indicators of external respiration were studied at the stages: I-outcome; II - on the 3rd day; III - on the 6th day of the study.

The results of the studies were processed statistically on a computer using Excel 70 programs. For each series of results, the arithmetic mean (M), standard deviation (σ), and error of the mean (m) were calculated. In addition, the median was calculated for the indicators with the wrong distribution. In tables and graphs, the results are presented as M ± m. Student's t-test was used to compare the mean values. To assess the correlation, nonparametric methods were used, in particular, Spearman's correlation analysis.

Comparative analysis of nonparametric features was carried out according to contingency tables using the ,2 criterion. In order to identify factors of independent significance, multivariate logistic regression analysis was used. The level of reliability of statistical indicators was taken as $p < 0.05$.

## Result and discussion

The state of external respiration in patients with ARF was judged by such indicators as tidal volume, respiratory rate, total tidal volume, minute ventilation of the lungs, lung compliance or compliance (compl ml / cm water column).

In patients of the 1st group, before treatment, d / o was 3.99 ± 0.03 ml / kg, the NPV as the first sign of respiratory failure reached 31.03 ± 0.42 per minute, the DO was 323.21 ± 8.59 ml, MV was at the level of 10006.31 ± 288.16 ml, compliance-compl. 22.68 ± 0.63 ml / cm water column (Table 1).

Patients in this group had all the clinical signs of ARF: shortness of breath, diffuse cyanosis. The patients were started with a standard therapeutic measure: drug treatment and oxygen therapy.

At the second stage, the indicators of external respiration were re-studied, the d / o increased to 4.45 ± 0.07 ml ($P < 0.001$), the respiratory rate decreased to 25.15 ± 0.48 per minute, i.e. by 19%, DO increased to 397.26 ± 23.01 ml ($P < 0.05$), there was an insignificant decrease in MV to 9907.54 ± 545.92 ml, ($P > 0.05$), sompl. increased to 29.66 ± 1.69 ml / cm of water column, significantly ($P < 0.05$) compared with the initial indicator.

Patients continued intensive therapy and, on the 6th, day repeated all the above studies to determine the parameters of external respiration (Table 1). d / o increased to 5.37 ± 0.06 ml / kg ($P < 0.001$), NPV decreased to 22.68 ± 0.42 per minute, significantly compared with the initial value and the second stage. The DO increased significantly to 481.08 ± 27.48 ml, significantly compared to the initial state and the previous stage.

Minute ventilation of the lungs increased to 10916.69 ± 671.45 ml, i.e. by 8.3%. Compl increased to 37.31 ± 2.10 ml / cm of water column, significantly compared with stages I and II.

Study of the saturation of xylene in the blood, i.e. saturation (SatO2) showed that in patients of the 1st group in the initial state oxygenation was at a low level. Subcompensated respiratory acidosis was noted. One of the most important indicators of the state of the respiratory function is SatO2, this indicator 3 days after the start of traditional therapy in patients of the 1st group

significantly increased by 3% from the initial one.

Thus, in patients with ARF who took traditional therapy, there is an increase in d\o, D\O, sompl., Most pronounced on the 6th day from the start of therapy.

**Table 1.** Respiratory function indicators in patients of the control group

| Index | Research phase | | |
|---|---|---|---|
| | initial | 3-rd day | 6-th day |
| t/v, ml/kg | 3,99±0,03 | 4,45±0,07*** | 5,37±0,06*** |
| respiratory rate per minute | 31,03±0,42 | 25,15±0,48*** | 22,68±0,42*** |
| Tidal volume, ml | 323,21±8,59 | 397,26±23,01* | 481,08±27,48** |
| MV, мл | 10006,31±288,16 | 9907,54±545,92 | 10916,69±671,45 |
| compl., ml/sm вwater column | 22,68±0,63 | 29,66±1,69* | 37,31±2,10*** |

*Note * P <0.05. ** p <0.01. *** p <0.001. compared to the original state.*

Table 2 shows that before treatment in patients of this group, d / o was 3.95 ± 0.03 ml / kg, on the 3rd day after the start of therapy in the Constant Positive Airway Pressure-CPAP mode, this indicator significantly increased to 4.88 ± 0.08 ml (p <0.001.), and on the 6th day 6.43 ± 0.07 ml / kg, i.e. by 38.5% compared to the initial state and by 24.1% compared to the previous stage. The NPV on the 3rd day was equal to 24.29 ± 0.57 / min (before treatment 31.79 ± 0.47 / min) (p <0.001), and on the 6th day it was within the normal range.

Three days later, there was also an increase in DO from 319.59 ± 7.74 to 393.86 ± 9.52 ml. (p <0.001), and on the 6th day up to 521.31 ± 13.83 ml (P <0.001) compared with the initial state (P <0.001) compared to stage II.

On the part of MV, no significant changes were observed, which is probably associated with a decrease in NPV despite an increase in DO. Compliance in the initial state was 22.25 ± 0.58 ml / cm of water column, after on the 3rd day 31.44 ± 0.85 (p <0.001), on the 6th day 44.90 ± 1, 27 is reliable in relation to stages I and II.

In group 2 patients, before treatment, oxygenation was at a low level: Sat O2 - 84.6 ± 0.54% against the background of hypoxia. At the second stage of the study, after the start of treatment, it showed that SatO2 increased by 6.2%. On the 6th day of the study, an increase in SatO2 was noted - by 10.4% (in control, by 7%).

**Table 2.** Respiratory function indices in patients receiving NVL in CPAP mode.

| Index | Research phase | | |
|---|---|---|---|
| | initial | 3-rd day | 6-th day |
| t/v, ml/kg | 3,95±0,03 | 4,88±0,08*** | 6,43±0,07*** |
| respiratory rate per minute | 31,79±0,47 | 24,29±0,57*** | 20,69±0,31*** |
| Tidal volume, ml | 319,59±7,74 | 393,86±9,52*** | 521,31±13,83****^ |
| MV, ml | 10140,3±278,6584 | 9552,7±312,2 | 10838,5±377,3 |
| compl., ml/sm вwater column | 22,25±0,58 | 31,44±0,85*** | 44,90±1,27*** |

*Note * P <0.05: * * - p <0.01. *** p <0.001. compared to the original state.*

When comparing the indicators of patients in groups 1 and 2 (Table 3), it was found that in the CPAP - d / o group it was 16.4%, the NPV was 8.7% higher than in patients receiving traditional therapy. On the part of MV, no significant changes were noted.

**Table 3.** Respiratory function indices in patients receiving traditional therapy (numerator) and NLV in CPAP mode (denominator).

| Parameters | Groups | initial | 3-rd day | 6-th day |
|---|---|---|---|---|
| t/v, ml/kg | 1-gr. | 3,99±0,03 | 4,45±0,07*** | 5,37±0,06*** |
| | 2-gr. | 3,95±0,03 | 4,88±0,08*** | 6,43±0,07***^ |
| respiratory rate per minute | 1-gr. | 31,03±0,42 | 25,15±0,48*** | 22,68±0,42*** |
| | 2-gr. | 31,79±0,47 | 24,29±0,57*** | 20,69±0,31***^ |
| Tidal volume, ml | 1-gr. | 323,21±8,59 | 397,26±23,01* | 481,08±27,48** |
| | 2-gr. | 319,59±7,74 | 393,86±9,52*** | 521,31±13,83*** |

| | | | | |
|---|---|---|---|---|
| MV, ml | 1-gr. | 10006,31±288,16 | 9907,54±545,92 | 10916,69±671,45 |
| | 2-гр. | 10140,3±278,6 | 9552,7±312,2 | 10838,5±377,3 |
| compl., ml/sm | 1-гр. | 22,68±0,63 | 29,66±1,69* | 37,31±2,10*** |
| вwater column | 2-гр. | 22,25±0,58 | 31,44±0,85*** | 44,90±1,27***^ |

*Note * P <0.05: ** p <0.01. *** p <0.001. compared to the original state.*

Tidal volume compared with the control increased by 7.71% ((Fig. 3.9), comp. by 16.9%.

Thus, in patients with ARF who took CPAP therapy, there is a more significant increase in tidal volume, total tidal volume, and lung compliance, which indicates the effectiveness of this NVL regimen.

In group 3 patients, before treatment, oxygenation was at a low level - SatO2 - 83.4 ± 0.50%, which indicates severe respiratory failure. On the 3rd day after the onset of NVL in the DUAL-LEVEL mode, an increase in SatO2 by 9.2% was observed.

At stage III, SatO2 increased by 13%, significantly compared with the baseline and stage 2 of the study.

Table 4 shows that in patients with ARF who received NLV in the DUAL-LEVEL mode on the background of traditional therapy, the d / s in the initial state was 4.0 ± 0.03 ml / kg; on the 3rd day after the start of therapy, the d / o increased to 5.2 ± 0.04 ml, (p <0.001), and on the 6th day, 7.07 ± 0.09 ml / kg, i.e. by 43.4% of the original data. The NPV in the initial state was 32.00 ± 0.31 per minute, which confirms the presence of respiratory failure, on the 3rd day it decreased to 22.24 ± 0.31 per minute (p <0.001), on the 6th day it was within normal limits values -19.62 ± 0.22 min.

**Table 4.** Respiratory function indices in 0 patients who received conventional therapy and NVL in the DUAL-LEVEL mode.

| Parameters | Research phase | | |
|---|---|---|---|
| | initial | 3-rd day | 6-th day |
| t/v, ml/kg | 4,0±0,03 | 5,2±0,04*** | 7,07±0,09*** |
| respiratory rate per minute | 32,00±0,31 | 22,24±0,31*** | 19,62±0,22*** |
| Tidal volume, ml | 329,47±7,15 | 429,38±10,43*** | 583,77±15,37*** |
| MV, ml | 10545,1±245,67 | 9586,1±298,68* | 11469,04±343,5** |
| compl., ml/sm вwater column | 23,01±0,54 | 35,07±0,86*** | 52,24±1,34*** |

*Note * p <0.05: ** p <0.01. *** p <0.001. compared to the original state.*

Three days after the start of therapy, the DO increased to 429.38 ± 10.43 ml (p <0.001), i.e., by 23.2% on the 6th day to 583.77 ± 15.37 ml, or by 43.5% of the initial and 26.4% of stage II. On the part of minute ventilation of the lungs, no significant changes were observed in stage II, only at stage III there was a significant increase in MV (p <0.01).

Comp. in the original was 23.01 ± 0.54 ml / cm. water column, after three days 35.07 ± 0.86 (p <0.001), at stage III 52.24 ± 1.34 (P <0.001 compared with the initial state; P <0.001 - compared with stage II).

Thus, in patients who received NVL in the DUAL-LEVEL mode, the d / o was 24% higher, and the respiration rate was 13.4% lower than in patients receiving traditional therapy. On the part of minute ventilation of the lungs, no significant changes were registered.

As for DO, on the 6th day after the start of therapy, it increased to 583.77 ± 15.37 ml (P <0.001), i.e. by 43.5%. compared with the initial state and by 26.4% compared with stage II. The preschool education at the II stage increased by 17.3%, at the III stage - by 14.1%.

In the groups that received respiratory support, NVL was successful in 86.6% of patients. In these patients, when using NVL, resolution of DN phenomena was observed, and subsequently they were transferred to spontaneous breathing.

Ineffectiveness of NVL was noted in 20 patients, signs of ineffectiveness of NVL were a decrease in PaO2 below 60 mm Hg, blood saturation up to 70%, an increase in PaCO2 more than 50 mm Hg. and hemodynamic instability, in connection with this NVL was discontinued and the patients were transferred to mechanical ventilation in the IPPV mode.

In the control group, in 16 cases against the background of traditional therapy, no decrease in DN was observed, and then they were transferred to absolute indications of mechanical ventilation and ventilated in the IPPV mode. In the same group of the environment who received mechanical ventilation, only one patient was extubated due to an improvement in the parameters of the blood gas composition and indicators of central hemodynamics. The duration

of mechanical ventilation in the surviving patient was 1 day.

In order to assess the effectiveness of NVL regimens, we carried out a comparative analysis of external respiration indicators. Table 4.3 shows that the d / o in the examined patients before treatment was below normal values - respectively 3.95 ± 0.03 and 4.0 ± 0.03 ml / kg. Three days later, there was a significant increase in d / o in both modes (P <0.05), and significant changes were found between the groups (P <0.05). On the 6th day, there was a significant increase in d / o by 38.5% in the CPAP mode and by 43.4% in the DUAL-LEVEL mode (Table 5).

The NPV in patients with ARF was higher than normal values - 31.79 ± 0.47 in the CPAP mode and 32.00 ± 0.31 in the DUAL-LEVEL mode, respectively. After three days, there was a decrease in NPV in both groups within 22-24 min (P <0.05). Already on the 3rd day, the NPV reached normal values: up to 20.69 ± 0.31 per minute in the CPAP mode and 19.62 ± 0.22 in the DUAL-LEVEL mode. There was a significant decrease in both groups, the value of this indicator in comparison between the groups was significant (P <0.05).

**Table 5.** Respiratory function indices in patients with ARF who received NVL in CPAP (numerator) and DUAL-LEVEL modes (denominator)

| Показатель | Groups | initial | 3-rd day | 6-th day |
|---|---|---|---|---|
| t/v, ml/kg | 2-gr. | 3,95±0,03 | 4,88±0,08*** | 6,43±0,07*** |
| | 3- gr | 4,0±0,03 | 5,2±0,04***^ | 7,07±0,09***^ |
| respiratory rate per minute | 2- gr. | 31,79±0,47 | 24,29±0,57*** | 20,69±0,31*** |
| | 3- gr | 32,00±0,31 | 22,24±0,31***^ | 19,62±0,22***^ |
| Tidal volume, ml | 2- gr. | 319,59±7,74 | 393,86±9,52*** | 521,31±13,83**** |
| | 3- gr | 329,47±7,15 | 429,38±10,43***^ | 583,77±15,37***^ |
| MV, ml | 2- gr. | 10140,3±278,6 | 9552,7±312,2 | 10838,5±377,3 |
| | 3- gr | 10545,1±245,67 | 9586,1±298,68 | 11469,04±343,5** |
| compl., ml/sm вwater column | 2- gr. | 22,25±0,58 | 31,44±0,85*** | 44,90±1,27*** |
| | 3- gr | 23,01±0,54 | 35,07±0,86***^ | 52,24±1,34***^ |

*Note * P <0.05: ** p <0.01. *** p <0.001. ^ compared to the original state.*

As a result of the research, it was found that the DO in the CPAP mode was 319.59 ± 7.74 ml, in the DUAL-LEVEL mode it was 329.47 ± 7.15 ml. On the 3rd day, TO increased by 18.8% in CPAP mode and by 23.2% in DUAL-LEVEL mode. At stage III of the study, both groups showed an increase in tidal volume up to 521.31 ± 13.83 ml in CPAP and up to 583.77 ± 15.37 ml in DUAL-LEVEL mode, i.e. in the DUAL-LEVEL mode, the DO was 10.6% higher than in the CPAP mode (Fig.4.4).

Minute ventilation of the MV lungs in both modes did not lead to significant changes at all stages of the study (P> 0.05).

As you know, the value of compliance depends on the volume of air in the lungs. In our studies, compliance in the initial CPAP mode was 22.25 ± 0.58 ml / cm H2O, in the DUAL-LEVEL mode 2323.01 ± 0.54 ml / cm H2O. On the 3rd day from the start of treatment, there was a significant increase in this indicator in both groups (P <0.05), there was a significant difference between the groups. When treating patients with both modes at stage III, a significant increase in compliance was recorded up to 44.90 ± 1.27 ml / cm H2O. in CPAP (p <0.001) and 52.24 ± 1.34 ml / cm water column. (p <0.001) in DUAL-LEVEL mode.

In the initial state, in patients with ARF, external respiration parameters were below normal (except for NPV); during treatment with the CPAP and DUAL-LEVEL regimens, there was a significant increase in P / C, DO, compliance and NPV. There were no significant changes on the part of MV.

## Output

Thus, the comparative analysis of gas composition disturbances in patients with ARF who received NVL in the CPAP and DUAL-LEVEL modes showed that in the initial state the patients have blood gas disturbances and a decrease in SatO2. After treatment with

traditional therapy in combination with NLV in the CPAP and DUAL-LEVEL modes, the patients showed an improvement in blood oxygenation, but when comparing both modes, it was found that DUAL-LEVEL is somewhat more effective than CPAP.

The parameters of external respiration in patients with ARF in the initial state were lower than normal values (except for NPV). In the course of treatment in the CPAP and DUAL-LEVEL modes, there was a significant increase in d / c, DO, compliance. There were no significant changes on the part of MV.

Consequently, both NVL regimens give positive clinical results: the indicators of central hemodynamics, blood gas composition and external respiration improve. In this case, the DUAL-LEVEL mode is more effective than CPAP.

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# TO STUDY THE PREVALENCE, MEDICO-SOCIAL ASPECTS OF IN THE BUKHARA

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✓ ***Resume,***

***This article defines the prevalence, medical and social aspects of vitiligo in the Bukhara region. Our goal was to collect all available data on the prevalence of vitiligo in the general population, with a focus on children/adolescents and adults.***

***Key words: vitiligo, axromiya, melanosytorrhagiya, oxidative stress***

# ИЗУЧИТЬ РАСПРОСТРАНЕННОСТЬ, МЕДИКО-СОЦИАЛЬНЫЕ АСПЕКТЫ ВИТИЛИГО В БУХАРСКОЙ ОБЛАСТИ

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✓ ***Резюме***

***В этой статье определены распространенность, медико-социальные аспекты витилиго в Бухарской области. Нашей целью было собрать все доступные данные о распространенности витилиго среди населения в целом, уделяя особое внимание детям/подросткам и взрослым.***

***Ключевые слова: витилиго, ахромия, меланоциторрагия, окислительный стресс***

# BUXORO VILOYATIDA VITILIGONING TARQALISHI, TIBBIY-IJTIMOIY ASPEKTLARINI O'RGANISH

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✓ ***Resume***

***Ushbu maqola vitiligo kasalligining Buxoro viloyatida tarqalishi, tibbiy va ijtimoiy aspektlarini o'rganadi. Bizning maqsadimiz bolalar, o'spirinlar va kattalarga e'tiborni qaratgan holda umumiy aholi orasida vitiligoning tarqalishi bo'yicha mavjud barcha ma'lumotlarni to'plash edi.***

***Kalit so'zlar: vitiligo, axromiya, melanositorragiya, oksidlovchi stress***

## Relevance

Vitiligo is a skin disease characterized by achromic patches (white) on the skin or mucous membranes that affects 0.5–2% of the population. Few publications are devoted to the epidemiological profile of vitiligo worldwide.

There are several hypotheses for the pathogenesis of diseases - genetic, autoimmune, neurohumoral, oxidative stress, melanocytorrhagia, autocytotoxic, convergent [1,9].

Oxidative stress may play a role in the pathogenesis of vitiligo. The damage to melanocytes in vitiligo may be associated with generalized oxidative stress [2].

The chronic, progressive course of vitiligo, caused by the activity of the immune system and stimulated by neuro-vegetative imbalance, is directly related to the psychological reaction of the individual to the presence of a cosmetic defect [3]. According to the majority of experts, the leading role in the damage to melanocytes and the disruption of melanogenesis in the skin of vitiligo patients is given to autoimmune mechanisms [4].

Based on the generalized literature data, the authors focus on the relationship of vitiligo with disorders of various parts of the nervous system, leading to damage and degeneration of melanocytes [5].

The link between vitiligo and thyroid disease has been proven in adult patients [9]. Vitiligo is a complex psychosomatic disease, and on the other hand, it is a pronounced cosmetic defect [1].

**Objective**

To study the prevalence of medical and social aspects of vitiligo in the Bukhara region.

The prevalence, some medico-social and clinical aspects of vitiligo, which will make it possible to develop a plan of treatment and prevention measures.

**Material and methods**

When performing the study, general clinical, epidemiological, clinical and statistical research methods were used. Epidemiological examination of the population in 6 regions of the Bukhara region to identify the prevalence of vitiligo, the study of their medical and social aspects. In this regard, we carried out similar studies in 6 regions of the Bukhara region. In total, 3112 people aged 5 to 78 years were examined, including 1650 men (53%), 1462 women (47%) (Table 1.1).

**Table 1.**

The proportion of patients with vitiligo in the general structure of skin diseases in Bukhara region

| Indicators | Total | By gender | |
|---|---|---|---|
| | | men | women |
| Total surveyed | 3112 | 1650 | 1462 |
| Number of skin patients | 631 | 328 | 303 |
| The number of patients with vitiligo | 49 | 26 | 23 |
| In relation to all surveyed, % | 1,6 % | 1,58 % | 1,57 % |
| In relation to skin diseases, % | 7,8 % | 7,9 % | 7,6 % |

**Result and discussion**

As can be seen from the presented material, the incidence of skin pathology in the Bukhara region was 631 people (20.3%), of whom there were 328 men, 303 women. Vitiligo was detected in 49 people out of the total surveyed. Its frequency was 1.6% in relation to all surveyed and 7.8% in relation to the total number of skin diseases. We did not reveal any gender differences in the frequency of occurrence: vitiligo was noted in 26 (53%) men and 23 (47%) women. Analysis of the prevalence of skin and subcutaneous tissue pathologies by districts showed some prevalence in Bukhara, Zhondar, Karakul and especially in Romitan districts: 20.1%, 20.0%, 22.3% and 25.3%, respectively, while in Gijduvan district and Peshku district, the frequency was 17.4% and 16.9%.

**Table 2.**

The number of the surveyed population and the identified skin diseases in the districts of the Bukhara region

| Districts, regions | Total number of examined | Discovered skin diseases | | Including vitiligo | | Women | Men |
|---|---|---|---|---|---|---|---|
| | | абс. | % | абс. | % | | |
| Gijduvan | 535 | 93 | 17,4 | 8 | 1,49 | 4 | 4 |
| Peshku | 526 | 89 | 16,9 | 7 | 1,33 | 4 | 3 |
| Bukhara | 531 | 107 | 20,1 | 10 | 1,88 | 4 | 6 |
| Jondar | 520 | 104 | 20 | 7 | 1,34 | 3 | 4 |
| Karakul | 510 | 114 | 22,3 | 11 | 2,15 | 5 | 6 |
| Romitan | 490 | 124 | 25,3 | 6 | 1,22 | 3 | 3 |
| Total | 3112 | 631 | 20,3 | 49 | 1,6 | 23 | 26 |

The analysis of the frequency of detection of vitiligo by area differed slightly from the total number of skin diseases.

Table 3 shows the results of the analysis of the distributions of the incidence of skin pathology by nosologically forms.

**Table 3.**

Frequency of nosologically forms of skin and subcutaneous tissue pathology

| Nosology | Total | % |
|---|---|---|
| Atopic dermatitis | 82 | 13,0 |
| Vulgar and rosacea | 66 | 10,4 |
| Mycosis of the feet | 60 | 9,5 |
| Psoriasis | 51 | 8,1 |
| Vitiligo | 49 | 7,8 |
| Versicolor and pink lichen | 33 | 5,2 |
| Trichophytosis | 30 | 4,7 |
| Polymore photodermatosis | 29 | 4,6 |
| Lichen planus | 23 | 3,6 |
| Scabies | 22 | 3,5 |
| Limited neurodermatitis | 21 | 3,3 |
| Keratoderma | 19 | 3,0 |
| Photodermatitis | 18 | 2,9 |
| Seborrheic dermatitis | 18 | 2,9 |
| Dry streptoderma | 18 | 2,9 |
| Sycosis | 15 | 2,4 |
| Alopecia areata | 11 | 1,7 |
| Nodular pruritus | 11 | 1,7 |
| Plantar warts | 11 | 1,7 |
| Discoid lupus erythematosus | 8 | 1,3 |
| Focal scleroderma | 6 | 0,95 |
| Spiny lichenoids | 5 | 0,79 |
| Darier's disease | 3 | 0,47 |
| Mucosal candidiasis | 3 | 0,47 |
| Other skin conditions | 19 | 3,0 |
| Total: | 631 | 100 % |

So, if in Romitan, Peshku, Zhondar and Gijduvan districts it was detected in 1.22%, 1.33%, 1.34% and 1.49% of the surveyed, then in Bukhara district it increased to 1.88%, and in Karakul - up to 2.15%. The revealed differences are apparently due to the peculiarities of climatic, industrial and agricultural production. We did not reveal any sharp sex differences in the regions.

As can be seen from Table 3, out of 631 patients with skin diseases: atopic dermatitis was noted in 82 (13%), acne vulgaris - in 66 (10.4%), mycosis of the feet - in 60 (9.5%), psoriasis - in 51 (8.1%), vitiligo - in 49 (7.8%), polymorphic photo dermatosis - in 29 (4.6%), photodermatitis - in 18 (2.9%), trichophytosis - in 30 (4.7%) ), lichen planus - in 23 (3.6%), scabies - in 22 (3.5%), limited neurodermatitis - in 21 (3.3%), seborrheic dermatitis - in 18 (2.9%), dry streptoderma - in 18 (2.9%), versicolor - in 17 (2.7%), sycosis - in 15 (2.4%), lichen rosacea - in 16 (2.5%), alopecia areata - in 11 (1.7%), nodular prurigo - in 11 (1.7%), plantar warts - in 11 (1.7%), keratoderma - in 19 (3.0%), discoid lupus erythematosus - 8 (1.3%), limited scleroderma - in 6 (0.95%), prickly lichenoid - in 5 (0, 79%), rosacea - in 4 (0.63%), Darier's disease - in 3 (0.47%) and mucosal candidiasis - in 3 (0.47%). Parapsoriasis, ichthyosis, cheilitis, senile keratoma, aphthous stomatitis were noted in 2 cases.

The analysis of the age qualification of patients with vitiligo showed the predominance of adults. So, it was revealed in 40 (81.6%) adults and only in 9 (18.4%) children. With the distribution of patients with vitiligo by age, it was noted that this dermatosis suffered from up to 5 years 1 patient (2%), from 6 to 14 years old - 8 (16.3%), from 15 to 20 years old - 13 (26.5%), from 21 to 30 years old - 11 (22.5%), from 31 to 40 years old - 7 (14.3%), from 41 to 50 years old - 4 (8.2%), from 51 to 60 years old - 3 (6.1%) patients, 60 and older - 2 patients (4.1%).

The development of depigmentation of certain areas of the skin causes various socio-psychological changes in patients. Therefore,

most of them hide their illness and carry out treatment intermittently, inconstantly.

However, it should be said that early treatment in specialized clinics can yield successful results. Therefore, in our research, we paid special attention to the appearance of the first signs of the disease.

In our observations, the appearance of the first signs of the disease before the age of 5 years was noted by only 1 (2%) patient, from 6 to 10 years - in 4 (8.1%), from 11 to 15 years - in 16 (32.6%) , from 16 to 20 years old - in 11 (22.4%), from 21 to 30 years old - in 7 (14.3%), from 31 to 40 years old - in 5 (10.2%), from 41 to 50 years - in 4 (8.1%) and over 51 years - in 1 (2%).

Consequently, in 32 (65.3%) patients, the first signs of the disease appeared before the age of 20. These data are consistent with the data of other scientists [6,9].

It is important to study the causes that contribute to the development of vitiligo (according to patients) (Table 4). As can be seen from Table 4, the nervous factor as the cause of the disease prevailed (26.5%) in relation to other factors. The occurrence of depigmentation with pathology of internal organs was associated with 20.4%, hereditary factor - 12.2%, intoxication - 6.1%, insolation - 10.2%, and 24.5% of patients could not indicate the cause of the disease.

**Table 4.**

Reasons leading to the development of depigmentation

| Causes | Amount | % |
|---|---|---|
| Nervous factor | 13 | 26,5 |
| Internal organs disease | 10 | 20,4 |
| Hereditary factor | 6 | 12,2 |
| Intoxication | 3 | 6,1 |
| Insolation | 5 | 10,2 |
| Couldn't indicate the reason | 12 | 24,5 |

A careful study of the anamnestic data of 49 examined patients revealed that 7 patients suffered from gastrointestinal tract pathology, 6 suffered from acute respiratory diseases and tonsillitis, 7 - viral hepatitis, 4 - measles, 2 - hypertension and 1 patient - prostatitis.

Examination by related specialists revealed concomitant pathology in 15 (40.8%) patients. 5 patients had gastritis, 1 - gastric ulcer, 2 - pyelonephritis, 2 - hypertension, 4 - thyroid pathology, 1 - discoid lupus erythematosus. In 5 (10.2%) of 49 patients, various skin diseases were found: atopic dermatitis - in 1 patient, limited neurodermatitis - in 1 patient, psoriasis - in 2, mycosis of the feet - in 1 patient.

Before the onset of the appearance of depigmented spots, 6 patients (12.2%) noted various subjective sensations. So, 4 patients had itching (8.2%), 1 (2%) - tingling and 1 (2%) - redness. Such subjective sensations have been described by other authors as well. For example, according to Yu.N. Koshevenko (2002) [46] before the appearance of vitiliginous spots, itching was noted in 5.3% of patients, tingling - in 0.7%, redness - in 1.6% and hyperpigmentation - in 0.2%.

In 30 (61.2%) of 49 patients noted that the first signs of the disease or progression of vitiliginous foci were observed in the spring or spring-summer period, while in 10 (20.4%) patients the appearance of depigmented spots was observed in the autumn-winter period ... 9 (18.4%) patients could not associate the onset of the disease with the season of the year.

The relationship between the onset of vitiligo and seasonality is apparently explained by the location of depigmented spots in open areas. In 36 (73.5%) of 49 patients, they were located in open areas (face, neck, hands, feet), and in 13 (26.5%) - in closed areas.

To assess the prevalence and medical and social aspects of vitiligo, 3112 people aged 4 to 82 years from 6 regions of the Bukhara region were examined. Of the total number of surveyed men there were 1650, women - 1462.

Studies have shown that the frequency of skin pathology among the surveyed population in Bukhara region is 20.3%. These are mainly atopic dermatitis (13%), acne vulgaris (10.3%), mycosis of the feet (9.5%), psoriasis (8.1%), vitiligo (7.8%), polymorphic photodermatosis and photodermatitis (7 , 6%), trichophytosis (4.7%), lichen planus (3.6%) and others. An analysis of the prevalence of pathologies of the skin and subcutaneous tissue by regions showed some prevalence in Bukhara (20.1%), Zhondor

(20%), Karakul fogs (22.3%) and especially in Romitan (25.3%) regions.

The frequency of detecting pathologies of the skin and subcutaneous tissue was slightly lower in Gijduvan (17.4%) and in the Peshku region (16.9%) compared to other regions.

Of the 3112 surveyed residents of the Bukhara region, 49 were diagnosed with vitiligo, which was 1.6% in relation to all surveyed and 7.8% in relation to the total number of skin diseases. There were 26 men, 23 women. We also noted some differences in the incidence of vitiligo in the districts of the Bukhara region. So, if in Romitan, Peshku, Zhondar and Gijduvan districts it was detected in 1.22, 1.33, 1.34 and 1.49% of the surveyed, then in Bukhara region it increased to 1.88%, and in Karakul region - to 2.15%.

The revealed differences are apparently due to the peculiarities of climatic, industrial and agricultural production. According to the literature, the overwhelming majority of patients with vitiligo begins before the age of 20 [16, 128]. In our studies, vitiligo was detected in 81.6% of adults and only in 18.6% of children. Moreover, adolescents (16.3%), young (49%) and mature (22.5%) ages suffered from this type of dermatoses. At the same time, the duration of the vitiliginous anamnesis varied within wide limits. So, out of the total number of cases, 22.5% of patients had a disease duration of up to 1 year, in 44.9% - from 1 to 5 years, and in 32.6% of those examined - more than 5 years. Analysis of the professional activity of patients with vitiligo showed that 36.7% of the surveyed were employees and students, and 34.7% were non-working people of working age.

In assessing the effectiveness of treatment, factors such as the age of onset of the disease and the causes of the onset of primary vitiliginal spots are important.

The analysis of the onset of the disease depending on age showed that the appearance of the first signs of the disease was noted at the age of 6 to 10 years by 8.1%, patients from 11 to 15 years old - 32.6%, from 16 to 20 years old - 22.4%, from 21 to 30 years old - 14.3%. As can be seen from the presented material, the first vitiligous spots in most patients appeared at the age of 11 to 15 years, when the production of sex hormones is activated, the menstrual function in girls is formed, secondary sexual characteristics and reproductive function of young men and the sensitivity of adolescents to stress factors increases. [3.5].

It is important to study the causes that contribute to the development of vitiligo. The analysis of the reasons in the examined patients showed that the nervous factor is in the first place for causative factors (26.5%). This seems to be due to the fact that the common substrate for the synthesis of catecholamines and melanin is the amino acid tyrosine [4]. In second place is the pathology of internal organs (20.4%), in third place is family predisposition (12.2%), only then is intoxication (6.1%) and insolation (10.2%).

It is important to note here that about ¼ of the patients were unable to indicate the cause of vitiligo spots.

Considering the important role of somatic diseases in the appearance and progression of depigmented areas, we, together with related specialists, examined all 49 patients with vitiligo. Concomitant somatic pathology was detected in 20 (40.8%) patients and skin - in 5 (10.2%).

## Conclusion

Thus, our epidemiological and medico-social studies of the population of the Bukhara region showed that the incidence of vitiligo among the population is 1.6%, and among skin diseases - 7.8%. Men and women get sick about the same (53 and 47%, respectively) and mainly between the ages of 15 and 30.

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# ROLE OF HEPATIC PATHOLOGY IN THE STRUCTURE OF MATERNAL MORTALITY BASED ON THE RESULTS OF PATHOLOGIC ANATOMICAL STUDIES

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✓ ***Resume***

***The aim of the study was to study the role of liver diseases in the structure of maternal mortality. The article presents data from 37 postmortem autopsies of pregnant women, women in labor and parturient women who died in Tashkent for the period from 2007 to 2020. In the group of direct obstetric causes of maternal mortality (MS), eclampsia / preeclampsia / HELLP-syndrome and AHH are ranked first. Eclampsia and HELLP syndrome are considered critical forms of the same pathology - preeclampsia. It was found that HELLP syndrome is characterized by widespread hepatocellular necrosis.***

***Key words: maternal mortality, HELLP-syndrome, acute fatty hepatosis of pregnant women, preeclampsia, postmortem diagnosis.***

# РОЛЬ ПЕЧЕНОЧНОЙ ПАТОЛОГИИ В СТРУКТУРЕ МАТЕРИНСКОЙ СМЕРТНОСТИ ПО РЕЗУЛЬТАТАМ ПАТОЛОГОАНАТОМИЧЕСКИХ ИССЛЕДОВАНИЙ

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✓ ***Резюме***

***Целью исследования явилось - изучить роль заболеваний печени в структуре материнской смертности. В статье приведены данные 37 патологоанатомических вскрытий беременных, рожениц и родильниц, умерших в г. Ташкенте за период с 2007 по 2020 гг. В группе прямых акушерских причин материнской смертности (МС) первое место занимают эклампсия/преэклампсия/HELLP-синдром и ОЖГБ. Эклампсия и HELLP-синдром считаются критическими формами одной патологии — преэклампсии. Установлено, что для HELLP-синдрома характерен распространенный гепатоцеллюлярный некроз.***

***Ключевые слова: материнская смертность, HELLP- синдром, острый жировой гепатоз беременных, преэклампсия, патологоанатомический диагноз.***

# PATOLOGIK ANATOMIK TADQIQOTLARNING ASOSIDA MADDALIK MORALIYASI TUZILISHIDA GEPATOTIK PATOLOGIYANING ROLI

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✓ ***Rezyume***

***Tadqiqotning maqsadi onalar o'limi tarkibida jigar kasalliklarining rolini o'rganish edi. Maqolada 2007 yildan 2020 yilgacha bo'lgan davrda Toshkentda vafot etgan homilador ayollar, tug'ruqdagi ayollar va tug'ruqdan keyingi ayollarning 37 ta o'limdan keyingi otopsi ma'lumotlari keltirilgan. Onalar o'limining bevosita akusherlik sabablari (MS), eklampsiya / preeklampsiya / HELLP- sindrom***

***va AHH birinchi o'rinda turadi. Eklampsiya va HELLP sindromi bir xil patologiyaning muhim shakllari - preeklampsiya hisoblanadi. HELLP sindromi keng tarqalgan gepatotsellulyar nekroz bilan ajralib turishi aniqlandi.***
***Kalit so'zlar: onalar o'limi, HELLP-sindrom, homilador ayollarning o'tkir yog'li gepatozi, preeklampsi, o'limdan keyingi tashxis.***

**Relevance**

The maternal mortality rate is directly related to from its structure, as it reflects the state of the service protection of motherhood and childhood, medical care in the whole.

The current maternal mortality rate is the same in Western Europe and the USA (2-10 per 100 thousand roubles. live births) [2]. The nosological structure of maternal mortality throughout the world has changed in the last decade. Earlier among causes of maternal mortality, for example, in Russia in 1st place there were obstetric bleeding (24-25%), the 2nd - preeclampsia (20-25%), the 3rd - extragenital diseases (16-18%), which varied depending on the region of the country [3-5].

Hepatic pathology in obstetrics is one of the most severe complications in pregnant women and constantly attracts the attention of researchers of various specialties. Even with a physiologically ongoing pregnancy, the functional state of the liver changes, which is expressed in a decrease in the level of albumin, antithrombin III, protein C, protein S, haptoglobin, an increase in the content of alkaline phosphatase, transferrin and bile acids. Altered liver tests occur in 3-8% of all pregnancies [8, 10]. The main causes of liver pathologies are very diverse. Traditionally, they are subdivided into pregnancy related and non-pregnancy related.

Causes of PP associated with pregnancy include:

- excessive vomiting of pregnant women;
- intrahepatic cholestasis of pregnant women;
- liver damage associated with preeclampsia;
- HELLP syndrome;
- acute fatty hepatosis of pregnant women (AGBH).

Undoubtedly, the main attention is paid to such causes of liver pathology as preeclampsia, HELLP-syndrome and AFHP, since they determine high rates of maternal and perinatal mortality, and have much in common in pathogenesis and treatment tactics. In the overwhelming majority (up to 80–90%) of cases, severe preeclampsia and HELLP syndrome are combined with each other and are considered as a whole, so we have combined them into one section [3, 8, 9].

The incidence of HELLP syndrome in the general population of pregnant women is 0.5-0.9%, and in severe preeclampsia and eclampsia, it occurs in 10-20% of cases.

**The aim of the study** was to study the role of liver diseases in the structure of maternal mortality.

**Material and methods**

The material of the study was the data of 37 postmortem autopsies of pregnant women, women in labor and parturient women who died in Tashkent for the period from 2007 to 2020. The autopsies were performed at the Republican Pathological Center of the Republic of Uzbekistan. The age of women ranged from 16 to 41 years; the average age was 26.3 ± 6.9 years. Half of the cases of maternal loss occurred in the 20-29 age group. Of the 37 women, 12 died from acute fatty hepatosis (AGBH), 6 women from HELLP syndrome and 19 women from complications of acute viral hepatitis. In the first trimester of pregnancy, 6 (7%) women died, in the second - 22 (25.6%), in the third - 41 (47.7%) and in the postpartum period - 17 (19.7%).

Autopsies of pregnant women, parturient women and parturient women were performed according to generally accepted methods (Abrikosov A.I., 1948; Medvedev I.I., 1969; Avtandilov G.G., 1994), 12-24 hours after the ascertaining of biological death. When conducting pathological studies, we adhered to the principles of a systematic approach [2, 3, 7]: the most complete autopsy, a thorough macro- and microscopic examination of the reproductive system organs with targeted study of the placental bed of the uterus, etc. Pathological diagnosis was formulated in a commission, with the participation of chief freelance pathologist's city and regional level.

Each case of maternal death was examined at treatment and control commissions, clinical and anatomical conferences and at obstetrics boards. When analyzing the causes of maternal death, in accordance with the WHO recommendations [1], only the initial causes of death were used, and groups of direct and indirect obstetric causes of MS, direct and indirect obstetric causes of MS were identified.

**Result and discussion**

When familiarizing with the numerous literature on this problem, the contradictory information on the nature of liver damage in HELLP syndrome draws attention. Some authors consider the classical morphological sign of liver damage in this pathology to be periportal or focal parenchymal necrosis with fibrin deposits in the lumen of sinusoidal capillaries, while others talk about the similarity of morphological changes in the liver in HELLP syndrome and AUHH and the impossibility of morphological differential diagnosis of these diseases. In our opinion, the differences in morphological changes in the liver in HELLP syndrome are determined by its form.

Complete HELLP syndrome is characterized by widespread hepatocellular necrosis. Macroscopically, such a liver is enlarged in size, light brown in color, variegated from the surface and on sections due to multiple, different-sized, irregularly shaped, merging subcapsular and parenchymal foci of dark red color.

Histological examination in the hepatic parenchyma reveals subcapsular, centrilobular, periportal and multilobular foci of necrosis, hemorrhages, massive deposits of fibrin in sinusoidal capillaries, plasma impregnation of arteriole walls (Fig. 1).

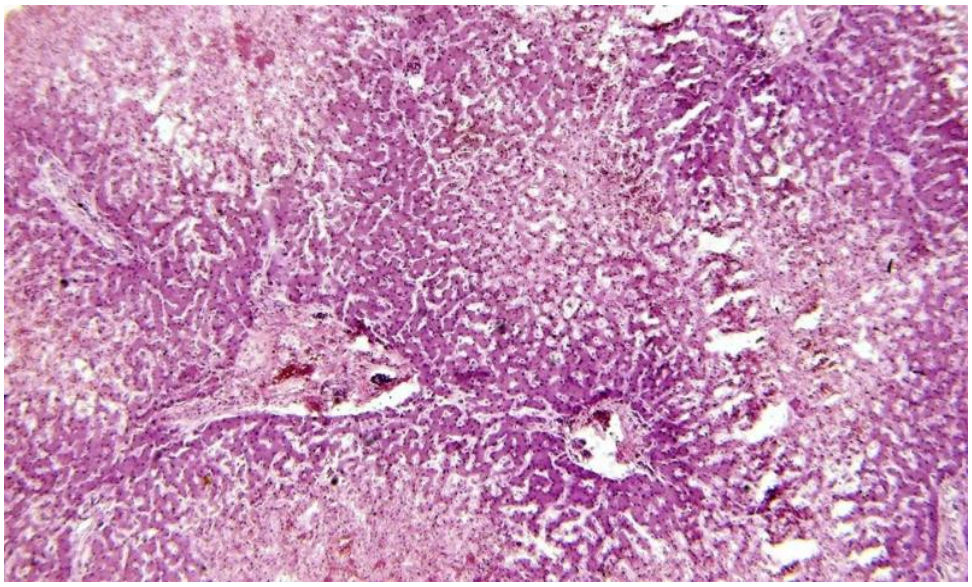

*Fig. 1 Deposits of fibrin in capillaries in HELLP syndrome.*

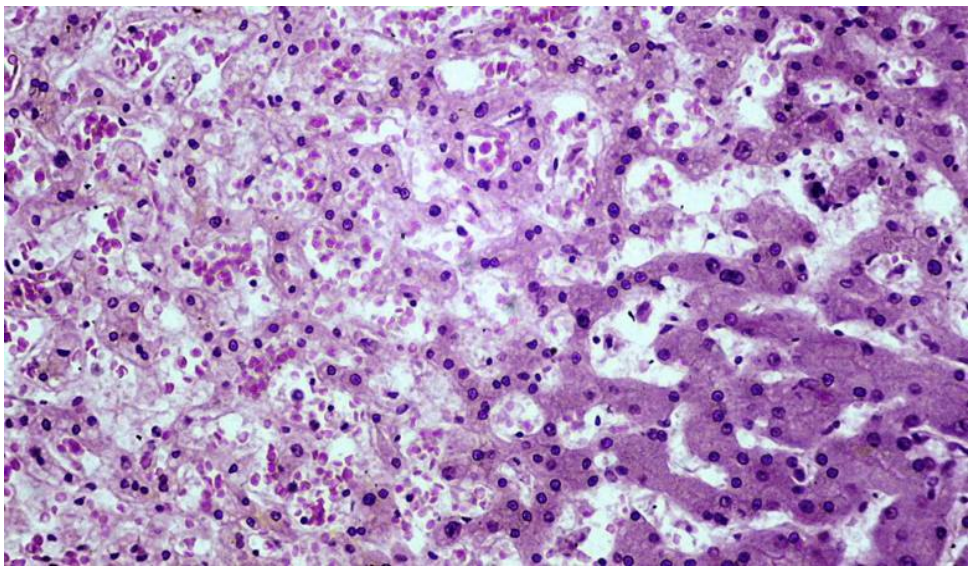

*Fig. 2. Subcapsular, centrilobular and periportal foci of necrosis.*

The nature of the morphological changes in the liver in acute fatty hepatosis has a pronounced similarity with changes in the eclampsic liver. This fact is obvious, since both eclampsia and HELLP syndrome are currently considered critical forms of one pathology - preeclampsia. In addition to liver damage, complete HELLP syndrome is also characterized by kidney damage in the form of hemoglobinuric nephrosis due to intravascular hemolysis and the presence of megakaryocytosis of the microvasculature of the lungs, which acts as a morphological marker of thrombocytopenia (Fig. 3).

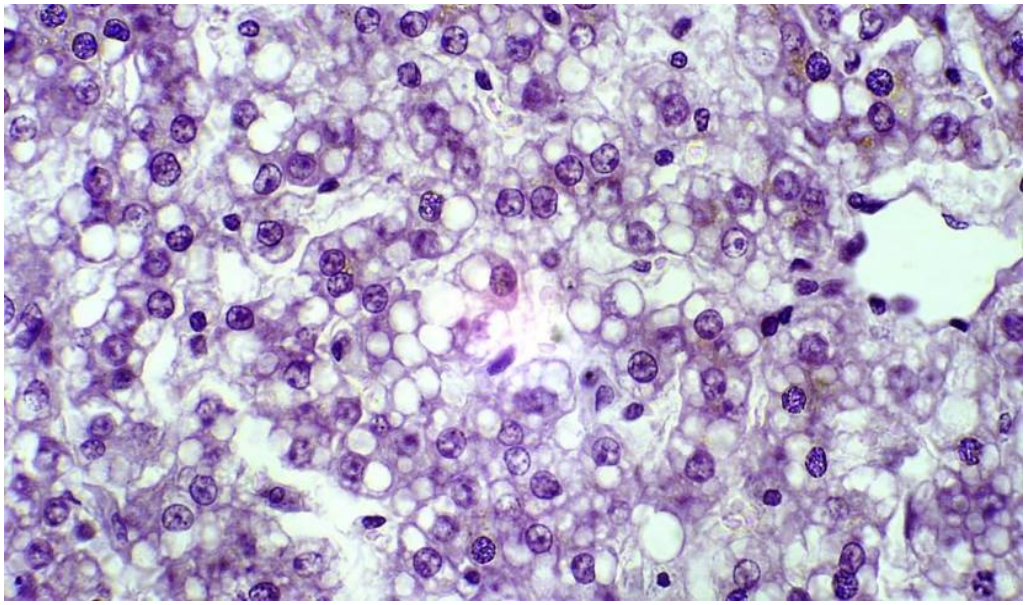

*Fig 3. Microversal liver steatosis with acute fatty hepatosis.*

Morphological changes in the liver in fatty hepatosis macroscopically, regardless of the cause that caused it, were stereotyped and characterized by an increase in the size of the liver with rounding of its edges, yellow color from the surface and on the section, and a flabby consistency (Fig. 2). On microscopic examination, fatty hepatosis was characterized either by diffuse obesity of hepatocytes, which corresponded to "goose" liver, or by uneven obesity of liver cells located mainly along the periphery of the lobules, corresponding to the histological picture of pseudo-nutmeg liver.

The lobular pattern of the structure of the liver in fatty hepatosis of the "goose" type of liver was erased, and hepatocytes with optically empty cytoplasm and the nucleus shifted to the periphery. With pseudo-nutmeg type of fatty hepatosis, the center of the lobules looked normal, and the periphery of the hepatic lobule acquired a yellowish-brownish color, as a result of which the liver looked motley. So, fatty hepatosis of the "goose" liver type was histologically typed in 14 cases, in 10 cases - as a pseudo-nutmeg liver, and in 1 case it was not related to any type of fatty hepatosis.

In the age groups from 25 to 40 years, the prevalence of cases of fatty hepatosis of the "goose" type of liver was 2, 25 times (9 cases) than of the type of pseudo-nutmeg liver (4 cases). In addition, fatty hepatosis was accompanied by perivenular fibrosis (14 cases) and mesenchymal reaction in the portal tracts (17 cases). Perivenular fibrosis was characterized by moderate, in some cases, pronounced proliferation of connective tissue fibers around the central veins of the hepatic lobules. In most cases of goose-type fatty hepatosis (10 cases), perivenular fibrosis was observed, compared with pseudo-nutmeg type (4 cases) (Fig. 4).

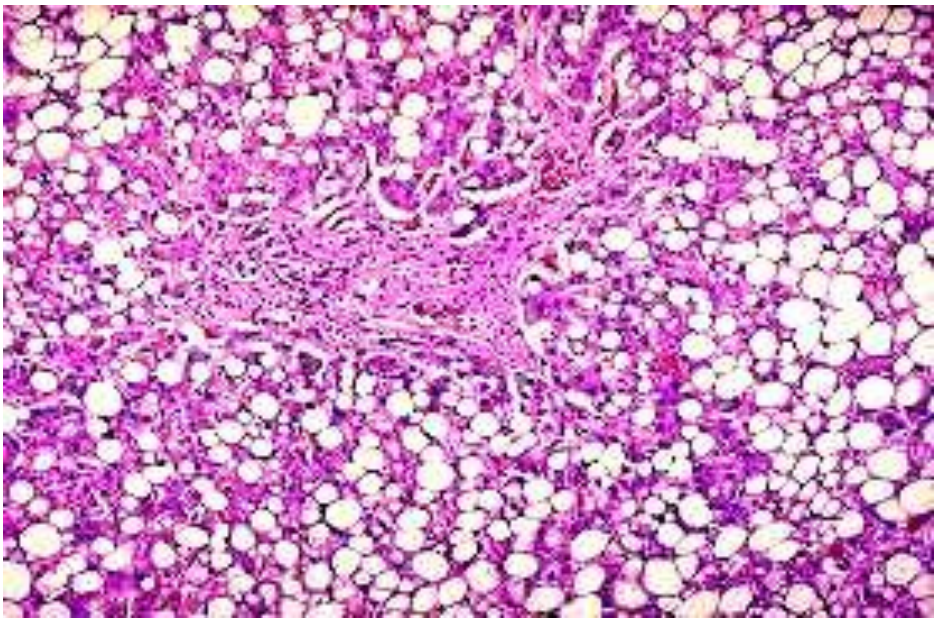

*Figure: 4. Fatty hepatosis like "goose" liver*

The initial cause of maternal death was represented by several nosological units in the form of a combined underlying disease (in the form of competing, combined, underlying and background diseases). In this regard, on the one hand, the pathologist increasingly has to experience difficulties in choosing the initial cause of death, and on the other hand, there is a contradiction between the statistical analysis of maternal mortality from a single cause and the multi-causal nature of MS in obstetric practice.

In such a situation, obtaining reliable data on the structure of maternal mortality, in our opinion, is possible only when it is analyzed for multiple reasons. In this regard, a comparative analysis of the structure of MS for single and multiple reasons has been carried out. There was no statistically significant difference in the groups ($p > 0.05$), however, when analyzing MS for multiple reasons, there was an increase in the group of "extragenital pathology" (indirect obstetric causes of MS) by two times, in the group "Preeclampsia" - by 1.9 times, and the group of "premature detachment of the normally located placenta (PONRP)" - 2.6 times.

As a result, there was a change in the causes of MS, namely: if, in the analysis for a single reason, the structure of the MS was represented by extragenital pathology — atrogenies — pre-preclampsia and amniotic embolism, then in the analysis for multiple reasons preeclampsia took second place, iatrogenia was third, and amniotic embolism was fourth. When analyzing the structure of MS in dynamics over 13 years, a clearly traced tendency towards a decrease in the share of direct obstetric causes with a simultaneous increase in the share of indirect ones was noted.

Among the indirect causes of maternal death, the main ones are: infectious diseases - their share was 36% (including viral hepatitis), diseases of the digestive system and diseases of the genitourinary system - the share of each of these groups was 14%. However, when analyzing in dynamics, a significant change in the nature of the pathology was noted over the considered period of time (13 years). In the group of direct obstetric causes of MS, the first place is occupied by eclampsia / preeclampsia / HELLP syndrome, the second place is taken by obstetric bleeding - PONRP.

**Conclusion**

During pregnancy, a number of liver pathologies are observed - associated with pregnancy or combined with it. Of these, complications of severe preeclampsia occupy the leading place. The classic liver injury associated with HELLP syndrome is periportal or focal parenchymal necrosis. With acute fatty liver disease - microversal steatosis of the liver.

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# ИНФЕКЦИОННЫЙ АНАМНЕЗ У ДЕТЕЙ И ПОДРОСТКОВ, ИЗЛЕЧЕННЫХ ОТ ЗЛОКАЧЕСТВЕННЫХ НОВООБРАЗОВАНИЙ

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✓ ***Резюме***

***Актуальность. Авторы статьи предприняли пилотное исследование, отталкиваясь от необходимости коррекции инфекционных проявлений у пациентов с онкогематологической патологией. На частоту инфекционных заболеваний оказывает влияние иммунодефицит, индуцированный опухолевым процессом, противоопухолевой терапией.***

***Целью настоящего исследования было изучение возможной специфичности инфекционного статуса пациентов онкогематологического профиля, направленных на второй этап реабилитации.***

***Материалы и методы. Исследование выполнено в лечебно-реабилитационном научном центре НМИЦ ДГОИ им. Дмитрия Рогачева. Сведения о частоте инфекционных заболеваний 2560 пациентов с кодами по МКБ: С 81-84; С 91-92; С96, Т86.0 занесены в разработанную анкету-опросник. Для расчета показателя заболеваемости в отделениях был проведен анализ по инфекционному анамнезу. Показатель заболеваемости нормировался на 100 человек.***

***Результаты. При анализе распределения показателей по критерию заболеваемости/100чел. в зависимости от профиля отделения оказалось, что максимальный показатель 67,5 ± 4,0 выявлен в отделении нейроонкологии. Статистически достоверно отличаются все пары сравнения показателей различных отделений за исключением пары, соответствующей отделениям иммунопатологии и солидных опухолей.***

***Заключение. В ходе проведенного пилотного обследования подтвердилась гипотеза о различиях в инфекционном статусе у пациентов детского возраста с различными опухолевыми заболеваниями.***

***Ключевые слова: инфекционный анамнез, дети, подростки, злокачественные новообразования, противоопухолевая терапия.***

# INFECTIOUS HISTORY IN CHILDREN AND ADOLESCENTS CURED OF MALIGNANT NEOPLASMS

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✓ ***Resume***

***Relevance. The authors of the article undertook a pilot study based on the need to correct infectious manifestations in patients with oncohematological pathology. The frequency of infectious diseases is affected by immunodeficiency induced by the tumor process, antitumor therapy. The aim of this study was to study the possible specificity of the infectious status of patients with hematological profile, sent to the second stage of rehabilitation.***

***Materials and methods. The study was performed at the medical and rehabilitation research center of the NMC dgoi. Dmitry Rogachev. Information about the frequency of infectious diseases 2560 patients with ICD codes: C 81-84; C 91-92; C96, T86. 0 are included in the developed questionnaire.***

***To calculate the morbidity rate in the departments, an analysis was performed based on an infectious history. The incidence rate was normalized per 100 people.***

***Results. When analyzing the distribution of indicators by the criterion of morbidity/100%.***

***Key words: infectious history, children, adolescents, malignant neoplasms, antitumor therapy.***

## BOLALAR VA O'SMIRLARDAGI YUQUMLI TARIX, MALIGN NEOPLAZMALARDAN DAVOLASH QILINGAN

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✓ ***Rezyume***

***Dolzarbligi. Maqolaning mualliflari onkogematologik patologiyasi bo'lgan bemorlarda yuqumli namoyonlarni tuzatish zarurligiga asoslanib, uchuvchi ish olib bordilar. Yuqumli kasalliklar insidansı o'simta jarayoni, o'simta qarshi davolash oqibatida immunitet tanqisligi ta'sir ko'rsatadi. Ushbu tadqiqotning maqsadi reabilitatsiya ikkinchi bosqichiga yo'naltirilgan onkogematologik profildagi bemorlarning yuqumli holatining o'ziga xos xususiyatlarini o'rganishdir.***

***Materiallar va usullar. Tadqiqot DGOI nomidagi NMITS davolash-reabilitatsiya ilmiy markazida amalga oshirildi. Dmitriy Rogachev. ICD kodi bo'lgan 2560 bemor yuqumli kasalliklar chastotasi haqida ma'lumot: 81-84 bilan; 91-92 bilan; C96, T86.0 ishlab chiqilgan anketa-so'rovnomaga kiritilgan. Bo'limlarda morbidlik ko'rsatkichini hisoblash uchun yuqumli anamnez bo'yicha tahlil o'tkazildi. Kasallanish darajasi 100 kishi uchun normallashdi.***

***Natijalar. Ko'rsatkichlarning morbiditiya mezonlari bo'yicha taqsimlanishini tahlil qilishda/100chel.***

***Kalit so'zlar: yuqumli tarix, bolalar, o'smirlar, malign neoplazmalar, antitümör davolash.***

### Актуальность

Распространенность инфекционных у заболеваний у пациентов онкологический заболеваниями всегда была чрезвычайно актуальной как с позиций канцерогенеза [11, 19], так и во время лечения [1, 7, 16, 18]. Значительно меньше данных накоплено в отношении инфекционного статуса у пациентов в периоде ремиссии [2, 20].У пациентов, завершивших противоопухолевую терапию (ПОТ), инфекции могут рассматриваться как маркеры иммунной реституции после вторичного иммунодефицита, индуцированного ПОТ [17]. В качестве коморбидной патологии острые и хронические инфекции усугубляют течение поздних токсических эффектов [3, 5, 13]П. андемия продемонстрировала возможное взаимное влияние злокачественных новообразований (ЗНО) на более высокий риск заражения COVID-19 и тяжелое течение заболеваний. Учитывая это, гендиректор НМИЦ радиологии, главный внештатный онколог Минздрава Андрей Каприн заявил, что Национальный регистр онкологических больных дополнят разделом, в котором будут размещаться сведения о перенесенной пациентами коронавирусной инфекции. Создается биобанк с материалами, полученными от онкопациентов, для изучения патоморфоза основного заболевания на фоне коронавирусной инфекции. Специалисты проанализируют отсроченные последствия COVID-19, его влияние на течение онкологических процессов, для полноты информации Федеральный регистр лиц с COVID-19 будет интегрирован с Национальным канцер-регистром [4, 6].

Эпидемический процесс также имеет свои особенности в среде лиц с ЗНО [14, 21]. В популяции детей и подростков, излеченных от ЗНО, инфекционный анамнез также может иметь значение в процессе формирования поздних токсических эффектов ПОТ и реабилитации пациентов [9]. При увеличении срока ремиссии у пациентов, излеченных от ЗНО в детском возрасте, кумулятивная заболеваемость циррозом увеличивается в

каждом 10-летнем интервале от 0 до 13 % при продолжительности наблюдения 30 лет [15].

Успешное проведение ПОТ в условиях специализированных медицинских центров возможно при эффективной организации инфекционного контроля [10]. Перенесенные инфекции могут рассматриваться в качестве одного из маркеров исходного состояния иммунной системы. Многолетний мировой опыт подтвердил обоснованность включения инфекционного анамнеза пациентов, госпитализируемых в педиатрический стационар, в качестве обязательной составляющей анамнеза жизни [12]. Клинические наблюдения за детьми и подростками, излеченными от различных ЗНО, перенесшими трансплантацию гемопоэтических стволовых клеток и находящимися на этапах реабилитации, продемонстрировали вариабельность инфекционного статуса в зависимости от нозологической принадлежности пациентов.

В качестве основной гипотезы исследования сформировано положение о возможных различиях инфекционного анамнеза у пациентов с различной опухолевой патологией и тяжелыми заболеваниями системы кроветворения.

**Целью настоящего исследования** было изучение возможной специфичности инфекционного статуса пациентов онкогематологического профиля, направленных на второй этап реабилитации.

## Материал и методы

В лечебно-реабилитационный научный центр «Русское поле» НМИЦ детской гематологии, онкологии и иммунологии им. Дмитрия Рогачева» МЗ России ежегодно госпитализируются около 2000 пациентов в состоянии ремиссии основного заболевания. В исследование включено 2092 пациента с кодами заболевания по МКБ: С 81-84; С 91-92; С96, Т86.0. Сбор информации о случаях инфекционных заболеваний осуществлялся на основании мониторинга анамнестических данных путем анкетирования, опроса родителей, выкопировки сведений из медицинских направительных документов. Для регистрации сведений разработана анкета-опросник с перечнем изучаемых инфекций. Учитывая полноту представленной информации, качество выписок из историй болезни/амбулаторной карты была отобрана только 1/3 часть пациентов, госпитализированных в ЛРНЦ «Русское поле» за 2017-1019гг.

Для расчета показателя заболеваемости в отделениях был проведен анализ данных о перенесенных инфекционных заболеваниях среди детей (гепатиты А, В и С, ветряная оспа, герпес Зостер, корь, паротит, краснуха). При этом была исключена возможность неоднократного учета числа заболеваний за счет повторных госпитализаций. Показатель заболеваемости нормировался на 100 человек и выражался в процентах.

Группы сравнения формировались в соответствии с нозологической принадлежностью пациентов (профилем отделений): нейроонкология, иммунопатология, солидные опухоли, гемобластозы; дети младшего возраста с типами онкогематологической патологии (до 4-х лет). Сравнение групп между собой было проведено с помощью Z-критерия множественного попарного сравнения данных с коррекцией на множественное тестирование (Multiple pairwise comparison Z-test for proportions with multiple testing correction), R версия 3.5.2, имеющаяся в свободном программном доступе. Для расчета доверительных границ показателя заболеваемости в сравниваемых группах использовалась прикладная программа «Анализ данных», встроенная в Microsoft Excel Professional, и программа Statistica 10. Доверительные границы определялись с заданным уровнем значимости $p < 0,01$.

## Результат и обсуждение

Частота перенесенных инфекционных заболеваний среди детей всех отделений лечебно-реабилитационного научного центра «Русское поле» представлена на рисунке 1. Суммарно более половины детей (56,9%) оказываются в группе инфекционных больных за время пребывания в центре. Как следует из диаграммы распределения, среди всех зафиксированных инфекционных заболеваний значительно превалирует частота случаев заболеваний ветряной оспой (49, 3%), затем следует герпес зостер (4,2%), краснуха (2,1%) и другие реже встречающиеся заболевания.

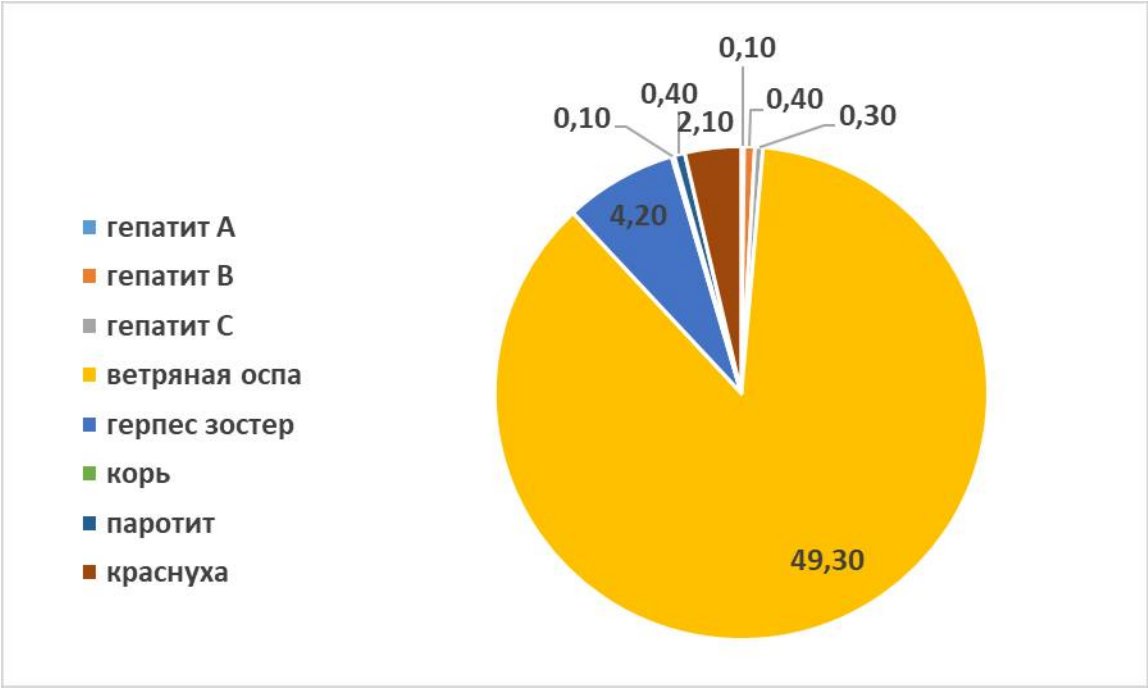


*Рис. 1. Перенесенные инфекционные заболевания среди детей лечебно-реабилитационного научного центра «Русское поле» (%)*

На рисунке 2 представлено распределение частоты перенесенных инфекционных заболеваний среди групп детей с разной нозологической принадлежностью в отделениях лечебно-реабилитационного научного центра «Русское поле». Обращает на себя внимание, что среди всех отделений в нейроонкологии зафиксирован наибольший показатель заболеваемости ветряной оспой, а в отделении детей младшего возраста – наибольший показатель заболеваемости герпесом зостера и наименьший – по всем остальным инфекциям.

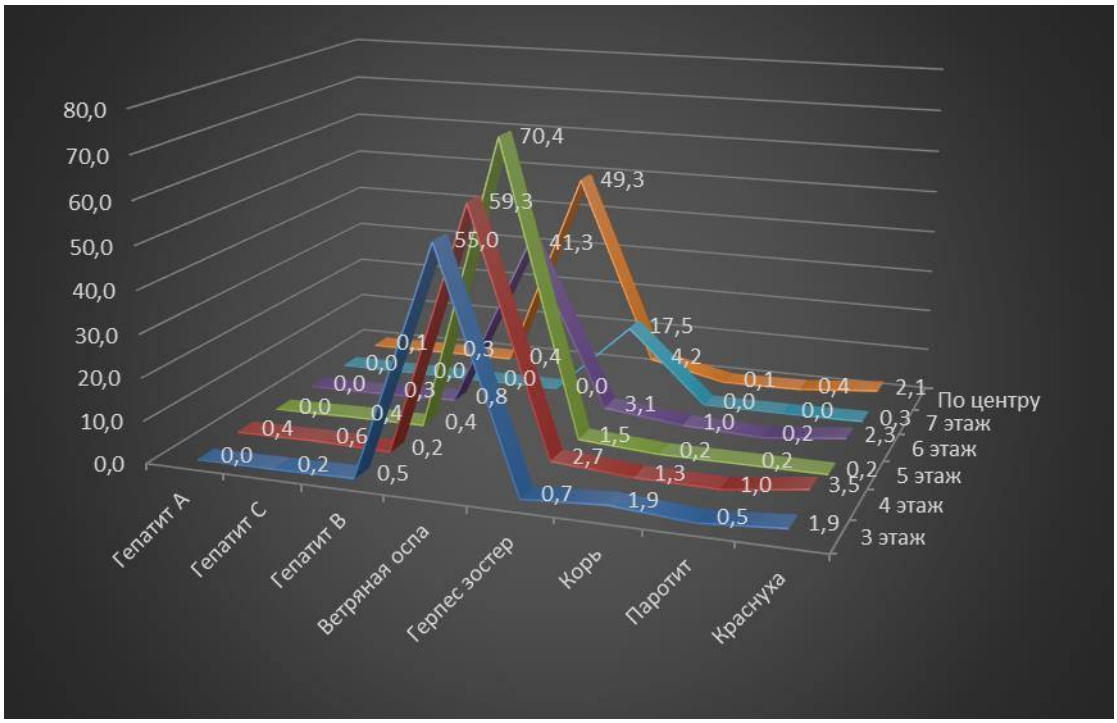


*Рис. 2. Перенесенные инфекционные заболевания среди групп детей из разных отделений лечебно-реабилитационного научного центра «Русское поле» (%). 3 этаж – гемобластозы; 4 этаж – солидные опухоли; 5 этаж – нейроонкология; 6 этаж – иммунопатология; 7 этаж – дети младшего возраста (до 4 лет).*

Распределение показателя заболеваемости, нормированного на 100 чел., в зависимости от нозологической принадлежности пациентов (профиля отделения) представлено в таблице1 и на рисунке 3. Анализ этого распределения показывает, что максимальное число всех инфекционных эпизодов (67,5±4,0) также зафиксировано у пациентов нейроонкологического профиля.

**Таблица 1**

**Перенесённые инфекционные заболевания у пациентов отделений (показатель заболеваемости нормирован на 100 чел.)**

| Отделение | Заболеваемость, нормированная на 100 чел. |
|---|---|
| нейроонкологии | 67,5±4,0 |
| иммунопатологии | 49,1±5,0 |
| солидных опухолей | 46,4±3,5 |
| гемобластозов | 35,9±3,5 |
| дети младшего возраста (до 4 лет) | 17,9±4,4 |

Распределение отделений по рейтинговому месту представлено на рисунке 3. Для пациентов младшего возраста характерна самая низкая заболеваемость. Связано это, в первую очередь, с возрастом пациентов и тем, что до заболевания они имели гораздо меньше контактов с потенциальными источниками заражения, и, как правило, активно прививаются в соответствии с национальным календарем прививок. Все указанные инфекции, кроме гепатита С, относятся к управляемым инфекциям.

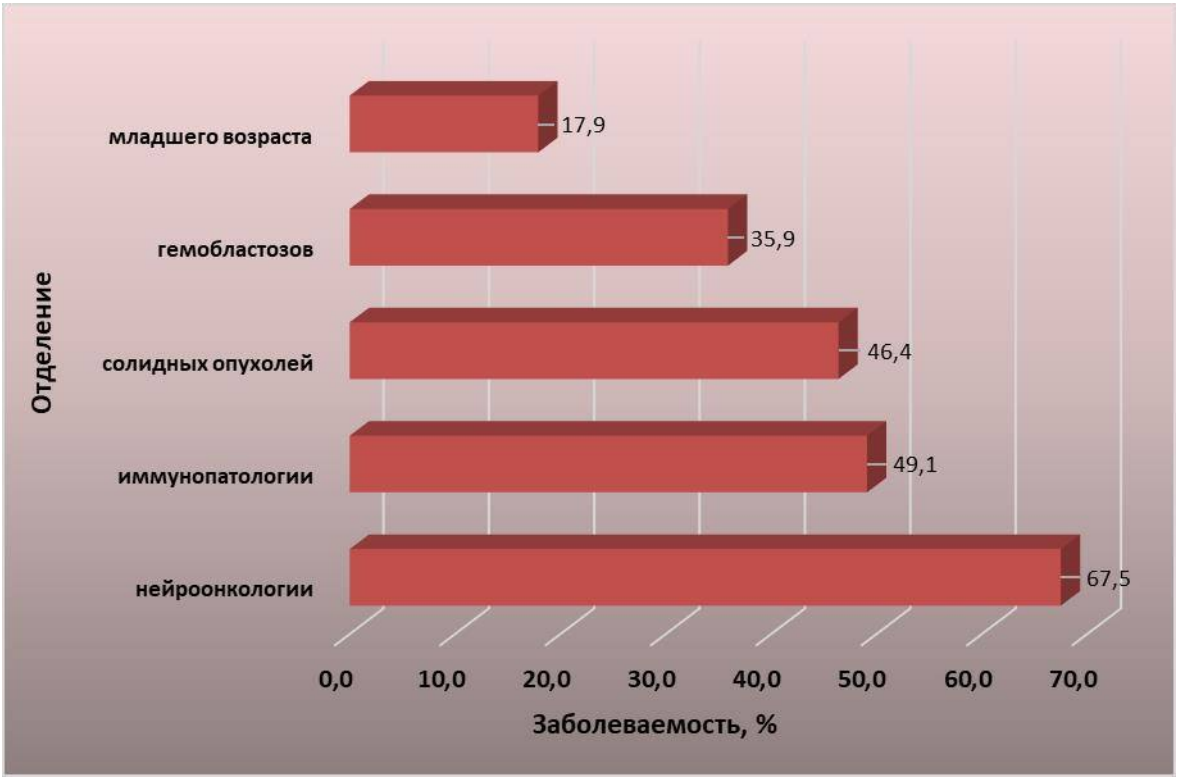


*Рис.3. Перенесенные инфекционные заболевания (показатель заболеваемости нормирован на 100 чел.)*

Было проведено сравнение показателей заболеваемости в каждой паре групп пациентов и сделана оценка статистической достоверности их различий. Сравнение групп между собой было проведено с помощью Z-критерия множественного попарного сравнения данных с коррекцией на множественное тестирование (Multiple pairwise comparison Z-test for proportions with multiple testing correction), R версия 3.5.2, имеющаяся в свободном программном доступе. Нулевая гипотеза о равенстве

показателей в сравниваемых группах была отвергнута.

Полученные данные сравнения представлены с помощью графического пакета ggpubr на рисунке 4. Статистически достоверные парные различия (с уровнем значимости p $<10^{-5}$) показателей заболеваемости показаны на графике горизонтальными скобками. Статистически достоверно отличаются все пары сравнения за исключением пары, соответствующей отделениям иммунопатологии и солидных опухолей.

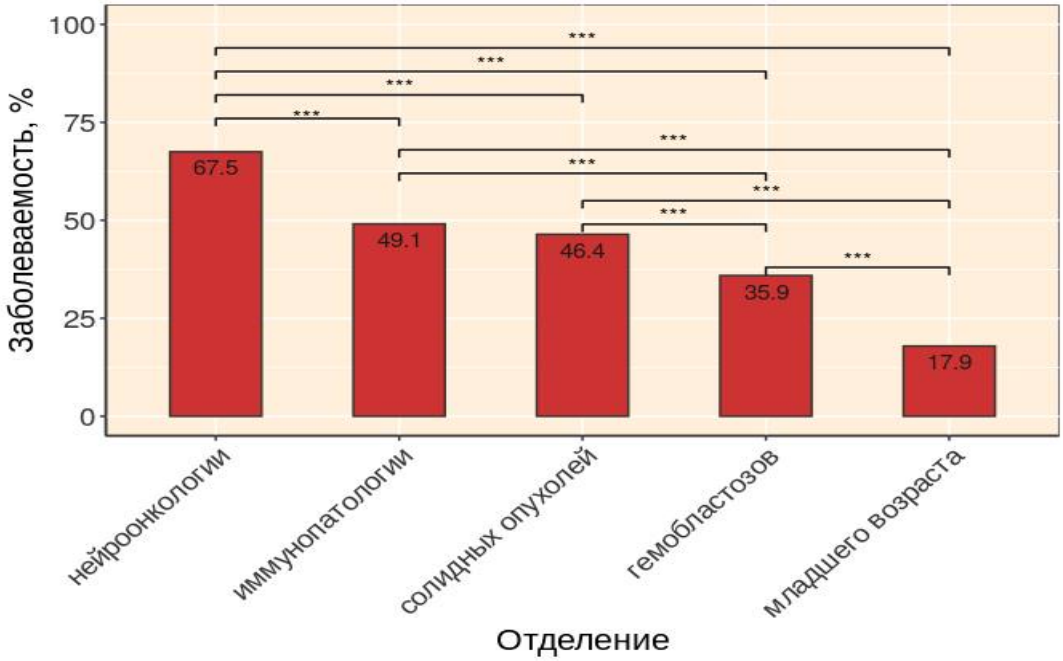


*Рис. 4. Перенесенные инфекционные заболевания (показатель заболеваемости нормирован на 100 чел.)*

**** Парные различия статистически достоверны с уровнем значимости p $<10^{-5}$.*

**Выводы**

В ходе проведенного пилотного исследования (результаты скрининга) подтвердилась гипотеза о неравномерности распределения показателей заболеваемости заявленными инфекциями у пациентов детского возраста с различными опухолевыми заболеваниями. Вследствие этого проведение вакцинации у излеченных от ЗНО детей и подростков требует несколько иного подхода, например, обязательного учета инфекционного анамнеза, определение уровня специфических антител. ПОТ также влияет на устойчивость иммунитета к возбудителям инфекции. Результаты настоящего исследования подтверждают важность оценки инфекционного статуса пациентов с учетом типа ЗНО.

Для подтверждения полученных выводов об особенностях инфекционного анамнеза у пациентов ЛРНЦ «Русское поле» запланировано проспективное исследование с лабораторным подтверждением напряженности специфического иммунитета, уточнения влияния возраста, пола, вариантов ЗНО пациентов, завершивших ПОТ. Получение этой важной дополнительной информации позволит перейти в дальнейшем к персонализированной программе инфекционного контроля у детей и подростков, излеченных от ЗНО, в том числе на уровне первичного звена здравоохранения [8, 22].

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# ROLE OF MICROORGANISMS AND THEIR METABOLITES IN THE MECHANISM OF PROTECTION OF THE VAGINAL ECOSYSTEM

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✓ ***Resume***

***The review article presents literature data on the role of lactobacilli and their metabolites in maintaining a healthy state of the vaginal ecosystem. Changes in metabolites in the reproductive tract are not only due to the dominance of a particular microflora in vaginal dysbiosis, but are also interrelated with changes in the immune system.***

***The study of the interaction between microorganisms, their metabolites and the immune system in the reproductive tract will make it possible to determine the pathogenetic mechanisms of the development of bacterial vaginosis, which will lay the foundation for further research on early diagnosis and effective treatment of the disease.***

***Key words: lactobacilli, metabolites, vaginal microbiocenosis, Lactobacillus crispatus, Lactobacillus iners***

# РОЛЬ МИКРООРГАНИЗМОВ И ИХ МЕТАБОЛИТОВ В МЕХАНИЗМЕ ЗАЩИТЫ ВАГИНАЛЬНОЙ ЭКОСИСТЕМЫ

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✓ ***Резюме***

***В обзорной статье представлены данные литературы относительно роли лактобактерий и их метаболитов в поддержании здорового состояния вагинальной экосистемы. Изменения метаболитов в репродуктивном тракте не только обусловлены с доминированием той или иной микрофлоры при дисбиозе влагалища, но и взаимосвязаны с изменениями иммунной системы.***

***Изучение взаимодействия между микроорганизмами, их метаболитами и иммунной системой в репродуктивном тракте позволит определить патогенетические механизмы развития бактериального вагиноза, что положит основу для дальнейших исследований по ранней диагностике и эффективному лечению заболевания.***

***Ключевые слова: лактобактерии, метаболиты, микробиоценоз влагалища, Lactobacillus crispatus, Lactobacillus iners***

# МИКРООРГАНИЗМЛАР ВА МЕТАБОЛИТЛАРИНИНГ ВАГИНАЛ ЭКОСИСТЕМА ҲИМОЯ МЕХАНИЗМИДАГИ ЎРНИ

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✓ ***Резюме***

***Ушбу шарҳда вагинал экосистемани соғлом ҳолатда сақлашда лактобактериялар ва уларнинг метаболитларининг ўрни тўғрисида адабий маълумотлар келтирилган. Репродуктив трактда метаболитларнинг ўзгариши қин дисбиозида у ёки бу микрофлоранинг устунлиги билангина боғлиқ бўлмай, балки иммун система ўзгаришлари билан ҳам ўзаро боғлиқдир.***

***Репродуктив трактда микроорганизмлар, уларнинг метаболитлари ва иммун системанинг ўзаро боғлиқлигини ўрганиш бактериал вагиноз патогенетик механизмларини аниқлашга имкон беради, бу эса касалликни эрта аниқлаш ва самарали даволаш бўйича кейинги тадқиқотларга замин яратади.***

***Калит сўзлар: лактобактериялар; метаболитлар; қин микробиоценози; Lactobacillus crispatus; Lactobacillus iners***

**Relevance**

The vaginal ecosystem includes microorganisms, metabolites and immune components, and the balance of interactions between them plays an important role in maintaining homeostasis and the health of the female reproductive tract [17].

The total bacterial mass (microbial contamination) in the vaginal mucosa in clinically healthy women of reproductive age ranges from 106 to 108.5 GE / ml. The proportion of lactobacilli in the microbiocenosis ranges from 90–99% and ranges from 105.4 to 108.5 GE / ml [16]. In normal vaginal microbiocenosis, the growth of various communities of opportunistic flora should not exceed 104 GE / ml, and the total number of transient microorganisms should not exceed 15–20% of the total pool of microorganisms [2].

Bacterial vaginosis (BV) is characterized by an increase in the diversity of the vaginal microflora, a decrease in the number of Lactobacillus spp. in the vagina and an increase in the number of anaerobes and microaerophilic bacteria associated with BV [26]. BV-associated bacteria mainly include Gardnerella vaginalis, Atopobium vaginae, Mycoplasma hominis, Megasphaera spp., Mobiluncus spp., Roseburia spp., Dialister spp., Sneathia spp. and Prevotella spp. [6].

Many of the bacteria associated with bacterial vaginosis (bacterial vaginosis-associated bacteria - BVAB) are common representatives of the normal vaginal microbiota [26], however, to date, little has been studied about the synergistic or antagonistic effects between them, the metabolic characteristics of microbiocenosis with the domination of various communities of vaginal microflora [ 6].

**Protective role of lactobacilli in the vaginal ecosystem**

In contrast to the wide variety of the gastrointestinal tract, the microbiocenosis of the female genital tract is less diverse and changes dynamically during the menstrual cycle [7]. The genomes of vaginal lactobacilli are much smaller in comparison with the genomes of lactobacilli microbiocenoses of other mucous membranes. This phenomenon may contribute to the fact that the vaginal species of lactobacilli demonstrate a certain degree of adaptation to the lifestyle, depending on the macroorganism [22], which may ultimately provide the dynamism of the vaginal microbiocenosis.

Most often, the basis of normal vaginal microbiocenosis in women of reproductive age is made up of 4 species: Lactobacillus crispatus, Lactobacillus jensenii, Lactobacillus gasseri and Lactobacillus iners [16]. It has been established that each of the four types of vaginal lactobacilli is unique due to the possession of their genome by one or another family of numerous proteins. These specific changes in the form of an increase or loss of genes occurred during the evolution of vaginal lactobacilli and thus, a unique set of proteins for a particular species was developed [22].

Each woman has her own individual species composition of lactobacilli, however, stable codominance of multiple species of lactobacilli in a single microbi- cenosis is rarely observed, and as a rule, only one or two species dominate in it [4, 22].

However, several studies in clinically healthy women of different populations have revealed the presence of this type of microbiocenosis, in the structure of which there is an absence of lactobacilli or the presence of certain microorganisms, such as Gardnerella vaginalis, or various species of Peptostreptococcus, Prevotella, Pseudomonas, Streptococcus and / or Corynebacterium, which may not be a pathological condition [1, 10]. Thus, Ravel J. et al. (2011) identified five different bacterial communities - community state types (CST) in clinically healthy women [26]. CSTs are grouped as CSTs I, II, III, IV, V, respectively, with each CST being dominated by L. crispatus, L. gasseri, L. iners, polymicrobial flora, including Lactobacillus and bacteria associated with bacterial vaginosis, and L jensenii [12, 26]. While CST I, III, and IV have been extensively studied and are commonly found in women, CST II and V are rare [9]. Studies have shown that differences in the composition of the bacterial community between subjects may be related to race, diet, age, sexual behavior, immunity, and genetic polymorphism [8, 21].

Thus, the predominance of non-lactobacillary microflora is not always associated with the state of bacterial vaginosis; therefore, it can be assumed that the state of the disease or its absence is not only determined by the number of bacteria, but includes a much wider aspect involving the internal environment of the macroorganism and the microenvironment of the vagina.

Metabolites in the female reproductive tract are substrates, intermediates, and byproducts of

biochemical reactions caused by the interaction of human nutrients with bacteria, reflecting subsequent gene expression events [6].

Despite the differences in the bacterial composition of vaginal communities, the acidification of the vaginal environment occurs through the formation of metabolites of organic acids, mainly lactic acid [12, 26]. Lactobacilli form lactic acid by anaerobic glycolysis of glycogen, which is released due to the constant rejection and cytolysis of the superficial cells of the vaginal epithelium. The contents of the vagina contain L- and D-isomers of lactic acid. The L-isomer of lactic acid can be synthesized not only by lactobacilli, but also by vaginal epithelial cells, while the D-isomer is synthesized only by lactobacilli. According to Linhares IM. et al. (2011), the content of D-lactic acid in the vaginal contents is higher when lactobacilli are dominant, with the exception of L. iners [18]. This is explained by the fact that L. iners is unable to synthesize the D-isomer of lactic acid, since the genome of the microorganism lacks genes responsible for its synthesis [18, 30]. Lactic acid, which forms 110 mmol, acidifies the vaginal medium to an average pH of 3.5 [23]. In women with lactobacilli dominance, the vaginal pH is closely correlated with the concentration of lactic acid in the vaginal fluid [23].

L. crispatus and L. jensenii have similar metabolic patterns [27], while L. crispatus and L. iners have different metabolic characteristics [24]. For example, studies have shown that the L. crispatus genome is almost twice as large as the L. iners genome [10]. However, the carbon metabolism of L. iners is fermented with fewer compounds than L. crispatus [24]. When the dominant bacteria are L. crispatus and / or L. jensenii, most of the metabolites in the vagina are amino acids and dipeptides, with higher levels of ornithine being determined lysine, glycylproline, phenylalanine [27]. L. iners, like BV associated flora, correlate with amino acid catabolites such as proline, threonine, aspartate, serine, and valinyl glutamate, the level of which in the vaginal fluid is higher than in other substrates [27]. As the researchers explain, the lack of a mechanism for the synthesis of essential amino acids in L. iners forces it to rely heavily on exogenous amino acids obtained from the macroorganism [11]. Its limited metabolic profile and dependence on the nutrients of the microorganism make it highly sensitive to environmental changes [11].

Due to the structure of its genome, L. iners has the ability to quickly adapt to changing environmental conditions [19], switching its metabolism and using glycerol of the phospholipids of the membranes of vaginal epithelial cells as a nutrient substrate instead of glycogen. L. iners produces a toxin - cholesterol-dependent cytolysin, similar in properties to vagolysin Gardnerella vaginalis, and under conditions of insufficient acidity (at pH 4.5-6.0) its production is 6 times more active than at pH less than 4.5 [25].

The mucous layer on the surface of epithelial cells of the female reproductive tract plays an important role as a first line of defense against microbial invasion. Under conditions of damage to the epithelial barrier or exposure to microbes or their metabolites, epithelial cells are activated. When microorganisms break through the line of defense, epithelial cells use recognition receptors to identify microorganisms that produce inflammatory factors and recruit immune cells to resist microbial invasion and colonization [5].

Dominance of Lactobacillus spp. in the genital tract is essential because it suppresses pathogens and maintains immune balance. Studies have shown that the concentration of pro-inflammatory factors in the vagina is very low when L. crispatus and L. jensenii are dominant [3, 14].

Lactic acid as a metabolite produced mainly by Lactobacillus spp. Is also associated with the immunity of the reproductive tract [9]. L-lactic acid produced by Lactobacillus spp. can induce an anti-inflammatory response and suppress the production of proinflammatory cytokines and chemokines induced by the toll-like receptor (TLR) in the epithelial cells of the cervix and vagina at low pH [9]. In addition, lactic acid can induce the secretion of the anti-inflammatory cytokine interleukin IL-10, decrease the production of the pro-inflammatory cytokine IL-12 in dendritic cells, and reduce the cytotoxicity of natural killer cells [13].

The anti-inflammatory activity of lactic acid also requires the presence of organic acids produced by microorganisms to maintain vaginal health, mainly by increasing the production of the anti-inflammatory cytokine IL-1RA, inhibition of the pro-inflammatory signal of the cytokine IL-1, while the production of pro-inflammatory cytokines IL-6 and macrophage inflammatory protein-3α (MIP-3α) decreases slightly [9]. Therefore, the interaction between normal microflora, metabolites and the immune system in the reproductive tract is very important for maintaining a healthy vaginal ecosystem.

**Metabolites of BV-Associated Bacteria**

BV is closely related to metabolites in the vaginal fluid. The metabolites of amines, organic acids, short-chain fatty acids, amino acids, nitrogenous bases, and monosaccharides in women with BV differ significantly from those in women without BV [29]. In women with BV, the metabolite profile is characterized by lower concentrations of amino acids and dipeptides, accompanied by higher levels of amino acid and polyamine catabolites [26]. BVABs increase vaginal pH by creating short-chain fatty acids and amines, and are also able to use lactic acid as an energy source [19, 28].

Many BVABs are known to produce several acid metabolites; for example: Bacteroides spp. produce succinate, Peptococcus spp. - butyrate and acetate, Gardnerella vaginalis - acetate and succinate, clostridia and gram-positive cocci - caproate and Dialister spp. - propionate. Typically, acetate is the predominant metabolite in the vaginal fluid of women with BV compared to elevated concentrations of propionate, butyrate, and succinate [27].

Studies show that in BV metabolites better reflect the disease phenotype than the microorganisms themselves. Before the onset of disease symptoms, the appearance or disappearance of certain metabolites in the vagina has a positive or negative correlation with the metabolic function of certain microorganisms [28]. Changes in maltose, kynurenine, nicotinate, malonate, acetate, and nicotinamide adenine dinucleotide (NAD +) reflect the occurrence of BV and can be used as metabolic biomarkers to distinguish BV from the healthy state of the vagina [29]. When BV is healed, the metabolites associated with BV are significantly reduced [27]. In addition, metabolic analysis of secretions from the genital tract plays an important role in the diagnosis of BV. McMillan A. et al. (2015) found that an increase in the level of 2-hydroxyisovalerate and γ-hydroxybutyrate and a decrease in lactic acid and tyrosine in the vagina are the most sensitive and specific indicators for the diagnosis of BV. Therefore, not only the vaginal microflora, but also their metabolites can be used as effective reference indicators for clinical diagnostics.

Vaginal microflora in BV can activate the immune response of the reproductive tract of a macroorganism, while not causing obvious symptoms of inflammation. The reason may be associated with the effect of microorganisms associated with BV and their metabolites on immunity. Delgado-Diaz DJ. et al. (2019) found that long-term action of organic acids, metabolites of vaginal microbiocenosis, associated with BV, leads to impaired regulation of the immune response of cervical and vaginal epithelial cells in vitro [9]. Short-chain fatty acids can attract and activate innate immune cells of the female reproductive tract, such as neutrophils and monocytes [29]. In addition, the succinic acid produced by Prevotella spp. and Mobiluncus spp. in BV, it can also suppress leukocyte chemotaxis and regulate the immune response [20, 29].

Thus, the conducted studies have shown that the interaction between microflora, metabolites and the immune system in BV is of great importance for understanding the clinical symptoms and signs of the disease. However, to confirm the effect of metabolites on the vaginal microflora and the immune system of the microorganism in BV, additional studies of the mechanism of these interactions are needed.

**Bacterial metabolites as disease markers**

Research Gajer R. et al. (2012) showed that the existence of a transitional composition of the vaginal community is associated with the production of lactic acid by members of this community, and that only long-term changes in the composition of the microbiocenosis are associated with changes in metabolite profiles [12]. In addition, Laghi L. et al (2014) evaluated the metabolomic composition of vaginal fluid in women with BV and found that if the vaginal fluid contains a high content of lactic acid in comparison with short-chain fatty acids, then in these cases spontaneous remissions will occur in the absence of treatment indicating that these cases cannot be considered true cases of BV. In this regard, the authors believe that different profiles of short-chain fatty acids detected in dysbiosis can be useful as biomarkers and supplement existing methods for diagnosing BV by identifying true cases of the disease [15].

According to Aldunate M. et al (2015), the use of metabolites as markers of BV will allow determining the likelihood of spontaneous remission in women whose microbiocenosis is in a transitional state, which prevents the unnecessary use of antibacterial drugs that can negatively affect the indigenous microflora of the vagina, contributing to the development of BV. and form antibiotic resistance [5]. Evaluation of metabolites in the vaginal fluid can also be used to determine the effectiveness of BV treatment and / or the likelihood of BV recurrence [15].

**Findings**

Thus, analysis of literature data shows that the mechanisms of maintaining the vaginal ecosystem and the development of bacterial vaginosis remain not fully understood. The degree of protection provided by various communities of the vaginal ecosystem is to be formulated by studying the metabolomic characteristics of bacteria and the influence of their metabolites on intermicrobial relations in the community and on immune defense mechanisms. Disclosure of the pathogenetic mechanisms of bacterial vaginosis is important for improving approaches to the treatment and prevention of bacterial vaginosis.

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# ИСТОРИЯ КРАСНОГО ПОЛУМЕСЯЦА УЗБЕКИСТАНА В ОТРАЖЕНИИ СРЕДСТВ ФАЛЕРИСТИКИ

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✓ ***Резюме***

***В статье представлены результаты исследования, касающиеся представлению в средствах филателии и фалеристики, информации об истории зарождения, становлення и вех истории Общества Красного Полумесяца Узбекистана, представленной в отражении средств фалеристики. В статье, в качестве иллюстраций, использованы разнообразные коллекционные материалы.***

***Ключевые слова: Узбекистан, Общество Красного Полумесяца, фалеристики, значки, памятные знаки.***

# THE HISTORY OF THE RED CRESCENT OF UZBEKISTAN IN THE REFLECTION OF FALERISTIC MEANS

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✓ ***Resume***

***The article presents the results of a study concerning the presentation in the means of philately and faleristics, information about the history of the origin, formation and milestones of the history of the Red Crescent Society of Uzbekistan, presented in the reflection of the means of faleristics.The article uses numerous collection materials as illustrations.***

***Keywords: Uzbekistan, Red Crescent Society, faleristics, badges, commemorative signs.***

# O'ZBEKISTONNING QIZIL KRESCENTINING FALERIK MA'LUMOTLARINI HISOBLAShIDA TARIXI

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***Maqolada filateliya va faleristika vositalarida taqdim etish, O'zbekiston Qizil Yarim Oy Jamiyatining paydo bo'lishi, shakllanishi va tarixining bosqichlari haqidagi ma'lumotlar, faleristik vositalarni aks ettirishga bag'ishlangan tadqiqot natijalari keltirilgan. Maqolada rasmlar sifatida turli xil to'plam materiallari qo'llaniladi.***

***Kalit so'zlar: O'zbekiston, Qizil Yarim Oy Jamiyati, faleristika, nishonlar, esdalik belgilari***

## Актуальность

Медицина, медицинская наука и практика, а также гуманитарная медицинская деятельность, имеют как древние, так и современные славные традиции [5-7, 9, 10, 14]. В этом, 2020 году, исполняется 95 лет, со дня создания

Общества Красного Полумесяца Узбекистана [6, 9, 10]. История Всемирного Обществ Красного Креста и Красного Полумесяца, напрямую связаны с созданием в 1863 году французским общественным деятелем Анри Дюнаном организации, деятельность которой была направлена на оказание помощи раненым солдатам на поле боя [7, 13]. По мере укрепления и развития этой организации, а также, в связи с тем, что подобная гуманитарная идея оказания помощи раненым и пострадавшим, нашла отклик у правительств и общественности многих стран мира, в т.ч. и в мусульманских, это привело и к созданию подобной организации в ряде стран, исповедующих ислам. Естественно, Крест не мог быть символом в мусульманских странах, поэтому, в соответствии с мусульманской религией и идеологией, таким символом стал Полумесяц [7, 9, 13]. Чтобы подчеркнуть тождественность гуманитарной миссии, в мусульманских странах, в т.ч. и Узбекистане, Красный Крест был замещён на Красный Полумесяц [7, 9, 13].

История Общества Красного Полумесяца Узбекистана, согласно доступным официальным данным, начинается с 14 ноября 1925 года [6, 9, 10, 14]. 29 мая 1923 года Председатели обществ Красного Креста РСФСР, Белорусской ССР, Украинской ССР, Армянской ССР, Грузинской ССР и Красного Полумесяца Азербайджанской ССР подписали декларацию об объединении – был создан Союз обществ Красного Креста и Красного Полумесяца СССР – СОКК и КП СССР [6, 9, 10, 14]. На 1931 год в состав СОКК и КП СССР входило 5 Республиканских обществ Красного Креста (РСФСР, Белорусской ССР, Украинской ССР, Армянской ССР, Грузинской ССР) и 4 общества Красного Полумесяца (Азербайджанской ССР, Таджикской ССР, Туркменской ССР, Узбекской ССР) [6, 9, 10, 14]. С момента распада СССР и до времени объявления независимости Узбекской державы, Общество Красного Полумесяца Узбекистана входило в состав, бывшего некогда Общества Красного Креста и Красного Полумесяца СССР [1-4, 6, 8-10, 14, 15,]. С 28 мая 1992 года, это самостоятельное общество Красного Полумесяца Узбекистана, являющееся неотъемлемой частью Всемирного сообщества Красного Креста и Красного Полумесяца [6, 9, 10, 14].

**Цель работы.** Представить данные об истории и этапах развития Общества Красного Полумесяца Узбекистана, посредством таких средств коллекционирования, как фалеристика – на памятных значках и наградных знаках Узбекистана и СССР, разных годов их выпуска.

## Материал и методы

При проведении данной исследовательской работы нами был использован метод углублённого литературно-критического анализа доступных научных источников информации по изучаемому вопросу, с использованием справочников, энциклопедий, каталогов, специализированных периодических изданий, интернет-ресурсов.

## Результат и обсуждения

Как уже говорилось, на I и II учредительно-организационных съездах Обществ Красного Креста и Красного Полумесяца (ОКрКиКрП) решались вопросы создания единого, Всесоюзного общества, объединяющего в своих рядах Общества ряда союзных республик, включая и Узбекскую СССР. Также прошли и Всеазиатские объединительные съезды Обществ Красного Полумесяца. Памятные знаки участников этих съездов, представлены на рисунке 1 [9, 14].

**Рис. 1. Памятные знаки первых съездов Обществ Красного Креста и Красного Полумесяца (ОКрКиП)**

На рисунке 2 представлен индивидуальный членский знак Красного Полумесяца, которое было создано в Узбекской ССР в 1925 году [6, 14, 16], а также памятный индивидуальный знак «Активисту Общества КП УзССР» [6, 14, 16].

**Рис. 2. Ранние памятные знаки Общества КП Узбекской ССР**

На рисунке 3 представлены памятные значки и знаки, периода СССР, посвящённые многосторонней деятельности Общества Красного Полумесяца Узбекской Республики, по воплощению в жизнь идей помощи людям [6, 10-12, 14, 16].

**Рис. 3. Памятные знаки Общества КП Узбекской СССР**

Отдельной подборкой, на рисунке 4, представлены памятные знаки Общества Красного Креста Узбекской ССР, посвящённые донорству [6, 10-12, 14, 16]. Это Знак «Почётного донора УзССР», лучшему пропагандисту донорства УзССР, и памятный Знак Самаркандской областной станции переливания крови «Дарящий жизнь» [11, 12, 16].

**Рис. 4. Памятные донорские знаки Узбекской ССР**

**Заключение**

Представленная статья, является логическим продолжением серии предыдущих статей автора, касающихся отражения истории медицины и науки в Узбекистане, а также биографиям великих учёных этой страны, в отражении разных средств коллекционирования.

**Выводы**

1. В представленной статье, креативно, красочно и информативно, поданы текстовые и иллюстративные материалы, касающиеся отражения информации остановлении, истории и развитии Общества Красного Полумесяца Узбекистана.
2. Материалы, изложенные в этой статье, могут быть использованы, как для самостоятельного изучения и/или как дополнительный материал, а также для практического применения, при изучении соответствующего раздела гематологии и гемоглобинопатий, а также в курсе «Исория медицины» и «Истории Общества Красного Полумесяца Узбекистана».

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# PERCUTANEOUS VERTEBROPLASTY FOR TRAUMATIC COMPRESSION FRACTURES OF THE CHEST-LUMBAR VERTEBRAE

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✓ ***Resume***

***Treatment of traumatic spinal injury is an urgent problem in modern neurosurgery. The work is devoted to the surgical treatment of uncomplicated compression fractures (vTh10-L3) using the method of puncture vertebroplasty (PV). The results of treatment of 50 victims were analyzed. High efficiency and safety of puncture vertebroplasty was noted.***

***Key words: compression fractures of the vertebral bodies, mini-invasion spinal neurosurgery, and percutaneous vertebroplasty***

# ПЕРКУТАННАЯ ВЕРТЕБРОПЛАСТИКА ПРИ ТРАВМАТИЧЕСКИХ КОМПРЕССИОННЫХ ПЕРЕЛОМАХ ГРУДНО-ПОЯСНИЧНЫХ ПОЗВОНКОВ

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✓ ***Резюме***

***Лечение травматического повреждения позвоночника является актуальной проблемой современной нейрохирургии. Работа посвящена лечению неосложненных компрессионных переломов позвонков на нижней грудном и верхне-поясничном уровне (vTh10-L3) с использованием метода пункционной вертебропластики (ПВ). Проанализированы результаты лечения 50 пострадавших. Отмечена высокая эффективность и безопасность пункционной вертебропластики.***

***Ключевые слова:*** **компрессионные переломы позвонков, мини инвазивная спинальная нейрохирургия, пункционная вертебропластика.**

# УМУРТҚА ПОҒОНАСИНИНГ КЎКРАК-БЕЛ СОҲАСИ СИҚИЛИБ СИНИШЛАРИДА ПЕРКУТАН ВЕРТЕБРОПЛАСТИКА УСУЛИНИ ҚЎЛЛАШ

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✓ ***Резюме***

***Бел кўкрак умуртқа поғонасининг (vTh10-L3) травматик шикастланишини даволаш замонавий нейрохирургияда долзарб муаммо бўлиб келмоқда. Мазкур мақола пункцион вертебропластика (ПВ) усули ёрдамида умуртқа поғонасининг асоратланмаган компрессион синишларни даволашга бағишланган. 50 та беморнинг даволаш натижалари таҳлил қилинди. Пункцион вертебропластика усулининг юқори самарадорлиги ва хавфсизлиги қайд этилди.***

***Калит сўзлар: умуртқанинг компрессион синишлари, миниинвазив спинал нейрохирургия, пункцион вертебропластика.***

## Relevance

The problem of treating uncomplicated compression fractures of the vertebral bodies is relevant and in demand in modern vertebrology. At present, the arsenal of methods for conservative treatment of traumatic "simple" compression fractures of the vertebral bodies includes the use of non-steroidal anti-inflammatory drugs, drugs that stimulate bone tissue repair and metabolic processes in it, a protective regime for the period of fracture consolidation (12-14 weeks), the use of special reclinators and corset belts that facilitate fracture consolidation.

The duration of consolidation of vertebral compression fractures is, as a rule, at least 3 months. In addition, prolonged immobilization impairs the quality of life of patients.

Treatment with immobilization and the use of external orthopedic devices (bracing) is recommended for patients with vTh10-L4 vertebrae fractures without concomitant neurological changes or severe instability. Although the treatment tactics for progressive deformity, neurological dysfunction, and pain are often nonsurgical, some authors are critical of this.

The amount of surgical intervention in patients with spinal trauma depends on many conditions, first of all, the type of spinal injury, the condition of the spinal cord and its roots, and the level of damage.

The approaches to treating patients with “simple” compression fractures of the vertebral bodies in the absence of neurological symptoms are different: from the installation of transpeduncular stabilization systems using the posterior approach to more aggressive treatment methods - corpectomy followed by stabilization with metal implants using the anterior approaches.

The tactics of treating such patients are being discussed, since open interventions are quite traumatic, and conservative treatment requires long-term immobilization.

In 1987, there were changes in the tactics of managing patients with pathology of the vertebral bodies due to the development by neurosurgeon P. Galibert and neuroradiologist H. Deramond of a new method called puncture vertebroplasty (PT). Application of the PV method allows increasing the strength, rigidity and loading capacity of the damaged vertebra.

PV implementation in the acute period of trauma allows consolidating the damaged vertebra, preventing the progression of compression and instability, and avoiding neurological disorders. PV provides early activation of patients, a quick return to normal life. J. Anderson (2001) and A. Camprell (2001) emphasize that the use of PV in traumatic injury is still not sufficiently developed and requires further improvement, especially with regard to the timing of the intervention.

**Objective:** to improve the results of treatment of patients with uncomplicated vertebral body fractures at the lower thoracic and lumbar spine levels using the method of percutaneous vertebroplasty.

## Material and methods

For the period 2019-2020 We have treated 50 victims with traumatic fractures of heifers at the lower thoracic and upper lumbar levels (vTh10-L3). Among them there were 34 men (68%), women - 16 (32%), aged 20 to 69 years (average age - 41.0 ± 9.7 years). The duration of the treatment period of patients - 23 (87.5%) ranged from 1 to 7 days, 2 (7.7%) patients applied within the first day, 1 (3.8%) - after 7 days.

Traumatic fracture of the vertebral body in 27 cases occurred as a result of a road traffic accident, in 23 - catatrauma. All the victims were hospitalized in the neurosurgical department, before the PV were on strict bed rest. All patients had “simple” compression fractures without damage to the posterior longitudinal ligament, epidural dissemination of fragments, and neurological symptoms. After a thorough examination, no other possible causes of vertebral fracture (osteoporosis, presence of primary or secondary tumors) were identified.

Radiography of the spine was performed in all patients; however, it often did not give a complete picture of the extent of the injury and the nature of the fracture, therefore, it did not allow choosing the optimal treatment tactics. Spondylography is also insufficiently informative in detecting compression of the spinal cord by bone fragments of bodies or vertebral arches, although we consider it an obligatory diagnostic procedure for traumatic injury, since it allows an objective assessment of the state of bone structures.

All victims underwent computed tomography (CT) and magnetic resonance imaging (MRI) tomography. CT allowed the most accurate assessment of the condition of not only the bone tissue of the vertebrae, but also the expediency of PT. With its help, it is possible to detail the fracture (we): to establish the level, the number of damaged vertebrae, to

identify fractures of arches, articular processes, vertebral bodies, to determine the length of the fracture lines. In "simple" compression fractures of the vertebral bodies, cracks within the cancellous tissue were revealed. In this case, the contour of the vertebral body in all cases was not changed, the integrity of other bone structures was not violated.

Particular attention was paid to the presence of cracks in the posterior wall of the vertebral body, since such changes may be the cause of epidural outflow of bone cement during PT. The closing plates with a simple compression fracture were deformed with the formation of Schmorl's traumatic hernias. If cracks were found that went beyond the cortical substance, which was evidence of the presence of a multi-splinter fracture of the vertebral bodies, PV was not used.

MRI was used to establish compression of the epidural space. The deformity of the vertebral body and the condition of the bone tissue were assessed. Possible displacement of the vertebral axis in relation to one another, compression of the spinal cord and its roots, deformation of the spinal canal and posterior bone structures, fractures of the arches, damage to the musculoskeletal system, which are well defined by MRI, were assessed on sagittal sections. Particular attention was paid to the condition of the posterior longitudinal ligament, which determines the stability of the injury, the involvement of the intervertebral disc with the possible formation of a traumatic disc herniation, and the presence of an epidural hematoma.

The indication for the intervention was the presence of a compression fracture of the vertebral bodies of the I-II degree without concomitant damage to the articular-capsular apparatus and the prescription of the fracture no more than 3 months, the absence of neurological symptoms.

Contraindications to PT were: the presence of unstable compression fractures of the vertebral bodies, concomitant trauma with damage to internal organs, traumatic spinal injury with deformity of the spinal canal and compression of the spinal cord and its roots, traumatic injury with concomitant fracture of the posterior semicircle, damage to the musculoskeletal system, bone fragments in the spinal canal with its deformation, partial or , complete blockage of the cerebrospinal fluid, decompensation of the patient's somatic status"explosion" of a compression fracture of the vertebral body; comminuted or multi-comminuted compression fracture of the vertebral bodies.

The degree of fracture was assessed by compression or wedge-shaped deformity of the vertebral bodies: I degree - the height of the vertebral body or its anterior sections was reduced by less than 1/2 was noted in 27, II degree - by 1/2 of the initial - in 14, III degree - more than 1/2 of the original in 9 patients.

## Result and discussion

The patients were divided into 2 groups. The 1st group included patients who underwent vertebroplasty from 2 sides - 27 (54.00%) patients and the 2nd group: patients underwent vertebroplasty from one side - 23 (46%). The effectiveness of treatment was assessed by the degree of regression of pain and muscle reflex syndromes and X-ray control data.

In the postoperative period, during X-ray (spondylogram, MSCT) studies in the 1st group, the effect of eliminating kyphotic deformity with restoration of the height of the fractured vertebra body is more than 90% and regression of pain syndrome according to the assessment of pain on a visual analogue scale below 3 points was noted in 20 ( 74.1%) observations. Whereas, the analysis of the results of the performed vertebroplasty in the patients of the 2nd group, the regression of pain syndrome according to the visual analogue scale is below 3 points and the radiological confirmation of the effect of normalization of the axis and height of the fractured vertebral body was noted satisfactory in 13 (56.52%) cases.

## Findings

Thus, performing vertebroplasty for uncomplicated compression fractures of the thoracolumbar vertebrae can significantly restore the height of the fractured vertebra body (from 5 to 10%, on average by 7.5%), normalize the vertical axis of the spine, and eliminate the factor causing pain. Bilateral implementation made it possible to achieve stable stabilization of the anterior supporting column of the spine, as well as early activation of this category of patients.

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# ANALYSIS OF AUTOPSY EXAMINATION DATA OF THE BUKHARA REGIONAL BUREAU OF FORENSIC MEDICAL EXAMINATION FOR THE PERIOD OF 2019YEAR

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✓ ***Resume***

***The results of the work of the forensic medical service are indicators that characterize the socio-economic state of the region. The article deals with the dynamics of deaths by region, month, and time of year. The analysis was carried out by standardized categories: distribution by month, seasonality of fatal injuries and by main disease. The article presents the results of the analysis of statistical data on some violent and nonviolent deaths in the Bukhara region during 2019 year according to the main parameters.***

***Key words: forensic examination, autopsy, coronary heart disease, traumatic brain injury.***

# ДАННЫЕ АНАЛИЗОВ ВСКРЫТИЙ ТРУПОВ БУХАРСКОГО ФИЛИАЛА Р.Н.И.Ц. СУДЕБНО-МЕДИЦИНСКОЙ ЭКСПЕРТИЗЫ ЗА ПЕРИОД 2019 ГОДА

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***Результаты работы судебно-медицинской службы, являются индикаторными показателями, характеризующими социально-экономическое состояние региона. В статье рассмотрены особенности динамики смертных случаев по районам, по месяцам и временам года. Проведен анализ по стандартизованным категориям: распределение по месяцам, сезонности смертельных повреждений и по основным заболеванием. В статье представлены результаты анализа статистических данных некоторых насильственных и ненасильственных летальных исходов в Бухарской области в течение 2019 года по основным параметрам.***

***Ключевые слова: судебно-медицинская экспертиза, аутопсия, ИБС, ЧМТ.***

# BUXORO VILOYATIDA 2019 YIL DAVOMIDA R.S.T.E.I.A.M BUXORO FILIALI TOMONIDAN OCHIB KO'RILGAN MURDALAR MA'LUMOTLARINI TAHLILI

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R.S.T.E.I.A.M Buhoro filiali

✓ ***Resume***

***Sud-tibbiyot xizmatining natijalari mintaqaning ijtimoiy-iqtisodiy holatini tavsiflovchi ko'rsatkichlardir.Maqolada hududlar, oylar va fasllar bo'yicha o'lim dinamikasining xususiyatlari ko'rib chiqiladi. Tahlillar standartlashtirilgan toifalar bo'yicha: oylar bo'yicha, o'limning mavsumiyligi va asosiy kasallikbo'yichataqsimlangan.Maqolada Buxoro viloyatida 2019 yil davomida asosiy parametrlar bo'yicha ayrim zo'raki va zo'ravonliksiz o'lim holatlarining statistik ma'lumotlari tahlili keltirilgan.***

***Kalit so'zlar:sud ekspertizasi, autopsiya, koronar yurak kasalligi, travmatik miya jarohati.***

## Relevance

One of the main goals of a civilized society is to achieve the lowest possible mortality and preserve every human life. Scientific research aimed at improving the expert system for comprehensive assessment and control of the volume and quality of medical care has become of great importance in recent years. We found it interesting to compare the dynamics of the number of autopsies of the deceased in the Bukhara region in 2019. It turned out that in 2019, forensic experts performed 319 autopsies of the deceased. We selected 243 cases of violent and nonviolent deaths selectively for study.

**The purpose of the study** is to analyze the corresponding autopsy indicators for 2019 with the study of regional characteristics of mortality, to show the medical and social significance of the problem.

## Material and methods

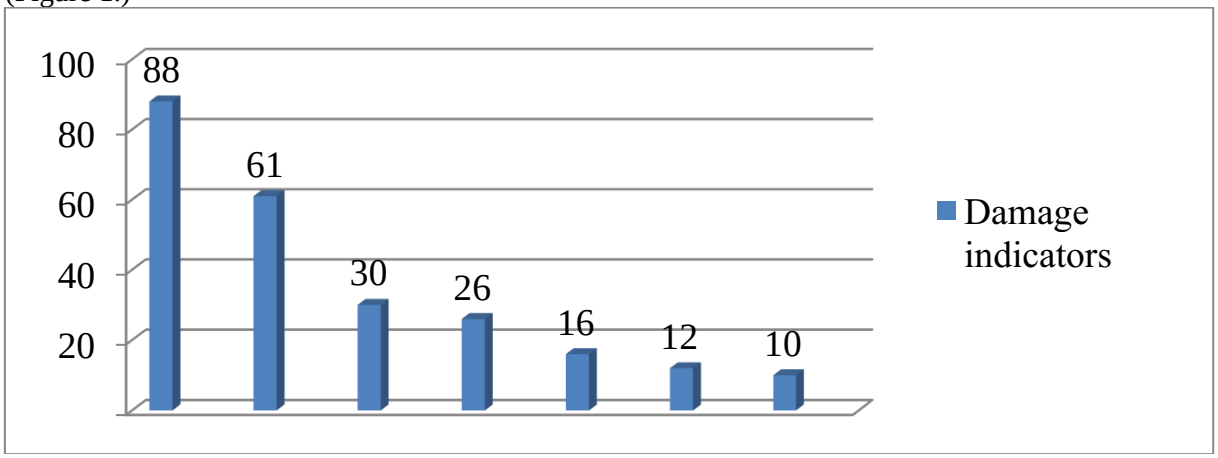
The study presents the results of a comparative analysis of mortality in the Bukhara region during 2019 by the main parameters (time of year, injuries received). The object of the study was the forensic medical examination of the corpses and the acts of the dead.

## Result and discussion

We analyzed deaths from the hanged, drowned, burns, electrical trauma, TBI, ischemic heart disease, sudden deaths that occurred at the scene and in hospitals in the Bukhara region for the period of 2019.

Reflecting the total number of deaths for the period of 2019, the prevalence of the number of those hanged should be highlighted, which amounted to 88 cases; the second place was taken by lethal outcomes from ischemic heart disease - 61 cases; in third place, there were deaths from drowning - 30 cases; in fourth place TBI - 26 cases; in fifth place burns - 16 cases; in sixth place, electrical injury - 12 cases; the smallest number of observations was sudden death - 10 cases.

(Figure 1.)

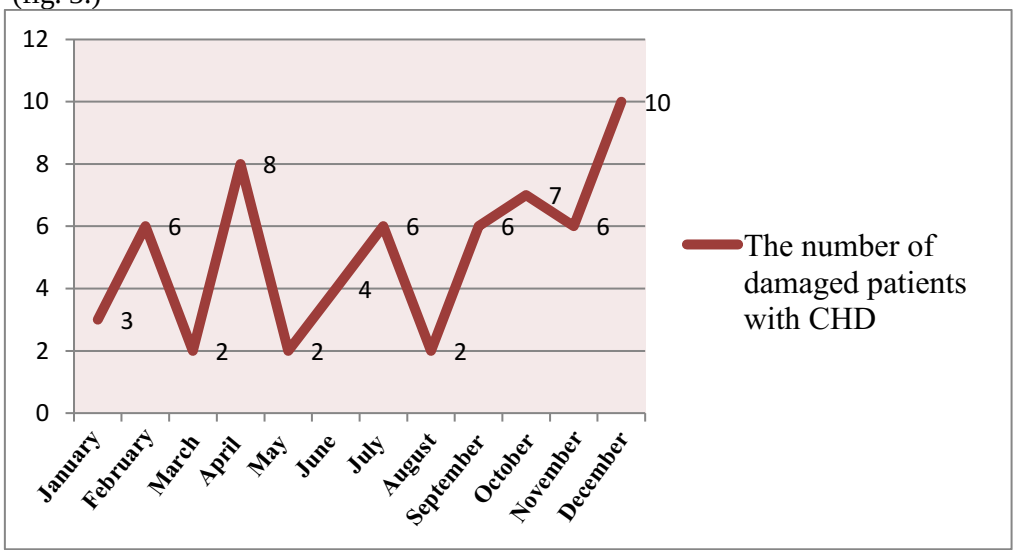



1- The Hanged
2- ischemic heart disease
3- Recessed
4- TBI
5- Burns
6- Electrical injury
7- Sudden death

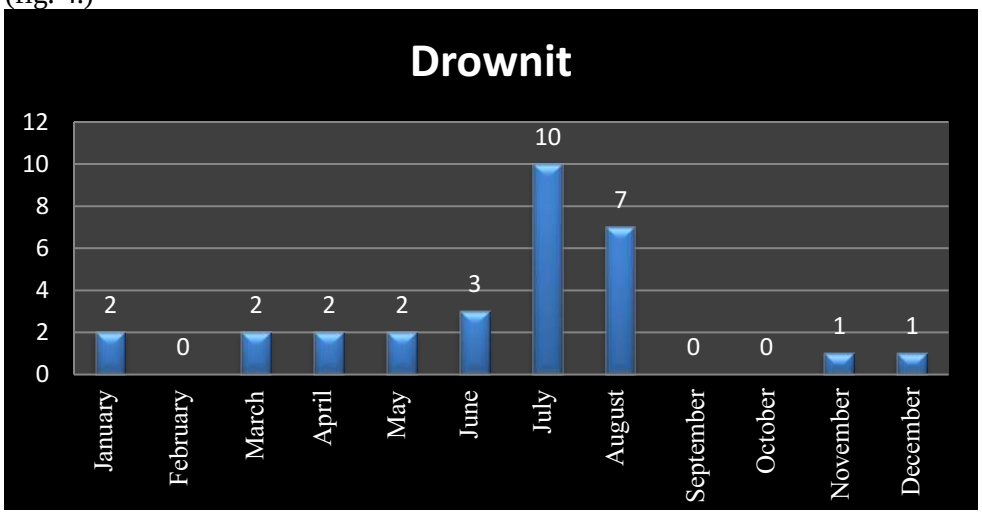
Distribution of injury cases by month revealed that a large number of hanged cases occurred in January (11 cases), February (11 cases), June (12 cases) and August (11 cases);Death from ischemic heart disease in April (8 cases) and December (10 cases) Fig. 3; drowned in July (10 cases), August (7 cases) rice 4; the predominant number of deaths from burns was determined in November and December (Figure 5); craniocerebral trauma in the month of November (8 cases) Fig. 6. Separately about sudden death. According to the criteria recommended by a group of WHO experts in 1964, death that occurred unexpectedly within 6 hours from the onset of the disease in a healthy person or a patient who was in a satisfactory condition is classified as sudden. Sudden cardiac death is characterized by a significant prevalence and potential reversibility in a significant proportion of cases, provided that timely and adequate resuscitation measures are taken. In this regard, there is a growing need for the study of deaths from cardiovascular accidents by both clinicians, pathologists and forensic physicians.

(fig 2)

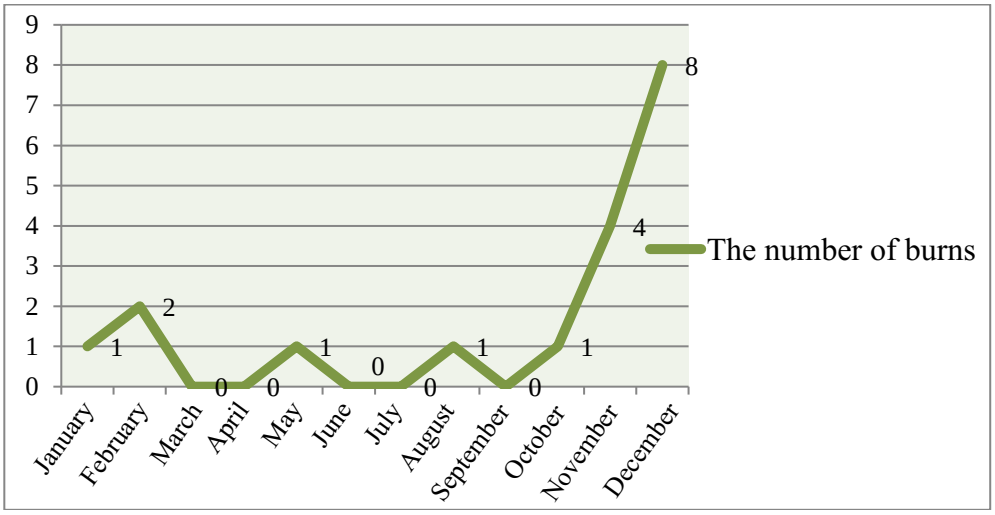
(fig. 3.)



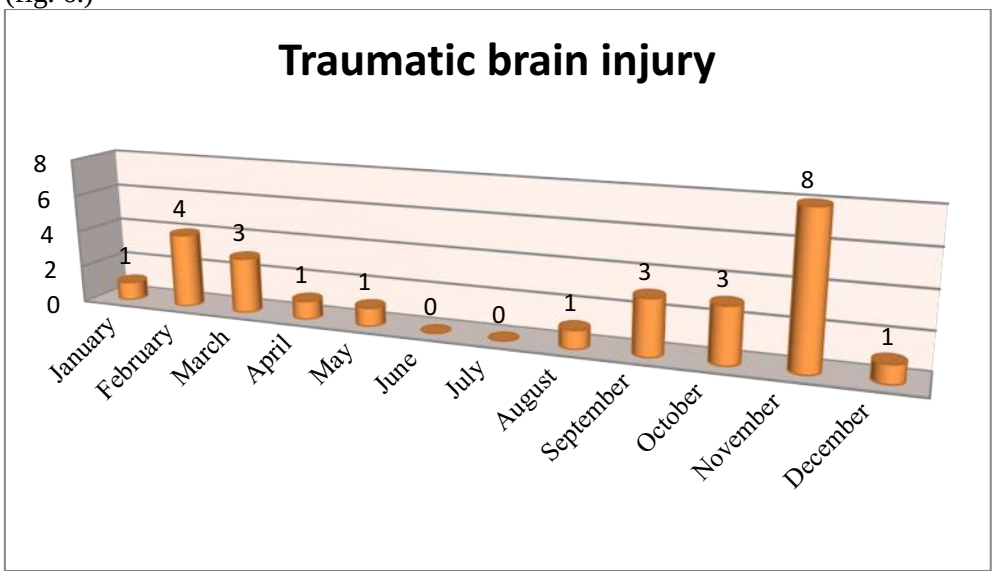

(fig. 4.)



(fig. 5.)




(fig. 6.)




We have investigated and identified 10 deaths from cardiovascular accidents based on the materials of forensic medical examinations.

It should be noted that high rates of deaths occurred from hanging, ischemic heart disease and drowning, which indicates the significant relevance of studying suicides, morphology and pathogenesis of these groups of injuries. Materials that emphasize the importance of the industry - both in the judicial and healthcare systems - help medical students and clinicians make informed choices in the field of forensic medicine.

**Findings**

1. In general, the work of the structural divisions of the Bukhara Regional Bureau of Forensic Medicine is systematically monitored. During the indicated period of time, work is proceeding at a consistently satisfactory level, with a noticeable tendency to improvement in recent years. The deadlines for the completion of expert studies have been significantly reduced, laboratory research objects are delivered on time, according to the approved schedule, there is an alternative way of delivery of biological objects and correspondence. The office work and labor discipline in the department has noticeably improved.
2. Constant cooperation with law enforcement agencies, healthcare, high-quality and conscientious performance of their official and official duties speaks of the high professionalism of the department employees. In general, the material and technical equipment, the staff of the department, fruitful interdepartmental cooperation, allow to carry out expert research of any complexity in the shortest possible time at a high professional level.

3. In addition, it is worth noting that it is necessary to strengthen scientific and practical ties with the leading departments of pathological anatomy and forensic medicine, with the aim of the possible creation of a scientific school of pathomorphologists and forensic experts of the Bukhara region in the future, together with leading specialists in the field of forensic medicine of our country ...

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## CONDITION OF CYTOKINS STATUS AT PATIENTS OF SEBORRHOEIC DERMATITIS

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✓ ***Resume***

***To articles are presented a condition of cytokins status of immune system at 32 sick of seborrhoeic dermatitis. Results of research have shown that one of the pathogenetic mechanisms of a clinical current of the chronic form of disease is the inconsistency of system of cellular reactance of the organism, characterized by decrease about - (FNO-ALPHA) and anti-inflammatory (ИЛ-4) cytokins that promotes development microbic contamination on the skin at patients of seborrhoeic dermatitis.***

***Key words: seborrheic dermatitis, clinical features, skin, skin scales, erythema, papular rash, microflora, cytokines, immune status.***

## СОСТОЯНИЕ ЦИТОКИНОВОГО СТАТУСА У БОЛЬНЫХ СЕБОРЕЙНЫМ ДЕРМАТИТОМ

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✓ ***Резюме***

***В этой статье был исследован цитокиновый статус (ИЛ-4,ФНО-альфа) иммунной системы больных с себорейным дерматитом. Результаты научно-исследовательских работ показывают, что одним из патогенетических механизмов хронического течения заболевания является несогласованность реактивности клеточной системы организма, то есть достоверное снижение уровня цитокинов (ИЛ-4, ФНО-альфа) связанное с воспалением. Что в свою очередь привело к развитию микробного заражения у пациентов с себорейным дерматитом.***

***Ключевые слова: себорейный дерматит, особенности клиники, кожа, кожные чешуйки, эритема, папулезные высыпания, микрофлора, цитокины, иммунный статус***

## СЕБОРЕЯЛИ ДЕРМАТИТ БИЛАН КАСАЛЛАНГАН БЕМОРЛАРДА ЦИТОКИН ТИЗИМИНИНГ ҲОЛАТИ

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✓ ***Резюме***

***Ушбу мақолада себорея дерматит билан касалланган 32 та беморларда иммун тизимининг цитокин статуси ( ИЛ-4,ФНО-альфа) ўрганилди. Олиб борилган илмий –тадқиқот натижалар шуни кўрсатдики, касалликнинг сурункали кечишидаги патагенетик механизмларидан бири бу организмнинг хужайравий тизимининг реактивлигини ўзлашитирилмаганлиги, яъни яллигланишга алоқадор цитокинлар (FNO- à, Ил-4) кўрсаткичларини ишончли камайганлигидан далолат берди. Бу эса ўз навбатида себорея дерматитли беморларда микробли контаминацияни ривожлантиришга олиб келди.***

***Калит сўзлар: себореяли дерматит, клиник кечиш хусусиятлари, тери, тери кипикчалари, эритема, тугунчали тошмалар, микрофлораси, цитокинлар, иммун ҳолат.***

### Relevance

Seborrheic dermatitis (DM) is a chronic relapsing disease characterized by lesions of skin areas rich in glands. Diabetes is more common in people aged 20 to 40. In the etiology of diabetes, a hereditary, infectious, allergic factor and the immune status of the body play a role [1,2,3,4].

In the genesis of the pathogen, the role is assigned to the similar fungi Pityrosporumovale, which saprophyte on the scalp (ACH), however, under certain conditions (hormonal imbalance, metabolic disorders, pathology / s of the gastrointestinal tract, nervous system, immunodeficiencies) can acquire pathogenic properties, participating in the development or aggravation of the pathological process [1,2,3,4,5,6,7].

Currently, in many countries, a steady upward trend in the number of patients with seborrheic dermatitis is recorded. [1,2,3,6,8] Chronization, frequent relapse, prevalence, persistent skin pathological process, resistance to therapy requires a deep approach to the study of the pathogenesis of this dermatosis.

According to the literature, in the pathogenesis of seborrheic dermatitis, great importance is attached to endocrinopathy, disorders of the gastrointestinal tract, etc. [2,3,4].

It should be said that recently in the etiopathogenesis of this dermatosis, an important role is played by yeast-like - lipophilic fungi of the genus Malassezia, which saprophytes on the scalp, however, under certain conditions - against the background of hormonal, metabolic disorders, drug allergies, diseases of the nervous system, gastrointestinal intestinal tract, quantitative and qualitative changes in the secretion of the sebaceous glands can acquire pathogenic properties [1,2,3,6,8].

The central role in the pathogenesis of skin diseases with a chronic course and frequent recurrence is assigned to the immune system [2,3,5,6,7]. According to modern concepts of the pathogenesis of seborrheic dermatitis, the leading place in the functioning of the immune system is given to the indicators of the cellular link of immunity - T cells with helper activity, producing cytokines of pro - and anti-inflammatory nature [5,6,7,8].

**Purpose of work**

The aim of our research was to study the indicators of the cytokine profile: IL4 and TNF-alfa in patients with seborrheic dermatitis.

**Material and methods**

32 patients aged 14 to 65 years were under observation. Among the males there were 18 patients, the female - 14. Clinical, microbiological and immunological research methods were carried out in all patients.

The study of the duration of the disease showed that 9 patients suffered from seborrheic dermatitis - up to 1 year, from 1 to 5 years - 19 and more than 5 years - 4 patients. The skin-pathological process was characterized by hyperemia, infiltration of the skin in the lesions of the "milk crust" type, pityriasis peeling was noted and was located only on the scalp - in 17 patients, on the skin of the trunk and scalp - in 9 and on the scalp parts of the head and face - in 6 patients. In terms of severity, 5 (15.6%) patients were diagnosed with mild severity, 21 (65.6%) with moderate and 6 (18.7%) with severe severity of the disease.

To assess the cytokine link of immunity, enzyme-linked immunosorbent assay was used using standard sets of test systems "Vector-Best" (Novosibirsk). The content of cytokines in blood serum was studied. Microbiological studies were characterized by bacterial inoculation of skin scales on nutrient media Sabouraud, 5% blood agar, endo, Levin to determine myco- and microflora. Statistical processing of the obtained material was carried out by the method of variation statistics. For statistical calculations, we used a PC of the Pentium - 4 type, standard (MS Excel - 2000, Statistica 6.0) and specially developed programs that ensure the effective use of statistical analysis methods. The results were considered reliable at $P < 0.05$.

**Result and discussion**

The results of the study of the content of cytokines in patients with seborrheic dermatitis are presented in table No. 1.

**Table № 1. Content of Il4 and TNF-alfa cytokines in patients with seborrheic dermatitis (pg / ml)**

| Indicators | Control healthy group N=20 | Sick N=32 |
|---|---|---|
| Il4 pg/ml | 2,5±0,08 | 1,7±0,2* |
| TNF-alfa pg/ml | 4.01±0,31 | 2,6±0,3* |

* - indicator of reliability in relation to the indicators of the healthy control group ($P < 0.05$)

As can be seen from table No. 1, in the blood serum of patients with seborrheic dermatitis, there is a significant decrease in the level of IL-4 and TNF-α ($p < 0.05$) compared with the indicators of

the control healthy group and on average it was 1.7 + 0, 2 pg / ml and 2.6 + 0.3 pg / ml, respectively, at 2.5 + 0.08 pg / ml and 4.01 + 0.31 pg / ml, respectively, in the control.

The results of the study indicate that in patients with seborrheic dermatitis, an imbalance of the cytokine status is observed in the blood, expressed by a deficiency of IL-4 and TNF-α. The decrease in the level of IL-4 and TNF-α in the blood reflects the development of the failure of the body's defense system.

**Table 2. Indicators of cytokine status in patients with seborrheic dermatitis depending on the duration of the disease (pg / ml)**

| Indicators | Control healthy group N=20 | Sick N=32 | Up to 1 year N=7 | 1-5 years old N=18 | More than 5 years N=7 |
|---|---|---|---|---|---|
| Il4 pg/ml | 2,5±0,08 | 1,7±0,2* | 2,3±0,5 | 1,8±0,2* | 2,3±0,2 |
| TNF-alfa pg/ml | 4.01±0,31 | 2,6±0,3* | 2,3±0,5* | 3,5±0,6 | 3,5±0,8 |

** - indicator of reliability in relation to the indicators of the healthy control group (P <0.05)*

The study of the state of IL-4 and TNF-α, depending on the duration of the disease, indicates a multidirectional imbalance of the cytokine status in patients with seborrheic dermatitis (Table 2). The concentration of IL-4 with a disease duration of up to 1 year was on average 2.3 + 0.5 pg / ml, which corresponded to the indicators of the healthy control group, while with an increase in the duration of the disease - 1-5 years, the concentration of IL-4 decreased by 1, 5 times compared with the control group and 1.3 times compared to 1 year old, which was statistically significant (P <0.05).

Whereas the pro-inflammatory cytokine TNF-α with a disease duration of up to 1 year decreased by 1.7 times and had a statistically significant character (P <0.05). And with an increase in the duration of the disease, this indicator tended to decrease, however, having a statistically unreliable character. It should be pointed out that TNF-α - as a mediator of inflammation, is involved in the activation of the functional activity of phagocytes, neutrophils, carries out the growth and differentiation of endothelial cells and is involved in antimicrobial immunity.

Thus, a decrease in IL-4 and TNF-α indicates a decrease in the cellular response of the body's immune system to foreign antigens of a bacterial or fungal nature. According to numerous authors, as well as our own observations, it is shown that seborrheic dermatitis is associated with fungal flora - M. furfur and other bacterial microflora.

Thus, microbiological studies of the scalp skin of lesions in 36 patients with seborrheic dermatitis showed an increase in M.fyrfyr in 7 out of 36 (19.4%), st.aureus - in 14 (38.8%), st. Haemolyticus - in 8 (22.2%), st.saprophyticus - in 9 (25%). Whereas on the skin of the trunk, M. furur was noted in 2 (5.5%), st.aureus - in 11 (30.5%), st. Haemolyticus - in 3 (8.3%) and st.saprophyticus - in 13 (36.1%) patients.

It should be noted that the colonization of representatives of the Micrococcaceae family in the lesions statistically significantly exceeded the microflora indicators in healthy individuals (P <0.05), which averaged 1221.5 ± 215.6 CFU / cm². The data obtained indicate a high contamination of the pathogenic flora of stafylococcus spp. on the skin of patients with seborrheic dermatitis, which, in our opinion, plays an important role in the clinical course of this dermatosis. At the same time, a decrease in the concentration of TNF-α helps to reduce the stimulation of endothelium and macrophages to release "pathological" nitric oxide, which leads to a decrease in neutrophil adhesion, which contributes to the development of a favorable environment for the growth of pathogenic microorganisms.

## Findings

Thus, the data obtained indicate that one of the pathogenetic mechanism of the clinical course of the chronic form of morbidity is the failure of the body's cellular reactivity system, characterized by a decrease in pro- (TNF-alpha) and anti-inflammatory (IL-4) cytokines, which contributes to the development of microbial contamination on the skin in patients with seborrheic dermatitis.

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# A MODERN VIEW TO OPTIMIZING DIAGNOSTICS OF CHRONIC KIDNEY DISEASE

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✓ ***Resume***

***The present work is a review that analyzes the accumulated knowledge on the modern view to optimize the diagnosis of the course of chronic kidney disease. We analyzed the results of foreign sources and the CIS countries, published in the last 10 years, which are devoted to the optimization of diagnostics of the course of chronic kidney disease. It is concluded that as a result of identifying the main risk factors and their predictive significance in the progression of CKD and the development of a clinical algorithm for the diagnosis and treatment of CKD for primary care physicians, it will be possible to identify a group of patients with an increased risk for predicting CKD. As a result, this will significantly improve the identification of patients in the early stages of CKD and the work of succession mechanisms with specialized institutions, which will give a real opportunity to qualitatively improve the level of national medicine in providing specialized nephrological care to the population of Uzbekistan at the level of world standards.***

***Key words: Chronic kidney disease, disability, cardiovascular complications, prognosis.***

# СОВРЕМЕННЫЙ ВЗГЛЯД К ОПТИМИЗАЦИИ ДИАГНОСТИКИ ТЕЧЕНИЯ ХРОНИЧЕСКОЙ БОЛЕЗНИ ПОЧЕК

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✓ ***Резюме***

***Настоящая работа представляет собой обзор, анализирующий накопленные знания по современному взгляду к оптимизации диагностики течения хронической болезни почек. Были проанализированы результаты зарубежных источников и стран СНГ, опубликованные в последние 10 лет, которые посвящены оптимизации диагностики течения хронической болезни почек. Делается вывод, что в результате определения основных факторов риска и их предикторной значимости в прогрессировании ХБП и разработка клинического алгоритма диагностики и лечения ХБП для врачей первичного звена здравоохранения, позволят выделить группу больных повышенного риска по прогнозированию ХБП. В итоге это значительно улучшит выявление больных на ранних стадиях ХБП и работу механизмов преемственности со специализированными учреждениями, что даст реальную возможность качественно повысить уровень национальной медицины по оказанию специализированной нефрологической помощи населению Узбекистана на уровне мировых стандартов.***

***Ключевые слова: Хроническая болезнь почек, трудоспособность, сердечно-сосудистые осложнения, прогнозирование.***

# BUYRAKNING SURUNKALI KASALLIGINI DIAGNOSTIKASINI OPTIMALLASHTIRISH UCHUN ZAMONAVIY KO'RINISH

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✓ ***Rezyume***

***Ushbu ish, surunkali buyrak kasalligi diagnostikasini optimallashtirishning zamonaviy nuqtai nazari bo'yicha to'plangan bilimlarni tahlil qiladigan sharhdir. So'nggi 10 yil ichida surunkali buyrak kasalligi diagnostikasini optimallashtirishga bag'ishlangan xorijiy manbalar va MDH mamlakatlarining natijalarini tahlil qildik. Xulosa qilish mumkinki, asosiy xavf omillarini aniqlash va ularning SBK rivojlanishidagi bashorat qiluvchi ahamiyati va SBK diagnostikasi va davolashning***

***klinik algoritmini ishlab chiqish, birlamchi vrachlar uchun SBKni bashorat qilish xavfi yuqori bo'lgan bemorlar guruhini aniqlash mumkin bo'ladi. Natijada, bu SBKning dastlabki bosqichlarida bemorlarni identifikatsiyalashni va ixtisoslashtirilgan muassasalar bilan merosxo'rlik mexanizmlarini ishlashini sezilarli darajada yaxshilaydi, bu esa jahon standartlari darajasida O'zbekiston aholisiga ixtisoslashgan nefrologik yordam ko'rsatishda milliy tibbiyot darajasini sifat jihatidan yaxshilashga imkon beradi.***

***Kalit so'zlar: Surunkali buyrak kasalligi, nogironlik, yurak-qon tomir asoratlari, prognoz.***

**Relevance**

Chronic kidney disease (CKD) is a general medical problem with profound socio-economic consequences associated with its widespread prevalence in the population (10-15% of the population), disability and mortality due to the development of end-stage renal failure (ESRD) and cardiovascular complications ( SSO), the risk of which in patients with impaired renal function increases tenfold. At the turn of the 20th and 21st centuries, the world community is faced with a global problem that has not only medical, but also enormous socioeconomic significance - a pandemic of chronic no communicable diseases, which claim millions of lives every year, lead to severe complications associated with disability and the need for high-cost treatment. Among them, kidney diseases occupy an important place due to their significant prevalence in the population, a sharp decrease in the quality of life, high mortality of patients and lead to the need to use expensive methods of replacement therapy in the terminal stage - dialysis and kidney transplant. At the same time, the development of medical science and pharmacology at the end of the 20th century laid the foundations for the development of new highly effective and affordable methods of prevention, which can significantly slow down the progression of chronic kidney disease, reduce the risk of complications and the cost of treatment. Such approaches turned out to be applicable to the vast majority of patients with renal pathology, regardless of its cause. These circumstances require a new strategy for health systems to define and stratify the severity of chronic renal disease. There is a need for the development of simple criteria and a universal classification that allow assessing the degree of renal dysfunction, prognosis and clearly planning certain therapeutic effects. Only on the basis of universal approaches and a unified terminology can an adequate assessment of the incidence and prevalence be carried out, regional and national registries of patients with impaired renal function can be compiled and, on this basis, the need for appropriate treatment methods can be calculated, and the necessary financial costs can be planned. Historically, the first attempt to address these issues was initiated at the beginning of the 21st century by the US National Kidney Foundation (NKF). The analysis of numerous publications on the diagnosis and treatment of kidney diseases, the prognostic role of a number of indicators, terminological concepts formed the basis of the concept of chronic kidney disease (CKD). Subsequently, experts from the European Renal Association - European Dialysis and Transplantation Association (ERA-EDTA) [18] and KDIGO (Kidney Disease: Improving Global Outcomes) [20] took part in the development of this model.

Diseases of the circulatory system (CVD) make the main contribution to the morbidity and mortality of people in older age groups. According to the Ministry of Health of the Russian Federation, the incidence of CSD in our country in 2012 was 63711.5 per 100,000 people over working age [15, 4]. Among cardiovascular diseases (CVD), the leading positions are occupied by ischemic heart disease (IHD) and arterial hypertension (AH), the share of the latter being from 30% to 40% [14].

Early development and progression of CVD is facilitated by renal dysfunction, the prevalence of which has increased significantly in the last 10-15 years [10,18,20]. In 2007, the term "chronic kidney disease" (CKD) was introduced into the international classification of diseases (ICD-10). According to the National Recommendations (2012), CKD includes conditions, regardless of nosology, existing for at least 3 months, in which signs of kidney damage are revealed - a persistent decrease in the glomerular filtration rate (GFR) below 60 ml / min / 1.73 m2, structural changes in the kidneys detected by imaging studies, increased albuminuria / proteinuria, changes in urine sediment, in the electrolyte composition of urine and blood [24]. CKD is recorded according to population studies in 6-14% of the adult population and in 20-56% of older age groups [21,23]. Many authors emphasize the unity of

risk factors for CKD and CVD, which include atherogenic dyslipidemia, metabolic syndrome, obesity, hyperuricemia, smoking [1,9,12].

To date, the concept of CKD and its classification have received worldwide recognition. The peculiarity of the CKD problem is the prevalence of secondary nephropathies, in connection with which patients are observed for a long time by therapists and "non-nephrologists" specialists, and cases of CKD as a secondary disease are practically not taken into account by official statistics. The prevalence of CKD is high and is not inferior to the prevalence of socially significant diseases such as diabetes mellitus, hypertension, and heart failure. In the United States, it is 14%, while kidney disease ranks 4th in the structure of causes of death. According to studies conducted on different continents in countries with different ethnic composition and economic development, signs of CKD are observed in 12-18% of the population, and CKD of the most unfavorable stages 3-5 - in 5.9-8.1% of the population (in Japan - up to 18.7%). Thus, at least every tenth inhabitant of the Earth has signs of CKD.

Data on the nosological composition of CKD require clarification, since population studies, as a rule, do not imply a detailed nephrological examination, and the currently created CKD registries do not include patients in its early stages. However, there is no doubt that, as already mentioned, the leading place in the structure of CKD and the causes of ESRD is occupied not by primary kidney diseases, such as glomerulonephritis, polycystic kidney disease, but by secondary nephropathies in diabetes and hypertension. The most obvious consequence of CKD is the colossal cost of life-saving renal replacement therapy (dialysis and kidney transplant), which places a heavy burden on the healthcare system. In 2011, renal replacement therapy expenditure in the United States reached 7.2% of the total Medicare health care budget, while these patients accounted for 1.4% of the total number of people covered by the system [25]. At the same time, an average of $ 87,945 was spent on the treatment of one patient with ESRD receiving hemodialysis treatment under the Medicare system. USA, peritoneal dialysis - 71 630 dollars. USA, for a patient with a transplanted kidney - 32 922 dollars. USA. In Russia, at least 1–1.5 million rubles are spent on the treatment of one dialysis patient during the year, which is more than 100 times higher than the per capita standard of the Program of State Guarantees of Free Provision of Medical Aid to Citizens.

Patients receiving renal replacement therapy are just the tip of the iceberg for CKD, attracting the most attention from healthcare providers, healthcare providers and the medical community. Meanwhile, the already moderate decline in kidney function leads to a significant decrease in life expectancy, deterioration of other health indicators and an increase in treatment costs. The need for hospitalization in patients with CKD is 38% higher than in people without CKD, and mortality is 43% [3, 18]. The kidneys eliminate factors damaging the endothelium, therefore, when their work is disrupted, the adverse effect on the cardiovascular system of traditional, "Framingham" risk factors (RF) increases: arterial hypertension (AH), insulin resistance, hyperlipidemia. At the same time, when GFR is <60 ml / min / 1.73 m2, the role of specific "renal" RF CVD begins to manifest itself and increases as it further decreases: disorders of calcium phosphate metabolism, protein-energy malnutrition syndrome (PEM), anemia, chronic inflammation , hyperuricemia. Each subsequent stage of CKD, starting from 3a, is characterized by an additional increase in cardiovascular risk by 1.5–3 times [11]. The high prevalence of CKD, its unfavorable outcomes and complications give grounds to raise the problem of the feasibility of developing and implementing measures at the population level for its early detection, nephroprotection and nephroprophylaxis [24].

Elderly and senile age is one of the main risk factors for both CVD and CKD. CKD can be asymptomatic and gradually progress to the terminal stage [13,17,20]. The prevalence of CKD is comparable to such socially significant diseases as hypertension and diabetes mellitus, as well as obesity and metabolic syndrome. The results of epidemiological studies in Uzbekistan showed that the problem of CKD for our country is no less acute. Signs of chronic kidney disease are noted in more than 1/3 of patients with chronic heart failure; decreased kidney function is observed in 36% of people over the age of 60, in people of working age; decreased function is observed in 16% of cases, and in the presence of cardiovascular diseases, its frequency increases to 26% [5,13,16]. These data make us reconsider the traditional view of the relative rarity of kidney diseases among the population and require a radical restructuring of the care system for this category of patients. A decrease in renal function, according to modern concepts, is an independent and important reason for the accelerated development of pathological changes in the cardiovascular system. This is due to a

number of metabolic and hemodynamic disorders that develop in patients with a reduced glomerular filtration rate, when unconventional, "renal" factors of cardiovascular risk arise and come to the fore: albuminuria / proteinuria, systemic inflammation, oxidative stress, anemia, hyperhomocysteinemia, etc. others [13].

Thus, the rapid growth in the population of the number of patients with reduced renal function is not a highly specialized, but a general medical interdisciplinary problem with serious socio-economic consequences [13]. It requires, on the one hand, the restructuring and strengthening of the nephrological service - not only by opening new dialysis centers and the development of transplantology, but also by strengthening its structures aimed at conducting etiotropic, pathogenetic and nephroprotective treatment in order to prevent end-stage renal failure. On the other hand, it is necessary to fully integrate nephrology and primary health care, as well as other specialties in order to conduct broad preventive measures, early diagnosis of CKD, ensure the continuity of treatment and the effective use of available resources. The concept of CKD, which provides the unification of approaches to both prevention, diagnosis, and treatment of nephropathies of various natures, creates the prerequisites for solving these important health problems.

**Conclusions**

An analysis of the available literature has shown that, despite the progress achieved in the study of CKD in recent years, there are still many unresolved problems in the field of diagnosis, treatment and prevention of CKD. Determination of the main risk factors and their predictive significance in the progression of CKD and the development of a clinical algorithm for the diagnosis and treatment of CKD for primary care physicians will make it possible to identify a group of patients at increased risk for predicting CKD. As a result, this will significantly improve the identification of patients in the early stages of CKD and the work of succession mechanisms with specialized institutions, which will give a real opportunity to qualitatively improve the level of national medicine in providing specialized nephrological care to the population of Uzbekistan at the level of world standards.

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# PROBLEMS OF THE POPULATION LIVING IN ECOLOGICALLY UNFAVORABLE AREAS OF THE SOUTHERN ARAL SEA REGION

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✓ ***Resume***

***The problems of the Aral Sea disaster, which has a destructive effect not only on the Aral Sea regions,but also on the entire planet. By now, the Aral Sea - the fourth largest lake in the world - has completely lost the status of a stable, super-complex natural system, the creative energy of which over the past three centuries has improved the relationship between various living systems and the latter with inanimate nature. The Aral ecological system maintained a fragile but very stable ecological balance over vast areas, extinguished the entropy of the surrounding world, and held back the movement of deserts to the North. These processes are reflected in the ecological state of the Republic of Uzbekistan, where, according to many experts, an extremely difficult and dangerous ecological situation has developed, which has a negative impact on the sanitary state of the region, on the organism of the population living here, as evidenced by the tendency for the growth and aggravation of many diseases. The investigation carried out confirm the legitimacy of the assumption about the existence of a connection between environmental factors negatively affecting the health of the population in the Aral Sea region with the ecological crises of these regions and the accompanying degradation of the natural environment. The studied phenomena, processes and patterns can be considered as characteristic.***

***Due to the continuing drying up of the Aral Sea and the ongoing humanitarian catastrophe around it, the preservation of the natural biological fund of the Aral Sea region, the reduction of the destructive impact of the Aral Sea crisis on the environment and, most importantly, on the livelihoods of hundreds of thousands and millions of people living here has become especially urgent.***

***Therefore, an in-depth study of the ecological, sanitary and epidemiological situation and the development of comprehensive recommendations for the protection of health and restoration of the natural environment in the Aral Sea region is one of the urgent scientific and practical tasks of the whole world.***

***Key words: Problems of the population living in ecologically unfavorable areas, the southern edge of the Aral Sea region.***

# ПРОБЛЕМЫ НАСЕЛЕНИЯ ПРОЖИВАЮШИХ В ЭКОЛОГИЧЕСКИЙ НЕБЛАГОПРИЯТНЫХ РАЙОНАХ ЮЖНОГО ПРИАРАЛЬЯ

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✓ ***Резюме***

***Проблемы Аральской катастрофы, аказьвающее губительное влияние не только на регионы Приаралья, но и на всю планету. К настоящему времени Аральское море – четвертое по величине озеро в мире – полностью потеряло статус стабильной, сверхсложной природной системы, созидательная энергия которой на протяжении последних трех столетий совершенствовала взаимоотношения между различными живыми системами и последними с неживой природой. Аральская экологическая система поддерживала хрупкое, но весьма устойчивое экологическое равновесие на огромных пространствах, гасила энтропию окружающего мира, сдерживала движения пустынь на Север. Эти процессы отражаются и на экологическом состоянии Республики Узбекистан, где по оценке многих специалистов, сложилась крайне сложная и опасная экологическая ситуация, оказывающая негативное влияние на санитарное состояние региона, на организм***

***проживающего здесь населения, о чем свидетельствует тенденция к росту и утяжелению многих заболеваний.***

***Проведенные исследования подтверждают правомерность предположения о существовании связи, негативно действующих на здоровье населения факторов окружающей среды в Приаралье с экологическими кризисами данных регионов и сопутствующей деградацией природной среды. Изученные явления, процессы и закономерности могут рассматриваться как характерные.***

***В связи с продолжающимся высыханием Арала и происходящей гуманитарной катастрофой вокруг него особую актуальность приобрело сегодня сохранение природного биологического фонда Приаралья, сокращение губительного воздействия Аральского кризиса на окружающую среду и, самое главное, на жизнедеятельность проживающих здесь сотни тысяч и миллионов людей.***

***Поэтому углубленное изучение экологической, санитарно-эпидемиологической обстановки и разработка комплексных рекомендаций по охрани здоровья и восстановления природной среды в районе Аральского моря является одной из актуальных научно-практических задач всего мира.***

***Ключевые слова: Проблемы населения проживавших в экологический неблагоприятных районах, южный край Приаралья.***

## AHOLINING EKOLOGIK JIHATDAN YASHASH MUAMMOLARI JANUBIY OROL DENGIZ MINTAQASINING NOXUSH HUDUDLARI

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***Tabiat va jamiyat insonning biologik tabiati ta'sir qilishi mumkin bo'lgan o'zgarishlarning yagona dinamik ekotizimini aks ettiradi. Mamlakatimizda ham, butun sayyorada ham hozirgi va kelajak avlodlarning ahvolini yanada yaxshilash ko'p jihatdan ekologik omillarga bog'liq.***

***Quriyotgan Orol tabiatning odamlarga bo'lgan abadiy turtki va uning dahshatli ogohlantirishidir. Insoniyat tsivilizatsiyasi tarixida birinchi marta butun dengiz Yer xaritasidan asta-sekin yo'qolib bormoqda.***

***Hozirgi vaqtda Orol dengizi - dunyodagi to'rtinchi katta ko'l - barqaror, o'ta murakkab tabiiy tizim maqomini butunlay yo'qotdi, uning so'nggi uch asr davomida bunyodkorlik energiyasi turli xil tirik tizimlar va ikkinchisi jonsiz tabiat bilan. Orol ekologik tizimi keng hududlar bo'yicha mo'rt, ammo juda barqaror ekologik muvozanatni saqlab, atrofdagi dunyoning entropiyasini o'chirdi va cho'llarning shimol tomon harakatlanishini to'xtatdi.***

***Ushbu jarayonlar O'zbekiston Respublikasining ekologik holatida aks etadi, bu erda ko'plab mutaxassislarning fikriga ko'ra, mintaqaning sanitariya holatiga, aholi organizmiga salbiy ta'sir ko'rsatadigan o'ta qiyin va xavfli ekologik vaziyat yuzaga kelgan. bu erda yashash, bu ko'plab kasalliklarning o'sishi va kuchayish tendentsiyasidan dalolat beradi.***

***O'zbekiston hukumati mintaqaning ekologiyasi holatiga katta e'tibor qaratmoqda.***

***BMTning Mingyillik rivojlanish maqsadlari bo'yicha sammitining yalpi majlisidagi O'zbekiston Respublikasi Prezidenti Shavkat Mirziyoevning nutqida ta'kidlangan: "Ekologiyani muhofaza qilish va atrof-muhitni muhofaza qilish belgilangan maqsadlarga erishish uchun katta ahamiyatga ega. Mingyillik deklaratsiyasi bilan, ayniqsa zamonaviy g'ayritabiiy tabiiy o'zgarishlar sharoitida».***

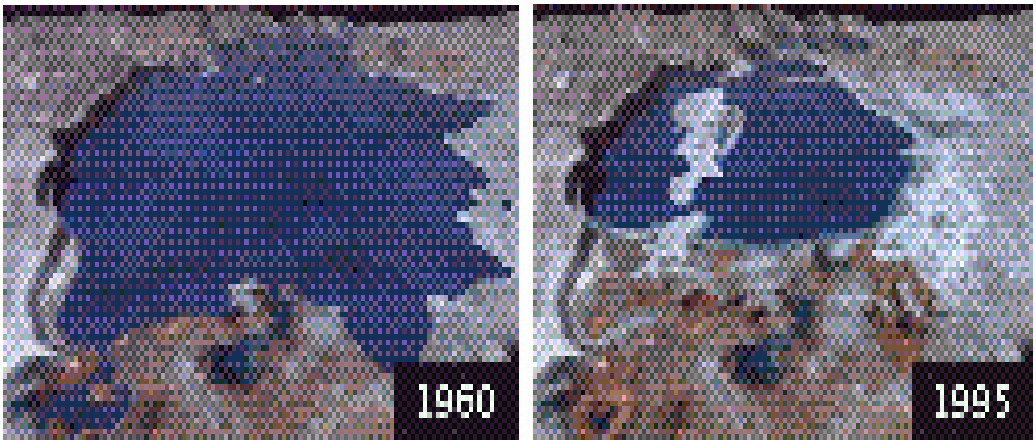
***Kalit so'zlar: Orol dengizi mintaqalarida ekologik inqirozning salbiy oqibatlarini o'rganish.***

**Relevance**

To ensure environmental safety and sustainability in the republic, measures are being taken to improve the process of environmental protection, stabilize the environmental situation. A harmonious system of government and administrative bodies has been built, and environmental legislation is being developed. National and international projects are being implemented in the field of environmental protection and rational use of natural resources, dissemination of environmental knowledge and best practices.

The problem of the Aral Sea crisis is an ecological, socio - economic, medical and demographic catastrophe, which affects not only the fate of the peoples of Uzbekistan, Kazakhstan and Turkmenistan. The negative consequences of the environmental crisis of the Aral Sea region go far beyond the framework of these regions, acquiring a planetary character. All this testifies to the fact that delay in liquidating the current crisis can lead to more serious moral and socio-economic costs.

From 1961 to 1990, the level of the Aral Sea decreased by 14.8 m. At the same time, the volume of water in the Aral Sea (from 1093 to 330 $km^3$, that is, by 763 $km^3$, or more than three times) and the area of the reservoir (from 68,500 to 36,500 $km^2$, that is, by 32,000 $km^2$, or almost twice) decreased significantly. By 1995, the level of the reservoir had dropped by another 2 m. (Picture 1).

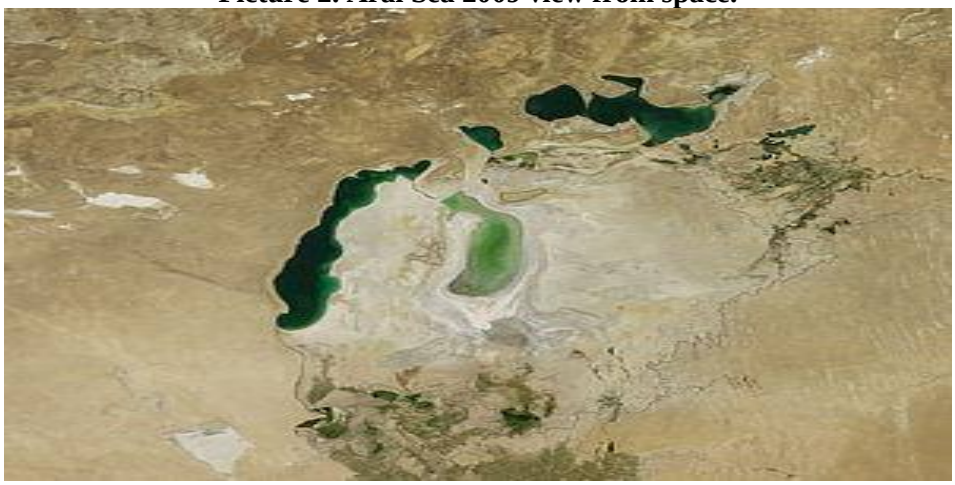



**Picture 1. View from space. Aral Sea in 1960 and 1995.**

Until the middle of the last century, the Aral Sea was the fourth largest inland water body of the planet, containing more than a thousand cubic kilometers of water. The salinity of the sea was then about three times lower than the average salinity of the waters of the World Ocean. The presence of such a large reservoir had a softening effect on the climate, turning the Aral Sea region into a kind of oasis in the middle of the desert. The unique ecosystem of the Aral Sea included hundreds of species of marine animals and plants, many of which were found only here. Gradually, thickets of Asiatic poplar, oleaster, willow began to disappear or shrank, they began to be replaced by salt-tolerant vegetation. Of the floristic richness of 574 plant species, 230 species are actually found at present, in addition, the presence of 192 species is noted, and 152 plant species have disappeared irrevocably. Of the remaining 422 plant species, 54 types are on the verge of extinction. Due to the consequences of the drying up of the Aral Sea, not only the delta of the Amu Darya River has been degraded, but also the vast desert areas of the Southern Aral Sea, which are pastures for distant pasture breeding. In the past, a rich fauna, numbering 498 species of vertebrates, including 307 birds, 33 reptiles, 2 amphibians, 44 fish. At present, more than 12 species have disappeared from this faunal composition, 19 species of mammals, 76 species of birds, 6 reptiles and 12 species of fish are on the verge of extinction.

Today, the Aral Sea area has decreased by three quarters (Pictures 2 and 3).

**Picture 2. Aral Sea 2009 view from space.**



**Picture 3. Aral Sea 2011 view from space.**

At the same time, the salinity of the reservoir has catastrophically increased, which is now almost three times higher than that of the ocean.

About 30 thousand square kilometers of the former seabed have become an arena for desertification. Today, almost twice as much moisture continues to evaporate from the mirror of the Aral Sea than it comes in.

From the surface of the salt marshes, which occupy vast areas of the dried bottom of the Aral Sea, about 65 million tons of toxic finely dispersed salt rises into the atmosphere annually. Spreading to the west, it forms dust-salt clouds, the range of which is unlimited. In recent years, the salt content in rainwater has more than doubled in the vicinity of Tashkent, in Belarus, and in Lithuania. In the immediate vicinity of the Aral Sea - seven times.

The consequences of the Aral Sea crisis for the Central Asian states are defined by international experts as a global ecological disaster of the 20$^{th}$ century.

The tragedy of the Aral Sea is the result of short-sighted and irrational policies in the former Soviet Union. One of the main causes of the Aral Sea ecological catastrophe is of anthropogenic nature.

From the 1960s to the late 1980s, the inflow of water into the sea decreased from 50-60 to 5 km$^3$. At the same time, there was a steady, unprecedented increase in the number of fertilizers and pesticides used (due to large-scale and uncontrolled use in agricultural practice of pesticides, defoliants, mineral fertilizers, environmental pollution with radionuclides, heavy metal salts).

The consequences of this catastrophe were gross distortions of the natural environment over vast territories, and an extreme ecological and socio-economic situation developed.

In the southern Aral Sea region, many small lakes have become shallow and dry, which has led to the disappearance of almost 90 percent of the existing tugai thickets on an area of 800 thousand hectares, and with them their inhabitants. As a result of anthropogenic desertification, the biological productivity of the Aral Sea region has decreased by 10 times.

Over the past 35-40 years, the level of the Aral Sea has decreased by 29 m, the area of the water area has decreased by more than 5,8 times,

the volume of water has decreased from 1064 to less than 80 $km^3$, the salinity of water in the western part has reached 110-112 g/l., and in the eastern basin 280 g/l. The area of the drained bottom of the Aral Sea is more than 4,0 million hectares.

Environmental problems pose a serious threat to human health. According to the Global Humanitarian Forum, global climate change is responsible for 300,000 deaths a year. Three hundred million people live under its negative influence. The economy also suffers from this.

Due to warming, or rather climate change in the region, degradation and reduction of the area of snow and ice resources that feed the rivers of the Aral Sea basin are taking place. Glaciologist's assessments show that mountain glaciation in Central Asia has already decreased by more than a third.

Earlier, the Aral Sea acted as a kind of regulator, softening the cold winds that came from Siberia in winter and, like a huge air conditioner, reducing the heat in the summer months. With the aridization of the climate, summers in the region have become drier and shorter, winters - long and cold. The climate of the Khorezm region was mainly formed under the influence of the Aral Sea, but due to the crisis of the Aral Sea, the climate of the region changed, so the summer became hotter, drier, the air temperature in some months reached + 60 degrees Celsius, the winter became colder and longer, the temperature mark decreased to 30-40 degrees, the amount of atmospheric precipitation also decreased to 80-100 mm. The number of wind days has increased. This entails the pollution of the air basin, soil and water of the Khorezm region with thousands of tons of dust and poisonous salt, carried by sand-salt storms from the drained shores and the bottom of the Aral Sea, thereby aggravating the existing ecological crisis of the region, as it were, in a vicious circle.

By now, in the Khorezm region, the volume of medium saline soil has reached 33.1%, highly saline 13%, in addition to widespread soil salinization, it has been established that about 40% of the soils in the Khorezm region are contaminated with such herbicides as duplex doppler and hexachlorocyclohexane, the number of which in 2009 year was the multiplicity of increasing the maximum permissible value by 1-3 times, for 2010 1-9 times, for 2011 1-3, 4 times.

Deterioration in the quality of drinking water in terms of salinity, total hardness, sulfates and chlorides is noted throughout the Aral Sea region. The share of water samples that do not meet sanitary and chemical standards in watercourses in the Republic of Karakalpakstan is 55,9%, in the Khorezm region – 60,8%, and microbiological – 16,2% and 2,7%, respectively.

The drinking water supply of the region improved after the commissioning of the first start-up complex in 1990, the second start-up complex in 1992 of the Tuyamuyun water pipeline with a total capacity of 200 thousand cubic meters per day of tap water. Coverage of the population of the region with centralized tap water was 44,7%, including 60-70% in cities and regional centers, 15-20% in rural areas.

Sanitary violations in the operation of water supply facilities, low water supply and water consumption of the population, high water salinity, affected the health of the population.

On the territory of the Khorezm region there are more than 200 stationary sources of air pollution, one of the largest are cotton processing enterprises and enterprises of the construction industry. Basically, all cotton factories are located in residential areas, the organic and inorganic dust of which pollutes populated areas and harms the environment and public health. The annual emission of all enterprises, together with vehicles, is thousands of tons. In samples taken from the atmospheric air of populated areas, an increase in the maximum permissible norms for the concentration of dust and various toxic substances was noted.

It is known that for human health and longevity, clean air, water and soil, the consumption of products grown in natural conditions and rich in useful microelements are needed. For more than 10 years, scientists from the Urgench branch of the Tashkent Medical Academy and the Khorezm Regional Committee for Nature Protection have been closely cooperating to study the causes, prevalence, environmental impact on the health of the population of the Khorezm region, the characteristics of the course, prevention and new approaches to the treatment of various diseases of the population of the South Aral Sea region.

More than 10 million people live in the territories directly affected by the ecological disaster of the Aral Sea. As numerous studies have shown, dust, wind and salts rising from the bottom of the dried-up Aral Sea basin have an adverse effect not only on the stability of the ecosystem, but also on human health. Despite the ongoing medical and preventive measures, among the population of this region, there is an increasing frequency and aggravation of the

number of many diseases (anemia, goiter, developmental delays in children).

The incidence rate of acute intestinal infections, typhoid fever, infectious hepatitis in the Aral Sea region is the highest and exceeds the national average by several times. A particularly high incidence of various infections is noted among children under 14 years of age.

The Aral Sea crisis has a negative impact on the conditions and quality of life of the entire population of the region, but it is felt most by the residents of the ecological disaster zone living in Karakalpakstan, the Kyzyl-Orda region of Kazakhstan, the Khorezm, Bukhara and Navoi regions of Uzbekistan and the Tashauz region of Turkmenistan.

The study of morbidity in the Khorezm region for a three-year period from 2008 to 2010 revealed the following: the average rate of patients with neoplasms per 100,000 population among children under 14 years old in the Khorezm region was 894,54 cases, among adolescents (15-17 years old) – 552,07 cases, among adults – 3113,92 cases; with diseases of the blood and hematopoietic organs among children under 14 years of age, this figure was 81936,13 cases, among adolescents (15-17 years old) – 43956,58 cases, among adults – 33822,77 cases; with diseases of the circulatory system among children under 14 years of age, this indicator was 9096,72 cases, among adolescents (15-17 years old) – 20615,19 cases, among adults – 29428,17 cases; with diseases of the respiratory and digestive organs among children under 14 years old, these indicators were 68637, 45 and 53386,85 cases, among adolescents (15-17 years old) – 34610,37 and 33966,5 cases, and among adults - 50367.72 cases ... These indicators also exceed the average republican indicators.

The investigation carried out confirm the legitimacy of the assumption about the existence of a connection between environmental factors negatively affecting the health of the population in the Aral Sea region with the ecological crises of these regions and the accompanying degradation of the natural environment. The studied phenomena, processes and patterns can be considered as characteristic.

Due to the continuing drying up of the Aral Sea and the ongoing humanitarian catastrophe around it, the preservation of the natural biological fund of the Aral Sea region, the reduction of the destructive impact of the Aral Sea crisis on the environment and, most importantly, on the livelihoods of hundreds of thousands and millions of people living here has become especially urgent.

**Conclusions**

Summing up, it is necessary to once again note the seriousness of the global Aral catastrophe, which has a disastrous effect not only on the Aral Sea regions, but also on the entire planet. Therefore, an in-depth study of the ecological, sanitary and epidemiological situation and the development of comprehensive recommendations for the protection of health and restoration of the natural environment in the Aral Sea region is one of the urgent scientific and practical tasks of the whole world.

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# DULY DIAGNOSIS OF URINARY INFECTIONS IN CHILDREN AND ANALYSIS OF MODERN APPROACH TO THE THERAPY

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✓ ***Resume***

***Thus, the need for early diagnosis and adequate antibacterial therapy of urinary system infections in children and adolescents is justified by the fact of the development of subsequent adverse disabling conditions (the development of arterial hypertension in young age, chronic renal failure, etc.). This article analyzes the current state of this problem in the studied industry.***

***Key words: urinary tract infection, children, diagnosis, treatment.***

# АНАЛИЗ СОВРЕМЕННОГО ПОДХОДА К СВОЕВРЕМЕННОЙ ДИАГНОСТИКЕ И ЛЕЧЕНИЮ ИНФЕКЦИЙ МОЧЕВЫВОДЯЩИХ ПУТЕЙ У ДЕТЕЙ

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✓ ***Резюме***

***Необходимость ранней диагностики и адекватной антибактериальной терапии инфекции мочевой системы у детей и подростков, обосновывается фактом развития последующих неблагоприятных инвалидизирующих состояний (развитие артериальной гипертензии в молодом возрасте, хронической почечной недостаточности и др.) В данном статье анализиованна современное состояния данной проблемы в исследуемой отрасле.***

***Ключевые слова: инфекция мочевыводящих путей, дети, диагностика, лечение.***

# БОЛАЛАРДА СИЙДИК ЙЎЛЛАРИ ИНФЕКЦИЯЛАРИНИ ЎЗ ВАҚТИДА ТАШХИСЛАШ ВА ДАВОЛАШГА БЎЛГАН ЗАМОНАВИЙ ЁНДОШУВИНИ ТАҲЛИЛИ

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✓ ***Резюме***

***Болалар ва ўсмирларда сийдик йўллари инфекцияларини эрта ташхислаш ва адекват антибактериал терапиясини олиб бориш зарурати кейинчалик нохуш бўлган ногиронликка олиб келувчи ҳолатларнинг (эрта артериал гипертензия, сурункали буйрак етишмовчилиги ва бошқа касалликлар) ривожланиши билан асосланади. Ушбу таҳлилий илмий тадқиқот ўтказилган соҳадаги замонавий аҳволи таҳлили берилган.***

***Калит сўзлара: сийдик йўллари инфекциялари, болалар, ташхислаш, даволаш.***

## Relevance

Most of the patients suffering urinary infections (UI) are girls, but among newborn babies, that infection is 4 times more often diagnosed in boys [4]. Among the children, under seven about 7 - 9% of girls and 1.6-2% of boys at least once have bacteriologically confirmed diagnosis of UI.

According to location there are upper (pyelonephritis) and lower urinary (cystitis, urethritis) infections. Children have pyelonephritis and cystitis more often. On the basis of the results of urinary bacteriological tests it can be concluded that the range of micro flora is effected by lots of factors such as age, gender, term of disease (debut or relapse), conditions of disease development (in hospital or out of it), anatomical obstruction, functional immaturity, resistance in a child's body and

social circumstances. Out of hospital, there is prevalence of E. coli, while clinical conditions the role of certain strains of Proteus, Klebsiella is significant.

In most cases UI is caused by a certain kind of micro organisms. Majority of nephrologists consider that viruses serve the basis for development of bacterial infection.

Fungous lesions in urinary duct, as a rule, can be observed in children with immune deficiency (preterm babies, children with congenital defects, fetal infection, and protein-energetic deficit). In most cases we can observe association of bacteria with fungi.

There are urinary, hem, and lymphatic ways of urinary infection transmission. Within new-born period the dominant way is hematogenic one. Later, particularly among girls, the first place is taken by urinogenic way. That happens due to shorter urethra in girls, compared to boys, and location of external urethral opening close to anus causing frequent contact with fecal masses. In urinogenic way of transmission important part is played by a phenomenon of bacterial adhesion, in other words certain micro organisms attach to mucous membrane of urinary ducts with the help of pili, resist opsonization and phagocytosis, release endotoxin and move against natural flow of urine. In children 40-60% of vesicoureteral reflux cases cause development of secondary pyelonephritis. At the time urine excretion the pressure in bladder rises and due to the reflux urine goes to calicies and pelvis of kidney [5].

Complete and regular emptying of bladder, high and low pH of urine, high urinary osmolarity, high concentration of antibodies in serum are considered to be the mechanisms of protection against reproduction of bacteria in urinary ways. Development of pyelonephritis is cause by multiple risk factors. In children, under 2 endogenic risk factors include development of urinary infection due to urinary bladder reflux. Later, the role of exogenic factors such as unfavorable ecologic conditions, irrational nutrition, chronic infections in the family, stress and other factors increases.

The risk of hematogenic transmission is higher in cases of sepsis and apostematous nephritis. Lymphogenic transmission is disputable. Inoculation of uropathogenic bacteria in the bladder does not always cause inflammation. In spite of being a good nutritious medium, urine in healthy children is considered to be sterile, except the distal part of urethra. Together with mechanical wash out of microbes with urine there are several factors protecting mucous membrane of the bladder. Cellular layers of transient epithelium have mucopolysaccharise-glycosaminoglycan coating; it is hydrophilic and makes bacterial adhesion complicated, by these means preventing contact of bacteria with uroepithelium. Normally, in the bladder bacteria are eliminated within 15 minutes. When the amount of residual urine increases, local protection in the bladder diminishes significantly. It is known that, if urinary bladder is frequently emptied the concentration of bacteria decreases several times, and that is considered to be one of UI prevention ways. However in young children (4-5 years old) incomplete emptying of the bladder is physiological. Incomplete emptying of the bladder is often observed in cases of chronic constipation. Antimicrobial properties of urine are conditioned by its high osmolarity, low pH, high rate of urea and organic acids. These properties of urine are not expressed in infants and that increases the risk of UI infection in young children. When there are congenital defects such as fistula between the bladder and vagina or bladder and colon micro organisms penetrate the bladder. Normally, peristalsis in urinary ducts and their conjunction prevent bacteria from going to urinary ducts and elevation to calicies. Any disorders in urodynamics causing dilatation of urinary ways makes elevation of microorganisms easier. Microbial inflammation is mostly observed in renal cortex and papillae, which can be explained by low intensity of blood flow, low pH, high osmolarity and high concentrations of ammonia here. These factors provide favorable conditions for bacterial growth and suppress leukocytes hem taxis.

Clinical symptoms include frequent painful small amount urination (dysuria), epipubic pain, incomplete emptying of the bladder, urinary incontinence, subfebril or normal body temperature. In common urine analysis we can see leukocyturia and bacteriuria.

Clinical symptoms of pyelonephritis include rise of body temperature above 38° C, stomachache and pain in spine, symptoms of intoxication (pallor, weakness, low appetite, headache, vomiting). In common urine analysis there is leukocyturia, bacteriuria, proteinuria (usually does not exceed 1g a day); in common blood analysis there is neutrophilic leukocytosis with shift to the left, ESR rise (above 20 mm/s), high CRP and procalcitonin.

In new-born and young children clinical presentation of UI is characterized by non-specific symptoms of intoxication such as fever,

pallor or marble-like skin, weakness, low appetite, vomiting, no weight gaining or weight loss, and diarrhea. In children under one anxiety and cry before, during and after urination, red face, small portions of urine, breaks in urination, and weakness can be equivalent of dysuria.

In elder children together with symptoms of intoxication, we can observe local symptoms such as stomachache and pain in spine, painful palpation and knocking of costavertebral angle, pain in epipubic area and dysuria.

In diagnosis of children with suspicion of UI the preference should be given to non-invasive methods with high sensitivity. The diagnosis of UI in young children (new-born and children under 2) causes certain difficulties. There are several reasons for that:

1. Manifestation of UI in young children is non-specific; UI can be underdiagnosed if based on body temperature measurement.
2. Problems in urine collection: in new-born and young children pure urine can be taken only by invasive way (transurethral catheterization of the bladder)

**Symptoms of UI and significance of diagnostic methods.**

A) Rise of body temperature. The basic reasons of rise of body temperature in 3-20% is pneumonia, bacteremia, meningitis and UI. Attention should be pain to children with body temperature 39°C and higher.

Б) Isolation of microbe in urine. According to Kate Verrier-Jones (2007) the best method for children is collection of freely excreted urine. Bladder catheterization should be used only in cases when collection of urine with the help of non-invasive methods is impossible, but, anyway, it should be preceded by US to confirm there is some urine in the bladder. For isolation of microbe urine can be collected into clean dish during free urination after careful cleaning of the area. The diagnosis of UI is cancelled if there is no microbe in urine. The following bacteriuria parameters are significant:

1. There are 100 000 and more microbes in 1 ml of urine collected during free urination;
2. There are 10 000 and more microbes in 1ml of urine collected using catheter;

B) Clinical analysis of urine. Diagnosis of UI in children can be performed with the help of screening test for detection of leukocyte esterase and nitrites. Absence of esterase and nitrites serves the basis to say it is not UI [8].

Correct collection of urine and correct microscopy (calculation of leukocytes) can provide 100% sensitivity and 97% specificity of the results. Results depend on the qualification of the specialists and the time of checking urine. Tests performed in three hours after collection of urine diminish the accuracy of the results by 35%.

Most pediatrician-nephrologists thick it is enough to calculate the number of leukocytes in the field of vision and to perform common urine analysis for the detection of leukocyturia. Leukocyturia criteria: number of leukocytes in the field of vision in common urine analysis >5.

Instrumental methods of UI diagnosis include:

1. Ultra sound imaging (USI). It is considered to be non-invasive diagnostic method applied in children with UI. USI can be performed at any time convenient for a patient and doctor. It provides a possibility to detect urinary developmental abnormalities (hydronephrosis, dilatation of the distal part of urinary ducts and pelvis, hypertrophy of the bladder walls, urolithiasis). Besides that, USI can help to detect signs of acute renal inflammation and renal shrinking [15].
2. Cysturethrography is recommended for all children with UI under 2. Necessity of such an approach is conditioned by the high prevalence rate of renal reflux in children (prevalence of renal reflux among the children with UI under 1 is 50%). Shrinking of kidney is observed 4-6 times more often among the children with IV and V stages of reflux compared to those with I,II, and III stages. The earlier reflux is diagnosed the greater is the chance to chose correct therapy and to prevent relapses, which in its turn prevents development of reflux nephropathy and chronic renal failure [9, 17, 32].

3) Scintiography (renoscintiography – RSG). Static nephroscintiography with Technetium-99m-dimercaptosuc-cinic acid (DMSA) provides the possibility to detect complications of UI such as pyelonephritis and shrinking of kidneys [10]. Nowadays, RSG is considered to be the most accurate method for detection of kidney shrinking in children. Sensitivity of RSG is 84%, and its specificity is 92%.

Static RSG is limited by detection of parenchymal defects, while dynamic one helps to clarify possibility of renal duct obstruction.

4) Excretory urography. For a long period of time excretory urography was considered to be the only method for detection of urinary tract abnormalities, though USI is safe, non-invasive, and economically more preferable. That is why

indications for excretory urography were limited.

5) Cystoscopy. Cystoscopy is not the basic method of instrumental diagnostics of UI in children, as it demands a qualified specialist and high quality equipment.

In children suffering UI it is important to start antimicrobial therapy as soon as possible. Delay of adequate antimicrobial therapy in children can lead to severe complications including damage of renal parenchyma (with formation of shrinking areas) and development of urosepsis. Results of static scintigraphy performed in 120 hours after the initiation of the therapy showed (Hiraoka M. et al., 2003), that start of recommended antimicrobial therapy within initial 24 hours in children with the rise of body temperature and suspicion of UI provides complete elimination of focal defects in renal parenchyma. Late initiation of the therapy (2-5$^{th}$ days) results in development of parenchymal defects in 30-40% cases.

Choice of the therapy of UI for children is based on the knowledge of dominant uropathogens in that age, supposed antibacterial sensitivity of micro flora and clinical health status. Empiric choice of protected penicillin, cephalosporins III generation, parenteral or per os aminoglycosides has proven its efficiency [3, 5]. According to Allen U.D. et al. (1999), sensitivity of E. coli to aminoglycosides can reach 98%. The main problem in the choice of antimicrobial therapy for UI is development of urinary micro flora resistance. Resistance mostly develops in cases of abnormalities of urinary tract, long-term application of antibiotics or violation of doses and terms. That is why while changing antibacterial therapy it is important to take into account confirmed sensitivity of urinary micro flora to antimicrobial agent.

Parenteral (intra venous or intra muscular) injection of antimicrobial agent is indicated when there is high body temperature, intoxication, and no possibility of per os therapy. parenteral method is recommended to reach optimal antimicrobial concentration in blood, elimination of acute infection, prevention of urosepsis and renal lesions. In children with UI it is recommended to inject a day dose of aminoglycosides and ceftriaxone intravenously once a day, while intramuscular injections should be performed in compliance with standard recommendations. When clinical status of a patient improves (usually in 24-48 hours after start of the therapy) and there is no vomiting the injection of the agent can be changed to per os administration.

In plenty of randomized studies it was confirmed that duration of antimicrobial therapy in children with UI varies from 1 day (cystitis) to 14 days [8, 13]. Optimal total duration of UI therapy is 10-14 days.

**Assessment of the efficacy of antibacterial therapy**

- Improvement in clinical symptoms in 24-48 hour after the initiation of the therapy.
- Eradication of micro flora (in case of correct therapy urine becomes sterile in 24-48 hours).
- Decrease or elimination of leukocyturia in 2-3 days after start of the therapy.

Absence of remission at the 14$^{th}$ day of the therapy can be observed in children with abnormalities of urinary system. Expediency to continue antibacterial therapy is decided after repeated check-up of the child including urine test, definition of microbial sensitivity to antimicrobial agents, and microscopic tests of urine.

The patient required urologist's consultation.

Obligatory tests performed during the term of antibacterial therapy:

1. Urine microscopic tests are performed at the 2-3 days of the therapy. Absence of clinical status improvement within initial 48 hours of the therapy is indication for definition of bacteriuria stage and sensitivity of urinary micro flora to antimicrobial agent.

2. After the end of antibacterial therapy microscopic urine tests are performed. It is recommended to perform common blood analysis.

Antibacterial agents recommended for the therapy of cystitis in children.

For the therapy of cystisis antibiotics with high degree of urinary excretion are chosen. Drugs of choice for peroral administration are protected penicilins, cephalosporins II and III generation, and furazidine.

Antibiotics recommended for the therapy of pyelonephritis in children.

Results of meta-analysis of randomized studies performed in various countries show that peroral antibiotic administration can be recommended for the therapy of peylonephritis without complications in children. It was proven that remission and its duration do not depend on the type of antibiotic administration. When there is necessity in parenteral injection of antibiotic it is injected intravenously or intramuscular not more than 2-3 days. After that child starts

administering the agent per os. Cephalosporins are very efficient in children with pyelonephritis without complications. Per oral administration of cephalosporins III generation has bactericidal effect on gram positive and gram negative micro flora; and that makes it convenient for application in children.

Preventive therapy against recurrent pyelonephritis is performed in out-patient polyclinic conditions and it is based on long-term administration of small doses of antibacterial agents. Administration of antimicrobial agents in sub-inhibitory doses (20% of therapeutic dose) is considered to be the most effective method [16]. Agents recommended in sub-inhibitory doses have following advantages: low concentrations preserve ability to prevent bacterial adhesion; do not affect intestinal micro flora; recommended once a day (in the evening); keep constant concentration in the bladder at night; have good tolerance rates in patients; reliably diminish frequency of relapses. In pediatric practice for prevention of relapses therapeutic agents recommended in most cases are nitroxoline, 5-NOK, furamag, protected penicillin. The terms of anti-recurrent therapy of acute pyelonephritis is 3-6 months and chronic pyelonephritis from 6 months to a year.

During remission in out-patient-polyclinic conditions at the same time with anti-recurrent therapy it is recommended to prescribe a therapy for improvement of urine passage, decrease of inflammation, improvement of blood circulation in kidneys, and phytotherapy.

It is recommended to drink certain tinctures and decoctions made of herbs (corn silk, rose hip, dandelion, sage, St.John's wort, etc) for 10 days every month.

Physiotherapeutic methods (UHF, ultra sound, ozokerite, paraffin applications, electrophoresis of 1% furadonin solution on the area of kidneys, therapeutic baths, and mineral water) are applied when the activity of the process diminishes during clinical-laboratory remission to prevent relapses.

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## CHANGES IN THE LIPOLYTIC ACTIVITY OF PANCREATIC JUICE UNDER THE INFLUENCE OF VARIOUS PROTEINS USED AS EMULSIFIERS OF TRIBUTYRIN AND SUNFLOWER OIL

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✓ ***Resume***

***In the work in vitro studied the change in the lipolytic activity of pancreatic juice under the influence of various proteins used as emulsifier's tributyrin and sunflower oil. It was concluded that the preliminary hydrolysis of proteins by pepsins in the stomach contributes not only to a further improvement of their hydrolysis under the influence of proteolytic enzymes of pancreatic juice, but also to the hydrolysis of fats under the influence of pancreatic lipase. The improvement in the lipolytic activity of pancreatic juice under the influence of various proteins depends on the length of the fatty acids of the fats.***

***Key words: pancreatic juice, gastric juice, proteolytic activity, protein-fat emulsion, fat hydrolysis products, proteins, tributyrin, sunflower oil.***

## ИЗМЕНЕНИЕ ЛИПОЛИТИЧЕСКОЙ АКТИВНОСТИ ПОДЖЕЛУДОЧНОГО СОКА ПОД ВЛИЯНИЕМ РАЗЛИЧНЫХ БЕЛКОВ ИСПОЛЬЗОВАННЫХ В КАЧЕСТВЕ ЭМУЛЬГАТОРОВ ТРИБУТИРИНА И ПОДСОЛНЕЧНОГО МАСЛА

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✓ ***Резюме***

***В работе in vitro изучалось изменение липолитической активности поджелудочного сока под влиянием различных белков использованных в качестве эмульгаторов трибутирина и подсолнечного масла. Сделано заключение, что предварительный гидролиз белков пепсинами в желудке способствует не только дальнейшему улучшению гидролиза их под влиянием протеолитических ферментов поджелудочного сока, но также и гидролизу жиров под влиянием панкреатической липазы. Улучшение липолитической активности поджелудочного сока под влиянием различных белков, зависит от длины жирных кислот жиров.***

***Ключевые слова: поджелудочный сок, желудочный сок, протеолитическая активность, белково-жировая эмульсия, продукты гидролиза жиров, белки, трибутирин, подсолнечное масло.***

## ТУРЛИ ОҚСИЛЛАР ВА ЭМУЛЬГАТОР СИФАТИДАГИ ТРИБУТИРИН ВА КУНГАБОҚАР ЁҒИНИ ОШҚОЗОН ОСТИ БЕЗИ ШИРАСИ АКТИВЛИГИНИ ЎЗГАРИШИГА ТАЪСИРИ

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✓ ***Резюме***

***Тадқиқотда in vitro усулида турли оқсиллар ва эмульгатор сифатидаги трибутирин ва кунгабоқар ёғини ошқозон ости бези ширасы активлигини ўзгаришига таъсири ўрганиш. Хулоса қилинганда, оқсилларни ошқозон ширасы таъсирида гидролизланганда нафақат уларни ошқозон ости ширасы протеолитик ферментлар таъсири остида гидролизини яхшилайди балки, панкреатик липаза таъсири остида ёғларни гидролизини хам яхшилайди. Турли оқсиллар таъсирида ошқозон ости бези ширасы липолитик активлигини яхшиланиши ёғ кислоталари таркибидаги занжирнинг узунлигига боғлиқ.***

***Калит сўзлар: ошқозон ости бези ширасы, ошқозон ширасы, протеолитик фаоллик, оқсил-ёғ эмульцияси, ёғ гидролизи махсулотлари, оқсиллар, трибутирин, кунгабоқар ёғи.***

## Relevance

Surfactant ingredients, such as proteins or low molecular weight emulsifiers, adsorb on the surface of the newly formed oil droplets and stabilize them. The size distribution of emulsion droplets depends on a number of factors, but one of them is how quickly protein emulsifiers are able to adsorb to the droplet surface. Fast adsorption and stabilization prevents droplet re-coalescence and results in a smaller droplet size distribution and a more stable emulsion. The structure and stability of the adsorbed protein layer is critical for the stability of the emulsion droplet [5].

The adsorption of proteins on the surface of fat droplets can reduce the activity of pancreatic lipase. The explanation for this is that proteins, due to competitive adsorption, can desorb lipase molecules from the surface of fat droplets. At the same time, the decrease in the activity of pancreatic lipase is not associated with the direct effect of the protein on the lipase enzyme, but with the competitive desorption of lipase by the protein from the substrate — the fat drop [2, 3, 6].

It was found that in protein-fat emulsions, hydrolysis of the protein layer by pepsin is the main driving force in destabilization of emulsified fat droplets. Hydrolysis of the protein layer by pepsin causes flocculation and some coalescence of fat droplets, which is most likely caused by the loss of the positive charge on the droplet surface and weakening of the adsorbed layer. Peptides that remain at the interface are unable to provide sufficient electrostatic repulsion and / or steric effects. In addition, it was also found that the action of pepsin in the hydrolysis of the adsorbed protein layer is accelerated in the presence of a salt with a high concentration [4].

Thus, with a decrease in gastric hydrolysis of proteins and their entry into the small intestine, it can help to reduce lipolysis of fats by pancreatic lipase. At the same time, an increase in the formation of protein hydrolysates by the stomach can improve the hydrolysis of fats by pancreatic lipase.

**The aim of the study:** to study the change in the lipolytic activity of pancreatic juice under the influence of various proteins used as emulsifiers of tributyrin and sunflower oil.

## Material and methods

We used gastric and pancreatic juices obtained in chronic experiments in dogs with fasting secretion. In pancreatic juice, lipase activity was determined [1], in the presence of various proteins (casein, serum albumin, hemoglobin, gelatin, egg white, meat powder protein). As a substrate for pancreatic lipase, we used 1% tributyrin and sunflower oil emulsified with the corresponding protein in an increasing concentration from 0.1 to 1%. In order to reduce the breakdown of proteins and weaken the emmugability of the substrates used, the proteolytic activity of pancreatic juice was inhibited by using its preincubation with 0.1% soy inhibitor solution.

The study of the lipolytic activity of pancreatic juice with the studied proteins was carried out in 3 variants: 1 - without preliminary incubation with gastric juice, with 30 min of preliminary incubation with gastric juice, 3 - with 60 min of preliminary incubation with gastric juice.

Preincubation of protein substrates with gastric juice was carried out at pH 2, after which pH was neutralized to 8 with NaOH solution and addition of phosphate buffer with pH 8.2, then the substrate was incubated with pancreatic juice. In studies without incubation, distilled water was added in an equivalent volumetric amount with the spent NaOH solution and the corresponding addition of phosphate buffer.

Statistical processing was carried out by the method of variation statistics with the calculation of mean values and their mean errors, determination of the coefficient of reliability of the Student-Fisher difference (t). Differences were considered statistically significant at $p < 0.05$ and less.

## Result and discussion

According to the results of the studies, it was found that the use of casein as an emulsifier, lipolytic activity is significantly reduced at a concentration of 0.1%, both when using tributyrin and sunflower oil. This decrease in activity to 0 was noted with an increase in the concentration of casein to 0.4% using tributyrin and 0.3% sunflower oil (Fig.1 A and A1).

After preliminary 30 minute incubation (preincubation) of casein of various concentrations with gastric juice and further use as emulsifiers. There was also a decrease in lipolytic activity at a concentration of 0.1%.

tributyrin and 0.4% of sunflower oil, a decrease in activity was noted to its complete absence, both when using tributyrin and sunflower oil. At the same time, the indicators were significantly higher than those without pre-incubation with gastric juice (Fig.1 A and A1).

A similar trend in the dynamics of changes in lipase activity using casein of various concentrations as an emulsifier was also observed after 60 minutes of preincubation with gastric juice. At the same time, a decrease in lipase activity, until it was completely absent, was manifested at a casein concentration of 0.6% using tributyrin and 0.5% using sunflower oil. Moreover, all indicators of lipolytic activity were significantly higher than those using tributyrin and sunflower oil without pre-incubation and higher than those indicators after 30 minutes of pre-incubation of casein with gastric juice. Also, the indicators using sunflower oil were lower than those using tributyrin (Fig.1 A and A1).

In studies using serum albumin as an emulsifier, lipolytic activity was similar to that of casein. At the same time, the decrease in activity continued, with an increase in the concentration of serum albumin until the complete absence of lipolytic activity at 0.7% tributyrin and 0.4% sunflower oil concentration (Fig.1 B and B1).

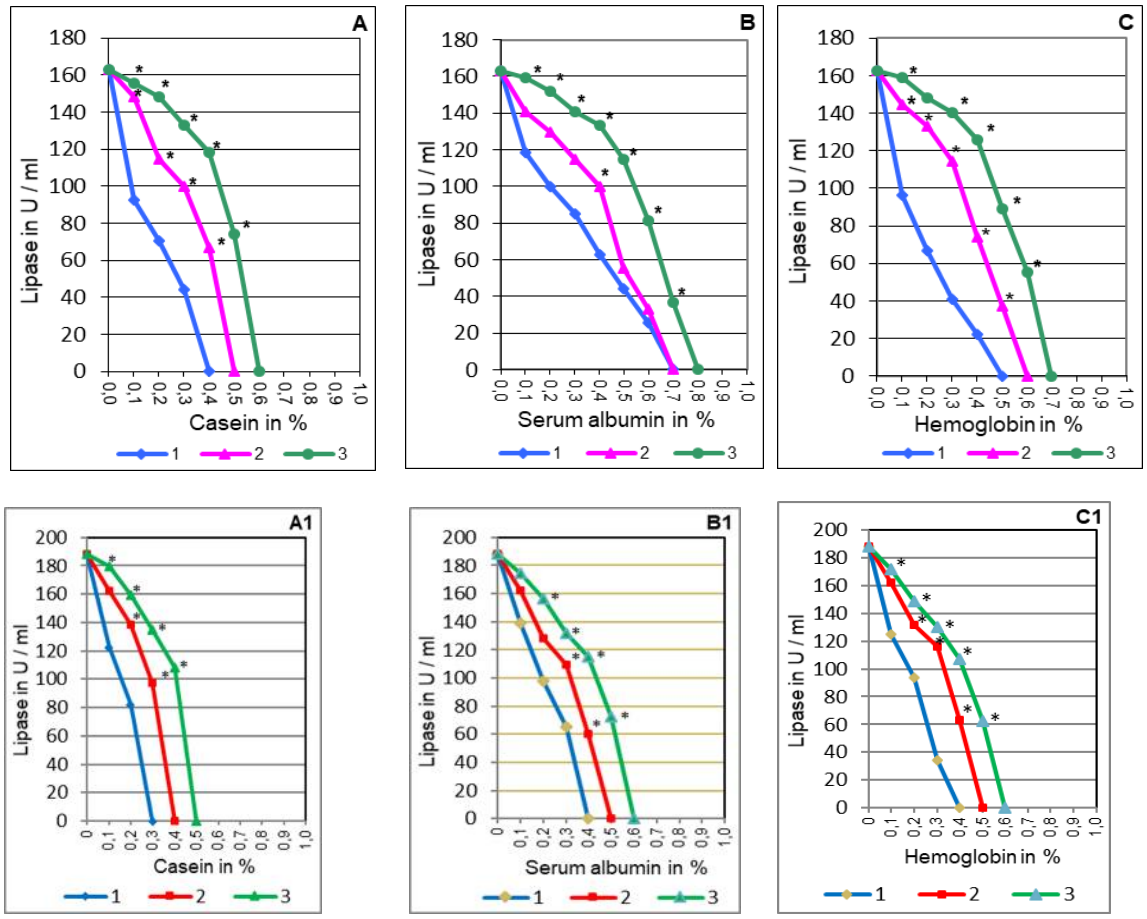


*Figure 1. Influence of proteins of various concentrations after hydrolysis with gastric juice on the activity of lipase (x103) of pancreatic juice.*

*Note: A, B, C, - tributyrin, A1, B1, C1, - sunflower oil, 1- without preincubation with gastric juice, 2- after 30 minutes. preincubation with gastric juice, 3 - after 60 min. preincubation with gastric juice.*

** - significantly different values in relation to indicators without preincubation with gastric juice.*

After preliminary 30 minute preincubation of serum albumin of various concentrations with gastric juice and their further use as emulsifiers, lipolytic activity gradually decreased to its complete absence at 0.7% using tributyrin and 0.7% using sunflower oil. These indices with the use of tributyrin and sunflower oil were significantly higher than those without preincubation with gastric juice, in addition, the indices with the use of sunflower oil were lower than those with the use of tributyrin (Fig.1 B and B1).

A similar trend in lipase activity changes using tributyrin and sunflower oil, and serum albumin of various concentrations as an emulsifier, was observed after 60 minutes of preincubation with gastric juice. At the same time, a decrease in lipase activity, until it is

completely absent, is manifested at a serum albumin concentration of 0.8% using tributyrin and 0.5% using sunflower oil. At the same time, all indicators of lipolytic activity were significantly higher than those without the preincubation of tributyrin and sunflower oil, and also higher than those indicators after 30 minutes of preincubation of serum albumin with gastric juice. At the same time, the indicators with the use of sunflower oil were lower than those with the use of tributyrin (Fig.1 B and B1).

The use of hemoglobin as an emulsifier also contributed to a significant decrease in lipolytic activity at a concentration of 0.1%, both tributyrin and sunflower oil, and this decrease continued, with an increase in concentration until the complete absence of lipolytic activity at a hemoglobin concentration of 0.5% using tributyrin and 0.4% using sunflower oil (Fig.1 C and C1).

After preliminary 30 minute preincubation of hemoglobin of various concentrations with gastric juice and further use as emulsifiers. Lipolytic activity gradually decreases with the use of tributyrin and sunflower oil, until it is completely absent at 0.6% with tributyrin and 0.6% with sunflower oil. These indicators were significantly higher than those without preincubation of hemoglobin with gastric juice using tributyrin and sunflower oil. At the same time, the indicators using sunflower oil were lower than those using tributyrin (Fig.1 C and C1).

A similar trend in the change in lipase activity with the use of hemoglobin of various concentrations as an emulsifier was also noted after 60 minutes of preincubation with gastric juice. At the same time, a decrease in lipase activity, until it was completely absent, was manifested at a hemoglobin concentration of 0.7% with the use of tributyrin and 0.5% with the use of sunflower oil. At the same time, all indicators of lipolytic activity after 60 minutes of preincubation of hemoglobin with gastric juice were significantly higher than those without preincubation of hemoglobin and higher than those indicators after 30 minutes of preincubation with gastric juice of hemoglobin, in addition, indicators using sunflower oil were lower than those using tributyrin (Fig.1 C and C1).

The use of egg white as an emulsifier contributed to a more significant decrease in lipolytic activity compared to the use of casein, serum albumin and hemoglobin. This decrease was manifested at a concentration of egg white from 0.1% and up to a complete absence of lipolytic activity at 0.3% concentration (Fig. 2 D and D1).

After a preliminary 30 minute preincubation of egg powder of various concentrations with gastric juice and further use as an emulsifier of tributyrin and sunflower oil, lipolytic activity gradually decreased at a concentration of egg white from 0.1% to its complete absence at 0.3% using tributyrin and 0 , 2% using sunflower oil.

These indicators of lipase activity using tributyrin and sunflower oil were significantly higher than those using tributyrin and sunflower oil without preincubating egg white with gastric juice. It can be seen that the indicators using sunflower oil were lower than those using tributyrine (Fig. 2 D and D1).

With the use of egg white of various concentrations as an emulsifier, after 60 minutes of preincubation with gastric juice, a similar trend in the change in lipase activity was observed. At the same the time of the decrease in lipase activity until its complete absence was manifested at an egg white concentration of 0.3% using tributyrin and sunflower oil. Moreover, all indicators of lipolytic activity were significantly higher than those without pre-incubation of egg white and the use of tributyrin and sunflower oil. Also higher than those after 30 minutes of preincubation of egg white with gastric juice. In addition, the indices with the use of sunflower oil were lower than those with the use of tributyrin (Fig. 2 D and D1).

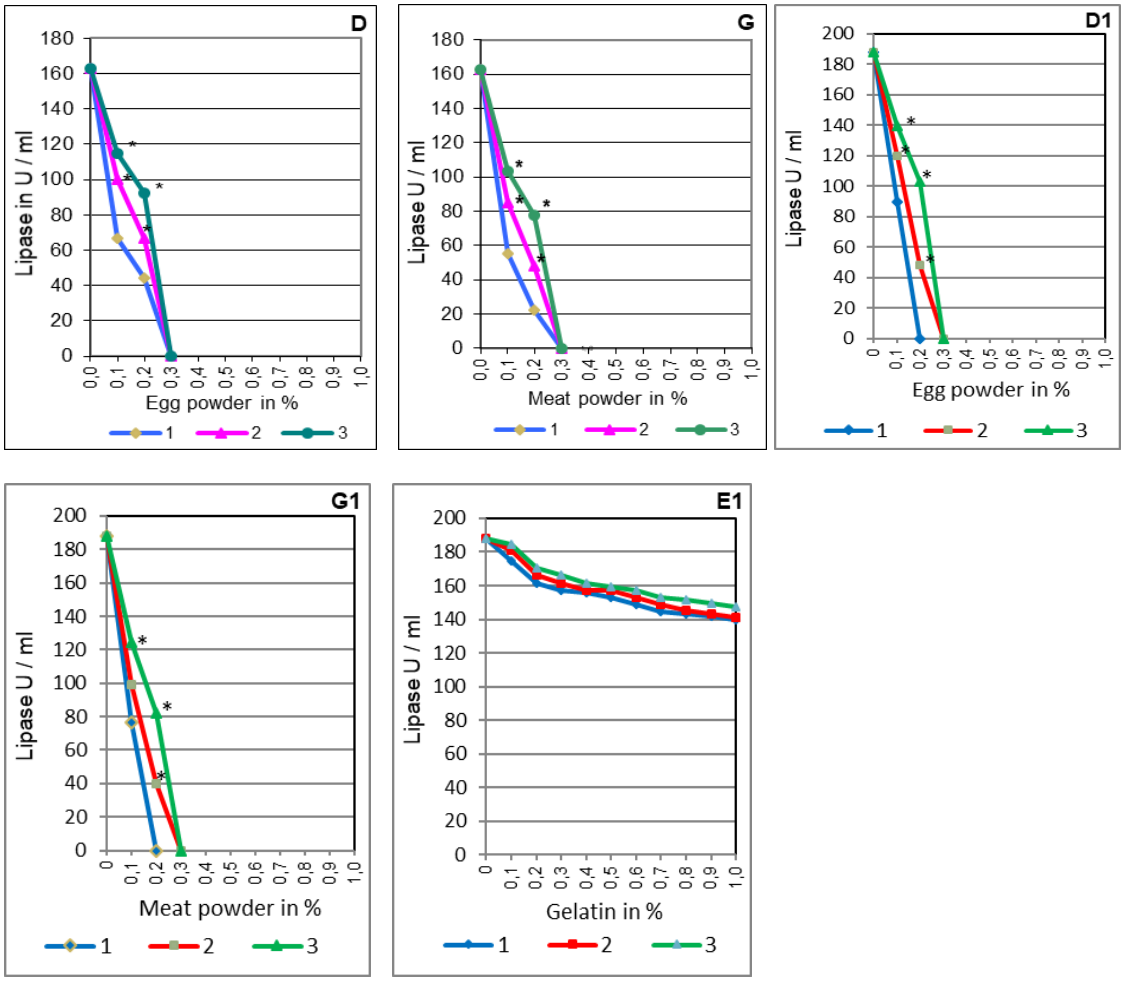


***Figure 2.*** *Influence of proteins of various concentrations after hydrolysis with gastric juice on the activity of lipase (x103) of pancreatic juice.*

*Note: D, G, E, - tributyrin, D1, G1, E1, - sunflower oil, 1- without preincubation with gastric juice, 2- after 30 minutes. preincubation with gastric juice, 3 - after 60 min. preincubation with gastric juice.*

** - significantly different values in relation to indicators without prein.*

The use of meat powder as an emulsifier of tributyrin and sunflower oil also contributed to a more significant decrease in lipolytic activity compared to the use of casein, serum albumin and hemoglobin. This decrease was manifested in the same way at a concentration of meat powder from 0.1% and up to the complete absence of lipolytic activity at a concentration of 0.3% when using tributyrin and 0.2% when using sunflower oil (Fig. 2 G and G1).

After preliminary 30 minute preincubation of meat powder of various concentrations with gastric juice and further use as an emulsifier of tributyrin and sunflower oil. Lipolytic activity gradually decreased at a concentration of meat powder from 0.1% to its complete absence at 0.3% using both tributyrin and sunflower oil, which was similar to the use of egg powder, but with different dynamics. These indicators were significantly higher than those with the use of tributyrin and sunflower oil without pre-incubation of meat powder with gastric juice, and the indicators using sunflower oil were lower than those with the use of tributyrin (Fig. 2 G and G1).

With the use of meat powder of various concentrations as an emulsifier after 60 minutes of preincubation with gastric juice, a similar trend in the change in lipase activity was observed. At the same time, a decrease in lipase activity, until its complete absence, was manifested at a concentration of meat powder from 0.1% to 0.3% using tributyrin and sunflower oil. At the same time, all indicators of lipolytic activity after 60 minutes of preincubation of meat powder with gastric juice were significantly higher than those using tributyrin and sunflower oil without preincubation and higher than those indicators after 30 minutes of preincubation of meat powder with gastric juice. At the same time, the indices using sunflower oil were lower than those using tributyrin (Fig. 2 G and G1).

Lipolytic activity in studies using gelatin as an emulsifier, both tributyrtine and sunflower oil, did not significantly decrease, at various concentrations from 0.1% to 1%, both without preincubation and after 30 and 60 minutes of preincubation (Fig. 2 E and E1).

The obtained data show that all the studied proteins, except for gelatin, have an inhibitory effect on lipase in the composition of pancreatic juice, the degree of inhibitory effect for each protein is expressed differently. To the greatest extent, the inhibitory ability on lipase is expressed in proteins of egg and meat powder, in less serum albumin, as well as casein and hemoglobin. After 30 minutes and even more after 60 minutes of preincubation with gastric juice of all studied proteins, the lipolytic activity of pancreatic juice, in comparison with the indicators without preincubation, significantly increased, but not the same. The dynamics of changes in the dependence of lipolytic activity on protein concentration was different, that is, individual for each protein under study. These results indicate that gastric digestion of proteins decreases their ability to inhibit pancreatic lipase to varying degrees for different proteins. Also, the decrease in lipase inhibition by various proteins depends on the digestive ability of gastric juice. It should also be noted that the inhibitory ability of lipase proteins also depends on the physicochemical properties of fats. Fats containing short-chain fatty acids have a lower inhibitory effect on lipase proteins, and fats containing long-chain fatty acids to a greater extent. This may be due to the fact that fats containing short-chain fatty acids contribute to a lesser degree of competitive adsorption of proteins in relation to lipase on the surface of fatty droplets, compared to fats containing long-chain fatty acids.

## Conclusions

Thus, the preliminary hydrolysis of proteins by pepsins in the stomach contributes not only to a further improvement of their hydrolysis under the influence of proteolytic enzymes of pancreatic juice, but also to the hydrolysis of fats under the influence of pancreatic lipase. The improvement in the lipolytic activity of pancreatic juice under the influence of various proteins depends on the length of the fatty acids of the fats.

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# EFFECTS OF DIET ON HIRUDOTHERAPY

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✓ ***Resume***

***The article presents the results of a survey of patients in whom the authors conducted hirudotherapy in combination with a special diet. The absence of such an approach to the treatment of hirudotherapy in the literature studied by us indicated its relevance, which was the reason for the study.***

***Key words: Diet, hirudotherapy, illness, age, vitamin.***

# ВЛИЯНИЕ ДИЕТЫ НА ГИРУДОТЕРАПИЮ

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✓ ***Резюме***

***В статье представлены результаты анкетирования пациентов, которым авторы проводили гирудотерапию в сочетании со специальной диетой. Отсутствие такого подхода к лечению гирудотерапии в изученной нами литературе указывало на его актуальность, что и явилось поводом для исследования.***

***Ключевые слова: Диета, гирудотерапия, болезнь, возраст, витамин.***

# ПАРХЕЗНИНГ ГИРУДОТЕРАПИЯГА ТАЪСИРИ

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✓ ***Резюме***

***Муаллифлар томонидан махсус пархез билан биргаликда гирудотерапия ўтказаган беморлар щртасида сщров натижаларини та=лили келтирилган.***

***Муаллифлар томонидан ўтказилган илмий таҳлилий тадқиқот оргиналлиги ва илмий асосланганлиги билан долзарб бўлиб, олинган натижалар илмий асосланганлиги билан долзарбддир.***

***Калит сўзлар: Пархез, гирудотерапия, касаллик, ёшга боғлик, витамин.***

## Relevance

In the modern world, hirudotherapy is an extremely relevant method of treating many diseases. On the one hand, this is due to the wide range of biotherapy methods, and on the other hand, the high risk of various complications from the use of synthetic drugs. Treatment with medical leeches, or hirudotherapy, is one of the most ancient examples of the use of the healing powers of wildlife in medical activities. Avicenna in the treatise "Canon of Medical Science" paid much attention to medical leeches. Even then, the active use of medical leeches for medical purposes began in concussion, kidney, liver, and joint diseases, in the treatment of tuberculosis, epilepsy, hysteria, and many other diseases. Analyzing the experience of using medical leeches for medicinal purposes, we found the results of numerous studies that indicate the high effectiveness of hirudotherapy in the treatment of various diseases. Hirudotherapy is one of the most ancient methods of treating various pathological conditions, which affects the rheological properties of blood, lipid metabolism and the human immune system. Treatment with leeches leads to diverse and versatile effects, the main of which are anti-ischemic, neuroprotective, anesthetic, anti-inflammatory and bactericidal. According to studies conducted with the use of

hirudotherapy in various fields of medicine (neurology, neurosurgery, cardiology), hirudotherapy has minimal contraindications and side effects, which is very important for elderly and senile patients.

Conducting a study of the literature, we did not find in any of them a reminder of the diet during treatment with a medical leech. Diet therapy is strictly coordinated with hirudotherapy. Therapeutic nutrition was prescribed in the form of special diets according to the nosological unit of the disease.

We specifically identified patients who were prone to obesity, had a history of hypertension, coronary heart disease, and patients with metabolic disorders. We paid attention to patients aged 35-45 years. Sometimes diet therapy is the main method of treatment; sometimes it serves as a mandatory therapeutic background, on which all other methods, including specific and hirudotherapy, are used. Patients with atherosclerosis limited the content of animal fat, cholesterol-containing substances, simple carbohydrates (glucose, fructose), table salt, vitamin D and extractive substances with an abundance of lipotropic factors (cottage cheese, oatmeal, soy, etc.), vitamins C, B1, B6, P, PP, cell membranes (fruits, vegetables), sitosterols, phosphatides (vegetable oils), sea products. In the treatment of patients with hypertension and chronic cardiovascular insufficiency, a diet containing no more than 2-3 g of table salt, enriched with potassium, magnesium and vitamins, and containing a physiological norm of proteins, fats and carbohydrates, is used. Against the background of this diet, a magnesium diet is periodically prescribed for a short time, designed for the depressive effect of magnesium salts.

Also noteworthy is the plant-based diet proposed by Caldwell Esselstine, who has achieved significant improvement in the condition of many patients with coronary insufficiency.

**Aim:** to study the effect of hirudin on the body in combination with the diet.

## Materials and methods

Patients with metabolic disorders were recommended a diet of dosed consumption of a variety of foods, daily many foods rich in fiber. These are fruits, vegetables, legumes, and cereals. All these products are low-calorie, rich in vitamins and minerals. Sweet, muffin, fried-excluded from the menu. All patients were forbidden to drink alcohol, as alcoholic beverages bring extra calories and no nutrients. In the diet, it was recommended to consume more water. Pure water contains 0 calories, and if you drink a glass of water 30 minutes before a meal, the feeling of satiety will come earlier.

The leech, biting the patient, releases hirudin into his blood and a number of other positive secrets that stabilize the blood clotting system, have a beneficial effect on the vascular wall, and improve microcirculation. This leads to improved blood circulation and oxygen supply to all internal organs.

In the treatment of hypertension leech effect is to reduce the volume of blood circulating in the bloodstream and, as the salivary glands, secretion has a very significant antihypertensive effect, reducing blood pressure. It is noted that the implementation of hirudotherapy changes the reactivity of the body; as a result, the sensitivity to the drug therapy is increased. Due to this, it is often possible to reduce the doses of the drugs used, and sometimes completely abandon their use.

| Age | gender | | Number of patients | Disease | The number of leeches | Number of sessions |
|---|---|---|---|---|---|---|
| | M | F | | | | |
| 35-40 | 132 | 60 | 192 | Coronary artery disease, hypertension, metabolic disorders | 5-15 | 5-9 |
| 40-45 | 150 | 76 | 226 | Coronary artery disease, hypertension, metabolic disorders | 5-15 | 5-9 |

Patients aged 35-40 years, including 132 men and 60 women with ischemic disease, hypertension, metabolic disorders after 5-9 sessions in the amount of 5-15 leeches during treatment from 10 days to 1 month with a strictly prescribed diet, the general condition improved, the blood clotting system stabilized, pain in the chest subsided, shortness of breath and abnormal

heartbeat disappeared. Blood pressure decreased, mood increased, headaches and dizziness stopped bothering.

The treated patients aged 40-45 years, including 150 men and 76 women with ischemic disease, hypertension, and metabolic disorders, who received 5-9 sessions in the amount of 5-15 leeches in the period from 10 days to 1 month, significantly improved the general condition, pain or discomfort in the hands, left shoulder, elbows, jaw, or back disappeared. Difficulty in breathing and lack of air were stopped. Nausea, vomiting, and dizziness were not observed. The skin turned pink, the patients became more cheerful.

A small number of patients did not follow the diet we proposed. Their clinical improvement is less pronounced for a longer period of time, an average of 25-30 days longer than the previous group.

Conclusion: Such a diet and hirudin secreted by a medical leech normalizes lipid metabolism, the state of the vascular wall, the coagulation and anticoagulation systems of the blood, the functions of the circulatory apparatus, and other systems.

In all groups of patients, there was a positive dynamics of the clinical picture and the therapeutic effect occurred from 5-9 sessions and lasted for 3 months. When studying the long-term results in outpatient settings, it was revealed that a more persistent antihypertensive effect and, accordingly, a good subjective state is achieved in patients with borderline arterial hypertension. As shown by the results of this study, treatment with leeches with a strict diet improves the general condition of the patient, correcting some pathological processes (inflammation, microcirculation disorders, hypoxia, etc.) hirudotherapy with a strict diet intervenes during the basic mechanisms of the development of the pathological process, controls the set of reactions that occur at different structural and functional levels of the formation of the disease.

Hirudotherapy with a strict diet has a normalizing effect on the vascular-motor center, the higher centers of the autonomic nervous system (reflexively), which, along with improving the adaptive capabilities of the cardiovascular system, leads to positive changes in peripheral and central hemodynamics.

Thus, the clinical sound of hirudotherapy is explained by the ability of leech enzymes to eliminate ischemia and hypoxia of tissues, as well as microcirculatory disorders that determine the basic mechanisms of disease development.

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# FEATURES OF CLINICAL MANIFESTATION OF BRUCELLOSIS

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✓ ***Resume***

***Bukhara region occupies a special place in the republic in terms of the incidence of brucellosis in people in places where animal husbandry is developed. The frequency and prevalence of brucellosis in Uzbekistan, despite the implementation of preventive and anti-epidemic measures, continues to maintain a high proportion among infectious diseases.***

***Brucellosis is one of the most dangerous quarantine infections. From animals with brucellosis, people become infected by eating infected meat, milk, dairy products. The causative agent of brucellosis in sheep and goats is especially dangerous.***

***The basic material was obtained on the territory of the Bukhara region, this served as a theoretical basis for developing the improvement of methodological and organizational approaches for the prevention of brucellosis.***

***Key words: brucellosis of small cattle, luminescent sera, clinical manifestations of brucellosis, Brucellosis melitensis, phenomenon of brucella antigen.***

# ОСОБЕННОСТИ КЛИНИЧЕСКОГО ПРОЯВЛЕНИЯ БРУЦЕЛЛЕЗА

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✓ ***Резюме***

***Бухарская область занимает особое место в республике по заболеваемости людей бруцеллезом в местах, где развито животноводство. Частота и распространенность бруцеллёза в Узбекистане, несмотря на проведение профилактических и противоэпидемических мероприятий, продолжает сохранять высокий удельный вес среди инфекционных заболеваний.***

***Бруцеллез относится к числу карантинных особо опасных инфекций. От больных бруцеллезом животных люди заражаются при употреблении инфицированного мяса, молока, молочных продуктов. Особенно опасен возбудитель бруцеллеза овец и коз.***

***Базовый материал был получен на территории Бухарской области, это послужило теоретический основой для разработки совершенствования методических и организационных подходов для профилактики бруцеллёза.***

***Ключевые слова: бруцеллез мелкого рогатого скота, люминесцирующие сыворотки, клинические проявления бруцеллеза, Brucellosis melitensis, феномен антигена бруцелл.***

# БРУЦЕЛЛЁЗНИНГ КЛИНИК НАМОЁН БЎЛИШ ХУСУСИЯТЛАРИ

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✓ ***Резюме***

***Бухоро вилояти чорвачилик ривожланган жойларда бруцеллёз касалланиши бўйича республикада алоҳида ўрин тутади. Ўзбекистонда бруцеллёзнинг частотаси ва тарқалиши, профилактик ва эпидемияга қарши чора-тадбирлар амалга оширилишига қарамай, юқумли касалликлар орасида юқори мутаносибликни сақлаб қолишда давом этмоқда.***

***Бруцеллёз энг хавфли карантин инфексиялардан биридир. Бруцеллёзли ҳайвонлардан одамлар касалланган гўшт, сут ва сут маҳсулотларини истеъмол қилиш орқали юқади. Қўй ва эчкиларда бруцеллёз қўзғатувчиси айниқса хавфлидир.***

***Асосий материал Бухоро вилояти ҳудудида олинган бўлиб, бруцеллёзнинг олдини олиш бўйича услубий ва ташкилий ёндашувларни такомиллаштиришнинг назарий асоси бўлиб хизмат қилган.***

***Калит сўзлар: кичик қорамолларнинг бруцеллёзи, люминессент зардоблар, бруцеллёзнинг клиник кўринишлари, Brucellosis melitensis, бруцеллёз антиген феномени.***

## Relevance

Bukhara region occupies a special place in the republic in terms of the incidence of brucellosis in people in places where animal husbandry is developed. The frequency and prevalence of brucellosis in Uzbekistan, despite the implementation of preventive and anti-epidemic measures, continues to maintain a high proportion among infectious diseases.

The fight against this disease is not only of great medical and social importance, but also of national economic importance, since this infection causes significant economic damage to the livestock sector of agriculture. Brucellosis causes severe, usually chronic diseases of people, leading to long-term disability, and sometimes to disability [4].

Brucellosis is one of the most dangerous quarantine infections. From animals sick with brucellosis, people become infected by eating infected meat, milk, dairy products. The causative agent of brucellosis in sheep and goats is especially dangerous [2].

The basic material was obtained on the territory of the Bukhara region, this served as a theoretical basis for developing the improvement of methodological and organizational approaches for the prevention of brucellosis.

**Purpose of the work:** observation of the peculiarities of the manifestation of clinical signs in persons who have a positive reaction to brucellosis, during laboratory examination.

## Material and methods

This study is based on: archival materials, SES reporting data, current epidemiological analysis, the results of bacteriological (380), immunological (8340) and allergic (215) studies for brucellosis. Brucella cultures were grown on the following nutrient media: Meat-peptone liver agar with 1% glucose and 2% glycerol; Preliminary experiments were carried out to study the activity and specificity of luminescent sera. For this, a 1 billionth suspension was prepared from daily cultures of Brucella in physiological saline according to the optical turbidity standard. From this suspension, 1 ml was transferred into a test tube containing 9 ml of physiological solution, then successive two-fold dilutions were made up to 1:10. Thus, in subsequent dilutions we had 100,000, 10,000, 1,000, 100, 10 microbial cells in 1 ml of solution. Solutions of these dilutions were centrifuged and smears were prepared from the sediment. The smears were marked and fixed with ethyl alcohol and acetone for 15 minutes. Then they were fixed in a glass vessel with alcohol and acetone in an upright position. After fixation and evaporation of alcohol, the smears were rinsed with physiological sodium chloride solution with phosphate buffer, pH 7.4.

Phosphate buffer pH 7.4 was prepared as follows: 9.078 g of chemically pure monosubstituted potassium phosphate was poured with distilled water to 1 l. Then 11.876 g of disubstituted sodium phosphate in another volumetric flask was brought to 1 liter with distilled water. The resulting buffer was added to physiological saline in a ratio of 1:50. On a slightly dried smear was applied 1 drop of brucellosis luminescent serum with the following dilutions: 1:10; 1:16; 1: 8. The serum smears were placed in a humid chamber - in Petri dishes with wet filter paper at the bottom and kept in a thermostat at 37 ° C (temperature optimum) [1].

## Result and discussion

In order to identify clinical signs in persons who have a positive reaction to brucellosis, during laboratory research, a clinical and laboratory examination of workers of all divisions of farms in the territory of the Kagan district of the Bukhara region was carried out over the past several years.

Each farm had its own technological features, a different degree of mechanization of the production process, etc. As a result, the risk of infection with brucellosis also differed.

The results of the research showed that among the 650 individuals examined, 310 workers with brucellosis infection were identified. Brucellosis infection was 46.2%. Of these, at the breeding unit of a sheep farm-129 people (41.7%), at the reproductive unit of a sheep-breeding farm-118 people (38.3%), at the fattening unit of the farm-62 people (20.0%). These figures are associated with the peculiarities of the production process of these functional units of farms [4].

It should be noted that among the above-mentioned units, the distribution of persons infected with brucellosis within them is uneven. Thus, the main percentage of those with brucellosis was observed in breeding and reproductive divisions of farms. This indicator falls on the feeding subdivision of farms. Detailed analysis showed that conditions conducive to infection of workers were mainly observed when working with aborted sheep during childbirth and caring for sick animals.

Analysis of the dynamics of identifying persons who have a positive reaction to brucellosis during laboratory examination for the specified period shows that at the beginning of the analyzed period, their percentage of the total number of those examined was 53.0%, and at the end it was already 58.9%. Consequently, the situation among the workers regarding brucellosis infection was difficult.

1. Of the workers with a positive reaction to brucellosis, laboratory examination during the study period revealed 34 patients with characteristic and clearly expressed clinical manifestations of the type of chronic forms of the disease. For clarity, we present individual extracts from the cards, since we have not come across a description of the clinic of brucellosis in the focus of brucellosis in the available literature.

1. Worker V., born in 1969, has been working on a farm for 17 years. According to medical records, he has suffered from chronic arthritis of the knee joint over the past 10 years. Complaints at the time of examination of pain in large joints of the upper and lower extremities, limitation of movement, moderate sweating, chilliness. An additional survey revealed sleep disturbance, impaired appetite, pain in the calf muscles, ankle joints, the liver does not protrude beyond the costal arch, the spleen does not palpable in the lateral position, the sensitivity of the available peripheral lymph nodes with mild pain is noted, the patient has an increase in the submandibular lymph nodes to the size of a pea, and the inguinal ones are enlarged to the size of a bean. On the part of the cardiopulmonary system, there are no special pathological changes.
2. Worker T., born in 1978, has been working on a sheep farm for 14 years, suffers from chronic sciatica. From the anamnesis it turns out: the patient 1.5 years ago fell ill with acute angina, accompanied by high fever, moderate sweating, chills. During this period, the patient turned to the polyclinic at the place of residence, where he was diagnosed with ARVI. Symptomatic treatment was prescribed. After 10-15 days, against the background of the aforementioned symptoms, pain appeared in the calf muscles, in large joints, especially in the ankle and shoulder. Further progression of the disease is noted, which is manifested in a worsening the state of health of the patient every day. The prescribed symptomatic treatment did not give positive results. It was assumed that the patient had brucellosis and appropriate treatment was carried out. After that, the patient's condition improved. Diagnosis of primary chronic brucellosis in the phase of subcompensation. The patient was recommended general strengthening symptomatic treatment.

1. Worker K., born in 1981, has been working on a farm for growing karakul sheep for 10 years. For the last 8 years he has been suffering from chronic sciatica. Complaints at the time of examination of fatigue, back pain, sleep disturbance, sweating, chills. Six months after starting work on the farm, pains first appeared in the lumbosacral region, which were accompanied by low-grade fever, chills, sweating. Pains are noted in the calf muscles, in the large joints - ankle, knee. The duration of the above symptoms for 1-2 months with a progressive deterioration in health, forced the patient to go to the clinic at the place of residence. The diagnosis was made: lumbosacral radiculitis, polyarthritis of unknown etiology. He was treated on an outpatient basis, symptomatically. Not examined for brucellosis. After treatment, she noted some improvement in her health, which was short-term. With the above mentioned diagnosis, he was periodically treated 2-3 times during the year. This condition has persisted for the last 8 years. Objectively: the skin and mucous membranes are slightly anemic, the lymph nodes are enlarged, the inguinal nodes are especially pronounced, which reach the size of large beans. There is bursitis of the knee joint and limited movement, the liver along the edge of the costal arch, sensitive to palpation, the spleen is not enlarged. On the part of the cardiovascular, pulmonary and reproductive systems, no special changes could be found.

Laboratory data: Heddelson's reaction - positive, Wright's reaction - negative, RPHA 1: 100, Burne's test - positive, edema at the injection site of the allergen measuring 4 x 4.5 cm, subfebrile pain was noted on the day of allergen injection, especially in large joints [4].

Considering the analysis of the development of the disease, work on farms and laboratory data, the diagnosis was made "primary chronic brucellosis in the phase of subcompensation."

From the studies carried out, it becomes obvious that brucellosis infection in the focus proceeds mainly as a primary chronic form of the

disease. This, in all likelihood, is associated with the source of infection with the causative agent of the disease.

It is known that Brucellosis melitensis is more pathogenic, but there were facts of isolation of the culture of Br.abortus bovis, the causative agent of brucellosis in cattle, and the main route of transmission was unpasteurized dairy products. This requires further scientific research to determine their virulence.

Individuals with a positive reaction to brucellosis, in laboratory examination (126), in whom the clinical diagnosis of brucellosis was not immediately confirmed, were attributed to the primary latent form of the disease. A careful clinical examination of these patients revealed a moderate increase in the inguinal, axillary lymph nodes. Periodic deterioration in health is manifested by a mild degree of sweating, against which weakness develops. On the part of other organs and systems, no special changes are observed.

Those who test positive for brucellosis on laboratory examination (126), in whom the clinical diagnosis of brucellosis was not immediately confirmed, were distributed as follows. Primary latent brucellosis - 40.7%, upper respiratory tract diseases 18.1%, rheumatism 13.0%, intestinal dysfunction 5.5%, tuberculosis 2.5%. The remaining 20.2% of patients suffer from diseases of various etiologies. The high percentage of primary latent brucellosis dictates the need for strict clinical examination within one year. Clinical examination does not reveal in the dynamics the progression of activity, that is, the transition to clinical forms of the disease (acute, primarily chronic brucellosis).

The rest of the number of persons who have a positive reaction to brucellosis, during laboratory examination, were assessed as such, due to a positive reaction with a cross-reaction of the phenomenon of brucella antigen. This phenomenon is observed when the Brucella antigen reacts with other heterologous antigens in rheumatism, catarrh of the upper respiratory tract due to viral and bacterial infection, intestinal dysfunction and tuberculosis. It was also noted that brucellosis infection is more severe in individuals with various diseases of the gastrointestinal tract.

For example, a person suffering from a duodenal ulcer is characterized by a deep deficiency of most parameters of the body's immune system. They have a significant decrease in the number of CD3 and CD4, as well as a decrease in the concentration of IgA [5].

Considering the above, we made a brief analysis of the epizootic situation of farms in the Kagan district of the Bukhara region.

Among the sheep examined for brucellosis, seropositive results of serological reactions are recorded annually.

The indisputable confirmation was the isolation of Brucella cultures from small ruminants. Bacteriologically examined (for the analyzed period) - 235 people, isolated cultures of Brucella - 28. Therefore, all this dictates the differentiation of functional and production units of farms into zones with a high risk of disease, including the following: idle animals with a moderate degree of danger, including a pen for sheep with young stock and a feeding area with a low risk of infection.

All this allows for more rational planning of anti-epidemiological and anti-epizootic measures on farms.

The criterion for this assessment was the infection of workers and small ruminants with brucellosis, often with bacteriological confirmation. So, for a high degree of risk of infection, farms were singled out, where the percentage of positively responding to brucellosis, both people and small ruminants, exceeds more than half of the total number of those surveyed.

A similar percentage of people who have a positive reaction to brucellosis, in laboratory examination, from 25 to 50% are attributed to a moderate degree of danger, and finally, up to 20% - a low degree of danger. This took into account all the phenomena of cross-reactivity of Brucella antigen with heterologous antigens [3].

## Findings

From this, the following conclusions can be drawn:

1. Clinical decoding of persons with a positive reaction to brucellosis, during laboratory examination, indicates the existence of infection exclusively in the primary chronic form and latent brucellosis, which is 52.5%.
2. The high percentage of primary latent brucellosis dictates the need for strict clinical examination within one year. Clinical examination does not reveal in the dynamics the progression of activity, that is, the transition to clinical forms of the disease (acute, primarily chronic brucellosis).

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# MODERN CONCEPTS OF THE STRUCTURE AND FUNCTION OF PEYER'S PATCHES (literature review)

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✓ ***Resume***

***The article is devoted to a review of native and foreign literature on the structure and functioning of Peyer's patches. Also, a comparative analysis of information on macroscopic and microscopic, morphological and morphometric parameters of these patches in rats in postnatal ontogenesis was carried out.***

***Key words: immune system, small intestine, Peyer's patches***

# СОВРЕМЕННЫЕ ПРЕДСТАВЛЕНИЯ О СТРУКТУРЕ И ФУНКЦИИ ПЕЙЕРОВЫХ БЛЯШЕК (обзор литературы)

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✓ ***Резюме***

***Статья посвящена обзору отечественной и зарубежной литературы по строению и функционированию Пейеровых бляшек. Также, проведен сравнительный анализ информации о макро и микроскопических, морфологических и морфометрических показателей этих бляшек у крыс в постнатальном онтогенезе.***

***Ключевые слова: иммунная система, тонкая кишка, Пейеровые бляшки***

# ПЕЙЕР ПИЛАКЧАЛАРИНИНГ ТУЗИЛИШИ ВА ВАЗИФАЛАРИ ТЎҒРИСИДА ЗАМОНАВИЙ ҚАРАШЛАР (адабиётлар шарҳи)

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✓ ***Резюме***

***Мақола пейер пилакчаларининг тузилиши ва вазифалари ҳақидаги маҳаллий ва чет эл адабиётларининг шарҳига бағишланган. Шунингдек, постнатал онтогенезда каламушларда бу пилакчаларнинг макро ва микроскопик, морфологик ва морфометрик кўраткичлари тўғрисидаги маълумотларнинг қиёсий таҳлили ўтказилган.***

***Калит сўзлар: иммун тизим, ингичка ичак, Пейер пилакчалари***

## Relevance

The immune system is of key importance in the mammalian body and is one of the most sensitive systems that reacts with lightning speed to contact with various exogenous and endogenous factors at the earliest stages of their impact. It is she who helps to go through "natural selection" defending against new infectious diseases that cause epidemics and pandemics, and affects the future of mankind. Defending against these threats depends on how the body can maximize the potential of its complex immune system.

The constant impact of pathogenic substances on the body leads to a violation of the immune status and the emergence of many diseases, and since any, even a short, infectious disease is a manifestation of a temporary failure of protection, the problems of immunity disturbance concern all inhabitants of the planet [3,17].

The fundamental property of immunity is that no part of our body is cut off from its observation. For this reason, although the immune system may seem less essential than an organ such as the heart or liver, collectively, the immune system consumes enormous resources, producing a large number of cells on which its successful functioning depends [33].

For example, in the skin there are Langerhans cells, in the liver there are Kupffer cells, adenoids of the nasopharynx, etc. One of such

improvisations of the immune system is the lymphoid tissue associated with the mucous membrane or the immune system of the mucous membranes (ISSS). It develops due to the action of microorganisms and antigens, after their absorption into the blood, regulated by the gastrointestinal barrier, in postnatal ontogenesis [9, 30]. As part of the ISSO, a distinction is made between lymphoid tissue organized in a certain way and lymphocytes located freely or forming clusters of several cells.

**The aim of the study** is to analyze literature data on the structure and function of Peyer's patches.

## Material and methods

We used information sources devoted to the development of ISS in postnatal ontogenesis and materials related to the structure and functioning of Peyer's patches.

## Discussions

Aggregated lymphoid follicles were first described by Marco Aurelio Severino in 1645 in Italy. They were named Peyer's plaques after they were described in detail by the Swiss pathologist Johann Konrad Peyer in 1677 [29].

It is now more than obvious that Peyer's patches are organized lymphoid structures that are of particular importance for the initiation of intestinal immune responses. Their precursors are found in the fetus at the 16th week of antenatal development, differentiation into separate T and B cells occurs before the 19th week of antenatal development. They are well developed already at the 5th month of intrauterine life and continue to develop after the birth of the child [22,32].

According to [19], lymphoid plaques of the small intestine of rats, which are universal experimental animals, are laid on the 19th day of prenatal development, and in newborn rat pups they have the appearance of a small rounded or oval spot visible from the serous membrane of the intestine. There are 4 stages of development of lymphoid plaques: 1-6 days - stage I; 7-14 days - stage II; 15-21 days - stage III; 22-30 days - IV stage.

The first plaque is found, as a rule, in the distal duodenum, the last - in the ileocecal angle from the ileum [15].

After isolating the visible lymphoid nodules and determining their mass, [1] found that in sexually mature animals it ranges from 3 to 52 μg (on average 29.6 ± 1.5 μg). The total mass of tissue aggregated into lymphoid nodules averages 704.5 ± 15 μg. The sizes of the nodules are (6.1 ± 1.8x6.5 ± 1) cmx10-1.

Macroscopic examination of stained preparations revealed that lymphoid formations in the intestines of rats and rabbits have a rounded or irregular shape, are colored in a light purple color, the size in rats is 0.1-0.3 cm, in rabbits 0.1-0.8 cm , are located from each other at a distance of 0.1 to 1.5 cm [4].

As the results obtained by different scientists show, the length and width of the small intestine LB change depending on similar factors that affect their number (age, breed and sex of animals) [16, 21, 25].

So, for example, the length and width of the PB of sexually mature white outbred rats according to T.S. Guseinov and S.T. Guseinova (2012) is - 5.20 + 0.4043.70 + 0.24 mm, according to S.A. Kashchenko and E.N. Tkacheva (2009) 4.70 + 0.1042.30 + 0.10 - 5.70 + 0.1042.50 + 0.10 mm [9, 11].

At the age of 3-4 months in rats, the number of PB was 16.70 ± 0.73, linear dimensions (length, width of plaques, distance between them, distance from the ileocecal angle to the first PB) were within 4.75 ± 0.23 mm , 2.83 ± 0.14 mm, 39.20 ± 1.96 mm, 29.90 ± 1.49 mm, respectively [15].

According to [12], the length of the lymphoid plaque is 1200 μm on average, the width is 640–560 μm; in its composition on the longitudinal section contains 7-10 single lymphoid nodules (50-55% of which with the center of reproduction) 85 μm long, 70-75 μm wide.

As shown by the results of a study by a number of scientists, even within the same breed of rats, the number of plaques varies widely. So, for example, in sexually mature white outbred rats according to S.A. Kashchenko and E.N. Tkacheva (2009), their number is 18.00 ± 0.02 - 19.20 ± 0.90 [11].

On a native specimen of the rat small intestine, Peyer's plaques were clusters of 5 to 15 lymph nodules on average [15].

In each nodule, the number of follicles is 13.5 ± 2.0. The nodules protrude dome-shapedly into the intestinal lumen and are surrounded by crypts and villi along the periphery.

The epithelium lining the dome continues at the base into the crypt. In this part, mitoses and single goblet cells containing a PIC-positive secretory product are determined in the epithelium [1]. For the most part, the epithelial lining does not contain goblet cells, but has specific M cells that are in close contact with lymphocytes and macrophages. They can capture lymphocytes and monocytes, which are capable of absorbing antigens, even being inside M cells [20,28,31].

In F1 mice (CBA × 57BL6), group lymphoid nodules in the amount of 4–7 are normally located throughout the small intestine, mainly (70–75%) in the terminal part of the ileum; are located, respectively, its antimesenteric edge, in the proper lamina of the mucous membrane and submucosa [12].

Many researchers [7, 8] count 19.3 ± 0.80 lymphoid nodules in one PB. The density of nodules per 1 cm2 is 3.35 ± 0.27. And the distance between single lymphoid nodules ranges from 2-3 to 5 cm.

Makarova M.N., et al. (2016), and Hryn V.H., et al. (2018) calculated that each large Peyer's patch consists of 18-20 individual lymphoid nodules. Naturally, along with them, along the entire length of the small intestine (with the exception of the duodenum) there are Peyer's patches of medium and small size, consisting of a proportionally smaller number of the same type of solitary lymphoid nodules.

There is also disagreement about the number of single lymphoid nodules in white rats in one PB and all plaques in the small intestine. The number of lymphoid plaques in the small intestine in white rats varies from 11 to 35 (18.6 ± 2.4). In rat pups, on the 5-10th day, single lymphoid nodules are not found in the small intestine, in the period 15-21 days, their number is 6-24 per 1 cm2, PB during this period have sizes from 0.6 * 0.6 mm to 2.0 * 2.5 mm, the density of single nodules in one plaque varies from 5 to 18 per 1 cm2 [9].

It was found that the density of single intestinal lymphoid nodules per 1 cm2 depends on their localization and on the age of the rat pups. So, for the first time they appear from the 15th day in the final section of the colon, on the 19th day in its caudal part on the antimesenteric side, and from the 21st day - throughout the intestine. The number of single nodules in a plaque varies from 15 to 17 [24].

Tissue samples for studying the internal relief of the mucous membrane of the small intestine in the area of localization of Peyer's patches were excised parts of its most distal sections, containing the largest forms of these lymphoid formations.

It should be noted that the circumference of the relief of the mucous membrane in the area of PB localization does not fundamentally differ from the relief of the small intestine, where they are absent. And the Peyer's patch itself, its inner surface fully justifies its understanding as a group association of individual lymphoid nodules, which have the form of rounded depressions, which once again emphasizes the above information [6].

Information on the cellular composition of Peyer's patches differs from one author to another.

For example, according to [2], B-lymphocytes in Peyer's patches account for 55%. The main part of lymphocytes is formed in the centers of proliferation of lymphoid nodules in Peyer's patches, where the percentage of mitotically dividing cells is 2.1%, and the sum of poorly differentiated cells is 15.69%.

The absolute number of lymphoid cells in the lymphoid tissue of the plaque (over an area of 880 μm2) varies from 25 cells (center of proliferation of the nodule) to 30 cells (diffuse lymphoid tissue) and 35 cells (mantle of the lymphoid nodule) [12].

The microtopographic features of Peyer's patches are that the internodal diffuse lymphoid tissue corresponds in the area of its location to the intestinal glands and villi. Because, in embryogenesis in white rats, small intestine PB undergoes such changes as the appearance of anlages, tissue belonging, the severity of individual structures, lymphoid transformation and the appearance of functional zones [9]. And at puberty, diffuse internodal lymphoid tissue of plaques is considered predominantly the T-zone, lymphoid nodules, and especially their mantle (dome) as the B-zone [12].

In addition, [23] conducted a comparative study of the barrier properties of the follicle-associated epithelium of Peyer's patches and the villous epithelium of the rat small intestine. The permeability of the epithelium of Peyer's patches, studied in the Ussing chamber, is significantly less than the permeability of the villous epithelium. In the tight junctions of the epithelium of Peyer's patches, the level of claudins, which limit paracellular transport, is increased, and the level of claudins, which increase the permeability of the epithelium, is decreased. It is assumed that the limitation of paracellular transport is a condition for the presentation of pathogens through specialized epithelial cells of Peyer's patches.

As for the angioarchitectonics of Peyer's patches, it is necessary to distinguish the general bloodstream of the small intestine, where there are superficially located highways that distribute blood over the entire area of the intestinal tube, and intramural networks, represented mainly by microvascular communications of the muscular and mucous membranes [13, 18, 26, 29 , 34]. Several nutritional arteries are involved in

providing trophism of an individual Peyer's plaque of the small intestine;

**Conclusion**

Thus, after analyzing the domestic and foreign literature available to us, we came to the conclusion that information on the macroscopic and microscopic parameters of Peyer's patches differ from different sources, although there is a general tendency for these indicators to change. Therefore, it is planned to conduct further studies to study and assess the morphological parameters of Peyer's patches in postnatal ontogenesis.

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# INNOVATIVE METHODS OF TREATMENT OF BACKGROUND AND PRECANCEROUS DISEASES OF THE CERVIX

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✓ ***Resume***

***Relevance. The article is devoted to the early diagnosis and treatment of background and precancerous diseases of the cervix is one of the important problems of gynecology, the ultimate goal of which is to reduce the incidence of cervical cancer.***

***Objective: To increase the effectiveness of the treatment of background and precancerous diseases of the cervix by photodynamic therapy.***

***Material and methods of the study: In accordance with the purpose and objectives of our study, 255 women with background and precancerous diseases of the cervix, who were in the gynecological departments of the regional perinatal center of the Bukhara region, were examined and treated for the period 2018 to 2020.***

***Conclusions: photodynamic therapy can be successfully used in the treatment of ectopia, leukoplakia, and endometriosis, dysplasia, not accompanied by pronounced deformation of the cervical tissue.***

***Key words: cervix, ectopia, leukoplakia, dysplasia, endometriosis, photodynamic therapy.***

# ИННОВАЦИОННЫЕ МЕТОДЫ ЛЕЧЕНИЯ ФОНОВЫХ И ПРЕДРАКОВЫХ ЗАБОЛЕВАНИЙ ШЕЙКИ МАТКИ

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✓ ***Резюме***

***Актуальность. Статья посвящена в раннюю диагностику и лечение фоновых и предраковых заболеваний шейки матки является одной из важных проблем гинекологии, конечной целью которой является снижение заболеваемости раком шейки матки.***

***Цель исследования: Повысить эффективность лечения фоновых и предраковых заболеваний шейки матки методом фотодинамической терапии.***

***Материал и методы исследования: В соответствии с целью и задачами нашего исследования за период 2018 по 2020 г.г. были обследованы и пролечены 255 женщины с фоновыми и предраковыми заболеваниями шейки матки, находившиеся в гинекологических отделениях областного перинатального центра Бухарской области.***

***Выводы: Фотодинамическая терапия успешно может применяться при лечении эктопии, лейкоплакии, эндометриоза, дисплазии, не сопровождающихся выраженной деформацией ткани шейки матки.***

***Ключевые слова: шейки матки, эктопия, лейкоплакия, дисплазия, эндометриоз, фотодинамическая терапия.***

# БАЧАДОН БЎЙНИ ФОН ВА РАК ОЛДИ КАСАЛЛИКЛАРИНИ ИННОВАЦИОН ДАВОЛАШ УСУЛЛАРИ

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✓ ***Резюме***

***Долзарблиги. Мақола гинекология муҳим муаммолардан бири бачадон саратони касалланишини камайтириш учун, бачадон бўйни фон ва рак олди касалликларини эрта ташхислаш ва даволашга бағишланган.***

***Тадқиқотнинг мақсади. Фотодинамик даволаш орқали бачадон бўйни фон ва рак олди касалликларни даволаш самарадорлигини ошириш.***

***Материал ва усуллари. Тадқиқотимизнинг мақсад ва вазифаларига мувофиқ, 2018 йилдан 2020 йилгача бўлган давр мобайнида Бухоро вилояти вилоят перинатал марказининг гинекологик бўлимларида бачадон бўйни фон ва рак олди касалликлари билан оғриган 255 нафар аёл тиббий кўрикдан ўтказилди ва даволанди.***

***Хулосалар: Фотодинамик терапия бачадон тўқимасининг аниқ деформацияси билан бирга келмаган эктопия, лейкоплакия, эндометриоз, дисплазияни даволашда муваффақиятли қўлланилиши мумкин.***

***Калит сўзлар: бачадон бўйни, эктопия, лейкоплакия, дисплазия, эндометриоз, фотодинамик даво.***

## Relevance

The need to identify and treat background and precancerous diseases of the cervix is due to the high frequency of background and precancerous diseases of the cervix in the structure of gynecological pathology in young women, significantly impairing reproductive function, a significant degree of danger of malignant degeneration and insufficient effectiveness of existing treatment methods. It is known that the process of carcinogenesis is multistage and the preclinical existence of a tumor usually lasts for years. According to the WHO, the transition of cervical dysplasia to cancer in situ lasts about 3-8 years, another 10-15 years passes before the development of microinvasive cancer.

Thus, early diagnosis and treatment of background and precancerous diseases of the cervix is one of the important problems of gynecology, the ultimate goal of which is to reduce the incidence of cervical cancer. To date, a lot of scientific works have been devoted to the problem of treating cervical pathology, and various methods of treating background and precancerous diseases of the cervix have been introduced. The most common are methods based on the use of electrocoagulation, cryodestruction, and vaporization lasers as a therapeutic effect. According to domestic and foreign authors, the therapeutic effect of the above treatment methods is 67-98.7%.

However, each of these methods has its own indications, contraindications and a number of oophoritis, bleeding, the occurrence of endometriosis, cicatricial changes in the cervix, stenosis of the cervical canal, impaired reproductive function. In pursuit of the goal of preventing cervical cancer, the treatment of background and precancerous diseases should be radical, but at the same time careful, while maintaining the anatomical and functional usefulness of the cervix, which largely determines the state of the reproductive system.

In this regard, methods of treatment are currently being developed that combine the optimal therapeutic effect in the absence of unwanted complications. One of the newest approaches to the treatment of cervical pathology is photodynamic therapy (PDT). This method causes selective death of pathological cells, which is ensured by the selectivity of drug accumulation in the pathological tissue and local light supply. According to foreign sources, isolated cases of successful treatment of dysplasia and cervical cancer with the use of hematoporphyrin derivatives as a photosensitizer are known.

In the sources available to us, no information was found on PDT in the treatment of background and precancerous diseases of the cervix, and the effectiveness of the drug "Photoditazin" in PDT was not sufficiently evaluated, which determined the purpose of our study.

**Objective of the study:** To increase the efficiency of treatment of background and precancerous diseases of the cervix uteri by the method of innovative photodynamic therapy.

## Material and methods

In accordance with the goal and objectives of our study for the period 2017-2020. 255 women with background and precancerous diseases of the cervix, who were in the gynecological departments of the regional perinatal center of the Bukhara region, were examined and treated. The age of the examined women varied from 21 to 65 years (mean age 43.2 ± 0.3 years).

The maximum number of patients (67%) was between 21 and 35 years old (mean age 32.2 ± 0.3 years). The following pathology of the cervix was revealed: ectopia - in 52 patients (20.4%), eroded ectropion - in 14 (5.5%), leukoplakia - in 21 (8.2%), grade I-II dysplasia. - in 11 (4.3%), endometriosis - in 13 (5.1%). The diagnosis of the disease was made in accordance with the International Statistical Classification of Diseases and Problems Related to Health, 10 - revision (ICD-10), adopted by WHO in 1995. To get a true idea of the nature of the pathological process of the cervix, we carried out a comprehensive clinical, microbiological, colposcopic, cytological, histological examination.

The clinical examination included a thorough analysis of the premorbid background, the study of complaints, past and concomitant extragenital and gynecological diseases, the characteristics of the menstrual, sexual, generative function. The state of the cardiovascular, respiratory, endocrine, urinary and digestive systems, mammary glands was assessed. In the process of work, a standard range of laboratory tests was used: general blood test, general urinalysis, blood for RW, HBs, HCv, HIV. The gynecological status was determined on the basis of examination of the external genital organs, examination of the vagina and uterus using mirrors, and bimanual vaginal examination.

Colposcopic examination was carried out with a Leisegang colposcope with a resolution of 15 times magnification. With the help of colposcopic examination, we determined the size, shape of the cervix and external os, the color and relief of the mucosa, the features of the vascular pattern, the boundaries of the squamous and cylindrical epithelium, revealed the true lesion area of the ectocervix, as well as signs of atypical transformation. Microbiological research was carried out using a bacterioscopic and bacteriological method.

Bacterioscopic examination made it possible to determine the belonging of microorganisms to obligate-anaerobic species, lactobacilli, to assess the invasiveness of the fungal flora, and to assess both the qualitative and quantitative composition of the bacterial flora. The determination of specific pathogens in the mucus of the cervical canal was carried out by the method of polymerase chain reaction (PCR). Cytological examination of smears - prints from the surface of the cervix and cervical canal is one of the main methods for diagnosing precancerous and malignant diseases of the cervix.

Cytological examination revealed the morphological characteristics of cells, the relationship of individual cell groups, the location of cellular elements in the preparation. Much attention was paid to the identification of the nuclear-cytoplasmic index, the distribution of chromatin in cells, an increase in the nucleoli, and the detection of figures of mitotic division. We described the results of the cytological examination according to the Papanicolaou classification. Histological examination of biopsies of the cervix and scrapings of the mucous membrane of the cervical canal made it possible to make a final diagnosis. We interpreted the histological pictures in accordance with the classification of Ya.V. Bohman (1989).

Preoperative preparation was carried out for all women with a detected genital tract infection and included etiotropic, immunomodulatory therapy, followed by the appointment of eubiotics to normalize the vaginal microbiocenosis. The treatment was carried out in the first phase of the menstrual cycle. PDT did not require anesthesia. The PDT session was carried out 2 hours after the application of the FS "Photoditazin" 0.5% in the form of a gel to the pathological zone of the ectocervix. A semiconductor laser device "ALT-Vostok-03" was used as a source of laser radiation.

The output wavelength was 662 nm in continuous mode for 1 0 - 2 0 minutes (depending on the affected area), the output power was -1 W, the energy density was 80 - 250 J / cm2. Assessing the process of cervical epithelization, we took into account the presence of complications during manipulation, the nature of the scab, the period of its rejection, the timing of regeneration, the dynamics of the results of cytological and bacteriological studies, as well as the presence of complications in the early (4 - 10 weeks) and late (6 - 9 months) terms of treatment.

## Result and discussion

Anamnesis analysis, clinical picture of cervical pathology, the effectiveness of diagnostic methods, immediate and long-term results of treatment carried out in 105 patients with background and precancerous diseases of the cervix, made it possible to obtain data on the causes of the development and features of the course of background and precancerous diseases of the cervix, the nature of reparative processes after PDT in comparison with the diathermy surgical method of treatment, to develop methods and indications for PDT.

Basically, the nature of the complaints presented by the patients: leucorrhoea (39.8%), burning sensation in the vagina (12.6%), pulling pains in the lower abdomen (21.9%), itching (7.6%) was associated with concomitant infectious inflammatory diseases of the vagina, cervix and uterine appendages. The study of the somatic history showed a fairly high percentage of infectious diseases, especially those suffered during the formation of menstrual function (29.2%) and the presence of chronic foci of endogenous infection in 41.1%, which, possibly, is an indicator of immunosuppressive conditions that reduce the body's resistance to infections and contributing to the chronicity of infectious and inflammatory diseases of the external and internal genital organs.

According to a number of authors, in women with menstrual irregularities, cervical pathology is more common than in the population. We have identified various menstrual irregularities: algomenorrhea (17.9%), oligomenorrhea (10.7%), hyperpolymenorrhea (6.9%), metrorrhagia (2.8%), which may indicate hormonal imbalance as a provoking factor of development pathology of the cervix. It was found that the risk factors in the development of cervical pathology are unprotected sex, numerous partners, early onset of sexual activity. Analysis of the use of contraceptive methods by patients revealed that 37 (35.2%) patients did not use any methods of contraception.

Hormonal contraception was used by 10 (9.5%) women, 31 (29.5%) used a condom, 5 (4.7%) - spermicides, 19 (18.1%) - interrupted intercourse. The rare use of barrier methods of contraception in the surveyed women contributed to the infection of the genital tract and the development of cervical pathology. When studying the reproductive function, we found that the patients had 255 pregnancies, of which 199 had births and 56 had abortions. The first pregnancy ended in abortion in 21.9% of women. Ruptures of the cervix during labor were detected in 31.1% of patients. The analysis of reproductive function testifies to the great role of postpartum and after abortion traumatization of the cervix in the development of cervical pathology.

The high level of concomitant gynecological pathology draws attention to itself: a history of colpitis was detected in 54% of cases; chronic inflammation of the uterine appendages was found in 29.3% of patients, and 15.8% of them repeatedly underwent inpatient treatment for exacerbation of the inflammatory process; in 58.5% of cases, various hormone-dependent diseases were identified (uterine fibroids, hyperplastic processes of the endometrium, menstrual irregularities).

Thus, the analysis of anamnestic data revealed extragenital, behavioral and genital risk factors for the development of cervical pathology, which create not only the background for the development of background and precancerous diseases of the cervix, but also cause the development of background and precancerous diseases of the cervix.

The laboratory and instrumental examination carried out by us made it possible to obtain data on the causes of the development of background and precancerous diseases of the cervix, the peculiarities of their course, to reveal the true dimensions and to study the structure of the pathological process.

Colposcopic examination in the majority of patients (71.3%) revealed the presence of sections of columnar epithelium on the surface of the ectocervix. Colposcopic signs of leukoplakia were detected in 21.4% of patients, endometriosis - in 5.8%. The normal transformation zone was observed in 65.6% of patients. Important colposcopic signs of precancerous diseases of the cervix are certain markers, which can be used to judge the high probability of dysplasia of stratified squamous epithelium. As a rule, their appearance is associated with an increase in the concentration of DNA in cells (aceto-white epithelium) or the formation of atypical vascularization.

The atypical transformation zone was found in 31.5% of patients and was mainly associated with the presence of inflammatory changes in the cervix, leukoplakia, and dysplasia. The results of our study confirmed the high information content of colposcopy in the diagnosis of background and precancerous diseases of the cervix. Many researchers have proven the role of infectious agents in the development of background and precancerous diseases of the cervix [1,3]. In this regard, we paid great attention to the identification of infectious agents using bacterioscopic, bacteriological research and diagnostics by PCR.

At bacterioscopic examination, the majority of patients showed the 2nd and 3rd degrees of vaginal cleanliness (46.9% and 37.8%, respectively), less often the 1st and IVth degrees of vaginal

cleanliness (5.8% and 6, 9% respectively). According to the bacteriological study, Staphylococcus epidermidis (27.2%), Staphylococcus saprophyticus (31.1%), Staphylococcus aureus (24.4%), Candida albicans (22.1%), Bacteroides (22.4 %), Esherichia coli (18.2%), Peptostreptococcus (16.2%), Enterococcus (11.7%). Moreover, in 82.4% of cases, a mixed infection was detected.

The data of microbiological studies revealed a sharp decrease in the frequency of isolation of the main obligate representatives of the microbiocenosis of the vagina and cervix - lacto- and bifidobacteria, which contributes to the growth of opportunistic microorganisms. When examining the mucus of the cervical canal, various pathogens were found: Gardnerella vaginalis in 21.6% of patients, Ureaplasma urealiticum in 17.6%, Mycoplasma homenis in 11.8%, Candida albicans in 11.8%, Clamidia trachomatis in 7 , 8%, Trichomonas vaginalis - in 5.9%. The presence of mixed infection was found in almost every third patient.

Recently, a number of researchers have paid great attention to the herpes simplex virus (serotype II) and human papillomaviruses, especially types with a high oncogenic risk (types 16 and 18), in the development of precancer and cervical cancer. The human papilloma virus was detected by us in 12.8% of patients, of which HPV 6.11, 40 types were found in 6.9% of patients with ectopia and leukoplakia of the cervix. HPV of high oncogenic risk was detected in 5.9% of patients with grade I-II dysplasia, confirmed by cytological and histological examination. All patients with identified papillomavirus infection had no clinical symptoms of infection.

The cytological method is one of the main ones in the diagnosis of diseases of the cervix. A number of authors point to the coincidence of cytological findings with the results of morphological studies of the cervix in 79.2% -93.4% of cases [2.5]. Cytological examination of the exo- and endocervix in 18.6% of cases did not reveal any pathology. In 66.7% of patients, cytological examination revealed cells of columnar epithelium in smears - prints from the surface of the cervix. Cytological studies carried out by us have shown low information content in the detection of leukoplakia.

So, among 23 patients with colposcopic signs of leukoplakia, 8 did not find cytological signs characteristic of leukoplakia. The cytogram of inflammation was observed in 41.2% of patients. Cytological signs of dysplasia against the background of ectopia, leukoplakia and concomitant inflammation were detected in 14.7% of patients. After a course of anti-inflammatory and antibiotic therapy, these patients underwent a biopsy of the cervix with subsequent histological examination, which confirmed the presence of dysplasia in 8.8% of patients with a colposcopic picture of ectopia and leukoplakia in combination with an atypical transformation zone.

**Conclusion**

Thus, photodynamic therapy can be successfully used in the treatment of ectopia, leukoplakia, endometriosis, dysplasia, which are not accompanied by severe deformation of the cervical tissue.

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# DISORDERS OF PHYSICAL DEVELOPMENT AND COMPLICATIONS OF REPRODUCTIVE PATHOLOGY IN ADOLESCENTS

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✓ ***Resume***

***Today, due to various environmental factors and ingredients in different foods, there is a violation of sexual hormonal activity in adolescents, the results of which are reflected in the disruption of reproductive life. Based on our research, we found that the factor of obesity in adolescents also causes changes in sex hormones.***

***Keywords: hormones, reproductive, obesity, multiple sclerosis.***

# НАРУШЕНИЕ ФИЗИЧЕСКОГО РАЗВИТИЯ У ПОДРОСТКОВ И ОСЛОЖНЕНИЯ РЕПРОДУКТИВНОЙ ПАТОЛОГИИ

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✓ ***Резюме***

***Сегодня из-за различных факторов окружающей среды и ингредиентов в разных нутриентах наблюдается нарушение половой гормональной активности у подростков, результаты которого сказываются на нарушении репродуктивной жизни. На основании наших исследований мы обнаружили, что фактор ожирения у подростков также вызывает изменения половых гормонов.***

***Ключевые слова: гормоны, репродуктивная, ожирение, рассеянный склероз.***

# O'SMIRLARDA JISMONIY RIVOJLANISHNING BUZILISHI VA REPRODUKTIV PATOLOGIYANING ASORATLARI.

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✓ ***Rezyume***

***Bugungi kunda turli ekologik faktorlar va turli ozuqlardagi ingradientlar sababli o'smirlarda jinsiy gormonal faoliyatning buzilishi kuzatilmoqda, bu natijalar repraduktiv hayotning buzilishiga o'z tasirini ko'rsatmoqda. Biz olib borgan tadqiqotlarimiz asosida o'smirlardagi semizlik omili ham jinsiy gormonlar o'zgarishiga sabab bo'lishini aniqladik.***

***Kalit so'zlar: gormonlar, reproduktiv, semizlik, skleroz.***

## Relevance

In recent years, all over the world, the problem of impaired physical development of adolescents has acquired special medical and social significance, due to the steady increase in morbidity. Along with this, the spectrum of pathology of the reproductive system is growing

inflammatory diseases of the genitals (77%), chronic foci of infections (41.8%), and hormonal disorders (61.2%). Particular caution is caused by impaired physical development with delayed sexual development in obese adolescents - this is a functional, temporal delay in the appearance of signs of puberty by more than two standard deviations compared to the average period.

Thus, the incidence of delayed puberty among boys over 4 years old is 5%. Moreover, in 70% of cases, delayed sexual development combined with obesity. Hyperprolactinemia (HPRL) is one of the most common endocrine syndromes that occupy a place at the junction of reproductive endocrinology and clinical endocrinology. Rehabilitation of adolescents and prevention of reproductive system pathology is an urgent problem.

Syndrome of impaired sexual development in adolescent girls, lack of menstruation. In adolescent boys, the lack of development of secondary sexual characteristics, gynecomastia are short, look younger than their peers, the face looks like a woman's, there is no growth of hair on the face, armpit, and pubic region. The sizes of the testicles, scrotum and penis do not meet the age norm and do not reach full development until the age of 15. On hand radiography - "growth zones" are two, 5-7 years slower than usual. Possible reduction of the ovaries (sclerosis) on ultrasound.

**Objective:** To study the risk factors for impaired physical and sexual development in obese adolescents.

Implementation;

1. Identification of pathology by preventive examinations.
2. Assessment of physical and sexual development in obese adolescents
3. Study of hormonal levels in adolescents with sexual development disorders

## Material and methods

To solve the set goals and objectives, we carried out preventive examinations in colleges and schools of the districts: The total number of adolescents was 5982 aged 15-16 years living in the Samarkand region. Of them, 58 were diagnosed with pathology of the reproductive system. Of this number, 36 boys with obesity and gynecomastia were boys and 26 girls. Study inclusion criteria:

- lag in physical development with impaired development of secondary sexual characteristics

- age > 14 years;

- obesity BMI over 35.

- amenorrhea in girls

-Gynecomastia in boys

At the first stage, adolescents with identified pathology were examined in an outpatient setting, where the assessment of the somatic state and physical development was carried out. Examination of adolescents revealed abdominal obesity in 83.3% of cases, disorders of carbohydrate metabolism (80.0%), hypertriglyceridemia (63.3%). and a decrease in HDL levels (76.7%).

To date, the negative impact of obesity on the male reproductive system has been proven. It has been established that obesity in men can impair the androgenic function of the testes. It has been proven that the content of total and free testosterone in the blood serum in overweight and obese patients was significantly lower than in the group of patients with normal body weight. It is assumed that the decrease in testosterone in overweight and obese men is associated with an increase in serum estrogen.

Thus, excess adipose tissue leads to the aromatization of androgens into estradiol by increasing the aromatase enzyme in white adipose tissue. In addition, obese patients are characterized by hyperinsulinemia, which can lead to a decrease in the synthesis of SHBG in the liver, which leads to an increase in the free fraction of estradiol. In turn, an excess amount of estradiol through a negative feedback mechanism can lead to a decrease in the secretion of gonadotropic hormones with the formation of hypogonadism. This leads to a decrease in the amplitude of LH secretion, a decrease in the total secretion of LH, FSH during the day in obese men.

Thus, excess adipose tissue leads to the aromatization of androgens into estradiol by increasing the aromatase enzyme in white adipose tissue. In addition, obese patients are characterized by hyperinsulinemia, which can lead to a decrease in the synthesis of SHBG in the liver, which leads to an increase in the free fraction of estradiol. In turn, an excess amount of estradiol through a negative feedback mechanism can lead to a decrease in the secretion of

gonadotropic hormones with the formation of hypogonadism. This leads to a decrease in the amplitude of LH secretion, a decrease in the total secretion of LH, FSH during the day in obese men.

1.Prolactinoma (macro and microadenoma) was found in 26 patients

2. In 2 patients, the syndrome of "empty" Turkish saddle

3. In 4 patients, polycystic ovary syndrome

4. In 18 patients, functional (idiopathic) hyperprolactinemia.

| Indicators<br><br>Me [25; 75] | KZPR with excessive body weight / obesity (n = 25) | KZPR with normal body weight (n = 38) | p |
|---|---|---|---|
| p | | | |
| Prolactin, mIU / L | 161,9 [106; 218] | 158 [108; 206] | 0,9 |
| Cortisol, nmol / l | 273 [240; 315] | 351[266; 432] | 0,07 |
| DHEA-s, μmol / l | 4,4 [3,7; 5,4] | 3,3 [2,8; 4,5] | 0,03 |
| Insulin, μU / ml | 9,7 [7,8; 12,8] | 4,0 [3,2; 5,3] | 0,00003 |

1. Preventive examinations should be carried out with the participation of pediatric gynecologists, after preliminary training of girls.
2. Conduct a thorough assessment of physical,sexual development in the detection ofsomatic pathology to conduct effective rehabilitation therapy.
3. Assessment of the pathology of the reproductive system by a commission with the participation of a pediatric gynecologist, endocrinologist and pediatrician.

Treatment performed:
1. Diet therapy table 9
2. Dostinek (Kobergalin) 1 tab 2 times once.

3. Against the background of the treatment, after 3 months gynecomastia disappeared in boys, secondary sexual characteristics appeared. However, monthly monitoring of weight and prolactin levels is necessary. In 2 patients, the effect was achieved after a year.

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# COMPARATIVE CHARACTERISTICS OF THE ANTHROPOMETRIC PARAMETERS OF THE HEAD AND MAXILLOFACIAL REGION IN CHILDREN WITH ADENOIDS

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✓ ***Resume***

***Adenoids are present in the body of absolutely every person and perform an important protective function. However, due to a number of factors in the lymphatic tissue, an inflammatory process can occur, provoking the proliferation of the nasopharyngeal tonsilThe article analyzes the literature on the anthropometric parameters of the craniofacial region of children with adenoids***

***Key words: adenoids, anthropometry, craniofacial region***

# СРАВНИТЕЛЬНАЯ АНАЛИЗ ЦЕФАЛОМЕТРИЧЕСКИХ ПАРАМЕТРОВ ГОЛОВЫ И ЧЕЛЮСТНО – ЛИЦЕВОЙ ОБЛАСТИ У ДЕТЕЙ С АДЕНОИДАМИ

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✓ ***Резюме***

***Аденоиды присутствуют в организме абсолютно каждого человека и выполняют важную защитную функцию. Однако из-за ряда факторов в лимфатической ткани может возникать воспалительный процесс, провоцирующий разрастание носоглоточной миндалины. В статье анализируется литература по антропометрическим параметрам краниофациальной области детей с аденоидами, также приводится данные***

***Ключевые слова: аденоиды, антропометрия, краниоцефалическая область***

# ADENOID BOR BOLALARDA BOSH VA YUZ - JAG' SOHASINING ANTROPOMETRIK KO'RSATKICHLARINING QIYOSIY TAVSIFI

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Buxoro davlat tibbiyot instituti

✓ ***Rezume***

***Adenoidlar har bir insonning tanasida mavjud bo'lib, muhim himoya funksiyasini bajaradi. Shu bilan birga, limfa to'qimalarida bir qator tashqi omillar tufayli yallig'lanish jarayoni paydo bo'lishi mumkin, bu esa bodomsimon bezining ko'payishini keltirib chiqaradi. Maqolada adenoidi bor bolalarning yuz - jag' sohasining antropometrik parametrlari to'g'risidagi adabiyotlar tahlil qilinadi.***

***Kalit so'zlar: adenoid, antropometriya, yuz – jag' sohasi***

## Relevance

The standard of a perfectly proportioned face is one that is distinguished by balanced individual parts and smooth outlines that form an oval.

The overall attractiveness of a face depends on all anatomical elements, including skin, subcutaneous tissue, muscles, bones, and teeth. To achieve or approach the aesthetic ideal, doctors

must have a clear idea of the proportions of facial features, the method for analyzing its defects and the possibility of using special methods for eliminating them. The etiological factors contributing to the development of dentoalveolar anomalies are numerous and varied [37].

The limits of fluctuations in the anthropometric parameters of parts of the body in children of the same age, as a rule, go beyond the fluctuations in size in children of a relatively younger or older age. This is transgressive variability, which necessitates quantitative determinations [2].

Having determined this variability in the body between healthy children and children with various diseases of the same age, it provides an early diagnosis of the lagging behind or ahead of the development of the child's body. These results are the methodological basis for the development and improvement of anthropometric methods of diagnosis and treatment of this contingent [11].

Every year all over the world the number of people with functional disorders of the musculoskeletal system is increasing, which is one of the main reasons for the decline in the working capacity and labor productivity of the adult population of the country. [one]

Dynamic clinical and anthropological observations of the development of a child are not only necessary to identify individual characteristics of growth and maturation, the pace and harmony of development [24], factors of well-being and the level of health of children, but they are also a diagnostic key to the timely solution of the question of indications for in-depth specialized examination, as well as the selection of therapeutic and preventive measures.

**Anthropometry** is one of the main methods of anthropological research, which consists in measuring the human body and its parts in order to establish age, sex, racial and other features of the physical structure, which makes it possible to give a quantitative characterization of their variability. Anthropometric methods are of great importance in applied anthropology, and in recent years have begun to play an important role in anthropometric (orthopedic) cosmetology [10].

By examining various ethnic, age and sex groups, and measuring the size of various parts and recording variations in the position and shape of cranial and facial structures, broad standards have been developed that describe the human head. As a specialized part of anthropometry, “human measurements”, the study of the head came to be called “craniometry” or “cephalometry” [6].

Cephalometry (measurement of craniofacial parameters), an ethnographic definition of skull morphology, has been studied by anthropologists for centuries. [36] Cephalometry is an effective method for assessing the structure of the individual's dentoalveolar system, identifying the formation features inherent in variants of dentoalveolar anomalies, and studying the changes occurring in the process of face growth [21].

Diseases of the ENT organs, in particular hypertrophy of the pharyngeal tonsil and "adenoid" growths, play an important role in changing the parameters of the face and the dentoalveolar system [21]. The trend towards an increase in the incidence of pathology of the pharyngeal tonsil in children is steadily growing, which negatively affects the formation of the structures of the nasomaxillary complex [28].

Diseases of the structures of the Valdeyer's lymphadenoid pharyngeal ring rank first among the entire ENT pathology of childhood: the proportion of children with chronic adenotonsylitis ranges from 20 to 50%, and among children who often get sick, these diseases are 37-70% [2].

Also, it was found that the frequency of this pathology detected is 398.8 cases per 1000 children in preschool age and 199.2 per 1000 among schoolchildren. In 21% of preschool children, hypertrophy of the pharyngeal tonsil was revealed, and in 3% - chronic adenoiditis. In the structure of ENT organ pathology in preschool children, adenoids account for more than half (53.1%) of all diseases. Adenoid growths (adenoides) are usually found between the ages of 3 and 15 years, but there are also younger children, as well as adults.

Adenoids are observed equally often in boys and girls, in about 3.5-8% [20]. But according to Garashchenko T.I., (2008) the greatest severity and prevalence of adenoid vegetation is observed in children aged 3-7 years. Pediatricians and ENT doctors associate these "age peaks" of reactive hyperplasia of the pharyngeal tonsil with the formation of an "immature" immune system due to the socialization of the child, that is, the expansion of external contact with the microbial environment when children enter preschool institutions or schools [3].

The pathogenesis and etiology of adenoid vegetations remain largely unclear. Adenoid growths are localized in the region of the posterior vault of the nasopharynx, but can fill its entire dome and spread along the lateral walls downward to the pharyngeal orifices of the auditory tubes [20].

And also, Palchun V.T. (2012) argues that adenoid vegetation (proliferation), or adenoids, is reactive hyperplasia of the pharyngeal tonsil to antigenic effects [13].

Other authors argue that in the pediatric population, the number of children with pathology of the lympharyngeal ring ranges from 50 to 70% [16]. In children of preschool and primary school age, 74.3% in the structure of diseases of the ear, throat and nose is the pathology of the pharyngeal tonsil [19]. The greatest increase in cases of hypertrophy of the pharyngeal tonsil (GGM) occurs at the age from 3 to 6 years and is up to 60% [18].

Despite the large number of scientific studies devoted to the problem of adenoids, until now there is no single point of view on the causes of pathological changes in the pharyngeal tonsil [2,4,8,9]. In children, chronic diseases of the lymphoid pharyngeal ring are characterized by certain features. According to Zicari A.M. et al., (2007) they are rarely recognized in the first 2-3 years of life, when they are more often manifested by hypertrophy of the tonsils (in most cases, these are hypertrophic tonsillitis and adenoids). However, doctors' attention is focused on such manifestations of these diseases as susceptibility to frequent respiratory viral infections (often ill children) or breathing disorders (sleep apnea, nasal breathing disorders) [40]. Since hypertrophy of the pharyngeal tonsil, which maintains a chronic rhinitis and complicates nasal breathing, helps to reduce the child's resistance to external stimuli, which leads to the development of many chronic diseases: sinusitis, tonsillitis, otitis media, lesions of the bronchopulmonary system, cardiovascular pathology and others [17].

Since the development of the dentition is influenced by many interdependent factors, the identification of morphological and functional changes in the dentition and upper respiratory tract is an important problem in theoretical and practical medicine, which has attracted the attention of many scientists today [5,26,32,39].

According to epidemiological studies, the prevalence of oral respiration among children and adolescents with adenoids can reach 55% [25,27,29]. Depending on the duration, oral breathing can cause numerous functional, structural, postural and behavioral changes, including the dentition, which is structurally and functionally closely related to the upper respiratory tract [22,35].

In research by Wyman O.A. (2009) found that if nasal breathing is partially obstructed due to large adenoids, then it leads to breathing through the mouth and a typical “adenoid face” [38]. With a long course of the disease in children, disorders in the development of the facial skeleton occur: a constantly drooping lower jaw becomes narrow and elongated, the hard palate develops incorrectly - it is formed high and narrow; due to the incorrect position of the teeth, the bite is disturbed. These changes give the face a characteristic “adenoid” appearance [20].

As well as the adenoid face according to Bonuk K., Parikh S., Bassila M. (2006) is characterized by the presence of incompetence of the upper lip, retentionally located hyoid bone, narrow upper dental arch, retro-positioned incisors of the lower jaw, increased height of the anterior surface of the face, narrow or V-shaped upper jaw, increased plane angle of the lower jaw and posterior rotating lower jaw compared to healthy children [23].

In addition, children suffering from adenoids and chronic rhinitis have difficulty in nasal breathing as a result of adenoids leading to disturbances in the structure of the facial skeleton, the so-called "adenoid" face, while the lethargy of the lips reduces the clarity of speech and impairs diction. Insufficient inclusion of resonator cavities with adenoids leads to rhinophonias. A large number of complex violations of the pronunciation side of speech determines the need to search for technical means that optimize speech therapy work. As a result of oral breathing, the child gradually begins to form a deformation of the facial skeleton. The lateral parts of the upper jaw converge, the hard palate becomes narrow, high (Gothic). There is a narrowing of the upper dentition, crowded position of the teeth of the upper jaw, and then the lower jaw. An irregular bite is formed, which provokes the emergence of complex violations of the pronunciation of sounds. Incorrect articulation and malocclusion are one of the most common causes of poor pronunciation. Abnormalities and deformities of the maxillofacial region prevent normal articulation of sounds, strengthen the habits of incorrect articulation and make it difficult to correct them. And also, in children with an open mouth and a lower position of the tongue, a lag in

the growth of the lower jaw is formed. Due to the underdevelopment of the lower jaw, an anterior position of the head is formed (tilt and advancement of the head forward) relative to the vertical of the spinal column, which leads to stoop and deterioration of physiological respiration [1].

Long-term absence of nasal breathing affects not only the development of the upper jaw, which is accompanied by a decrease in its transversal size and is a factor in the development of bilateral crossbite, but also the formation of the lower nasal passage through which the main air flow enters during inhalation [24]. Cephalometrically, it is possible to note the greater height of the anterior part of the face and the increased angle of the plane of the mandible [32].

According to Emmerich A. et al., (2004) and De Menezes V.A. et al., (2006) children with nasal breathing difficulties have a 2-2.5 times higher risk of developing dentoalveolar anomalies [26,27]. Many dentoalveolar abnormalities associated with impaired nasal breathing, such as crowding of teeth, have a high risk of recurrence after treatment [36].

At the same time, there is still no consensus among scientists about the criteria for the severity of nasal obstruction that cause changes in the maxillofacial region, development mechanisms and characteristic signs of malocclusion in violation of nasal breathing [5]. Due to breathing through the mouth, the position of the tongue downward and the balance between the tongue and the lower jaw are different compared to healthy children. This results in a lower position of the lower jaw. In this situation, a number of postural changes can occur, such as open position of the mandible and expansion of the head. Prolonged absence of nasal breathing in a child is accompanied by a violation of the interaction of the muscles of the tongue, cheeks and lips. One of the factors contributing to these disorders is hyperplasia of the nasopharyngeal tonsil, which blocks the posterior parts of the nose and nasopharynx and makes nasal breathing difficult.

Its prolonged absence affects the development of the dentition in children, causing the formation of anomalies in the occlusion of the dentition in the form of lengthening of the lower third of the face, impaired lip closure, labial displacement of the maxillary incisors, V-shaped narrowing of the maxillary dental arch [7].

Therefore, an open mouth and, as a result, the child's mouth breathing is the cause and effect of many myofunctional disorders. Over the past 10–15 years, the number of children who have fixed the habitual open position of the mouth has increased, which results in a restructuring of the breathing type: the child switches from the physiological nasal breathing type to the pathological oral breathing type [1].

There is evidence of improved growth in children after tonsillectomy and / or adenoidectomy [40].

Among children with ATH, growth retardation was at least double the expected rate, and adenotonsilectomy had a valuable beneficial effect on children with adenoids [24].

An increase in the height of the front of the face may be due to nasal congestion caused by chronic mouth breathing [33].

After adenoidectomy and relief of nasal breathing, accelerated growth of the mandible and closure of the mandibular plane angle have been reported [38].

After studying the literature available to us, we found that information about the anthropometric parameters of children with ENT diseases is diverse and this requires further research.

Thus, the issue of tactics of managing patients with dentoalveolar anomalies against the background of an adenoid requires the creation of an algorithm for a comprehensive solution to this problem with the participation of not only an otorhinolaryngologist and a morphologist. It is better not to treat any disease, but to prevent it.

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# INDICATIONS FOR THE USE OF DENTURES, WHICH ARE TAKEN IN PATIENTS WITH TYPE 2 DIABETES, DEPEND ON THE VIOLATION OF KIDNEY FUNCTION

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✓ ***Resume***

***In recent years, the population of our planet has faced a global problem of chronic non-communicable diseases of medical, social and economic importance. It was determined that " patients with type 2 diabetes mellitus with chronic kidney disease should be at risk of developing oral diseases."***

***Key words: Kidney, dysfunction, diabetes, removable dentures.***

# БУЙРАК ФУНКЦИЯСИ БУЗИЛИШИГА ҚАРАБ 2-ТОИФА ДИАБЕТЛИ БЕМОРЛАРДА ОЛИБ ҚЎЙИЛАДИГАН ТИШ ПРОТЕЗЛАРИНИНГ ҚЎЛЛАНИЛИШ КЎРСАТКИЧЛАРИ

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✓ ***Резюме***

***Сўнги йилларда планетамиз аҳолиси тиббий-ижтимоий ҳамда иқтисодий аҳамиятга эга сурункали ноинфекцияли касалликларнинг глобал муаммосига дуч келди. “Буйракнинг сурункали касалликларига эга 2-типдаги қандли диабет билан касалланган беморлар оғиз бўшлиғида касалликлар ривожланиш хавфи бўлган гуруҳга кириши” белгиланди.***

***Калит сўзлар. Буйрак, функциянинг бузилиши, қандли диабет, олиб қўйиладиган тиш протезлари.***

# ПОКАЗАНИЯ К ПРИМЕНЕНИЮ ЗУБНЫХ ПРОТЕЗОВ, КОТОРЫЕ ПРИНИМАЮТСЯ У БОЛЬНЫХ САХАРНЫМ ДИАБЕТОМ 2 ТИПА, ЗАВИСЯТ ОТ НАРУШЕНИЯ ФУНКЦИИ ПОЧЕК

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✓ ***Резюме***

***В последние годы население нашей планеты столкнулось с глобальной проблемой хронических неинфекционных заболеваний, имеющих медицинское, социальное и экономическое значение. Было определено, что" больные сахарным диабетом 2 типа с хроническими заболеваниями почек должны входить в группу риска развития заболеваний полости рта".***

***Ключевые слова: Почки, дисфункция, диабет, съемные зубные протезы.***

## Relevance

In recent years, the population of our planet has faced the global problem of chronic non-communicable diseases of medical, social and economic importance. It was determined that "patients with type 2 diabetes mellitus with chronic kidney disease should be at risk of developing oral diseases." The studies carried out have now proven that the treatment of patients with complications of type 2 diabetes mellitus SBC is not only one of the main problems of modern endocrinology, but also dentistry (Galimova A.Z., 2012). A systematic approach in conditions of pathologies harmonized with the endocrine, renal systems and the oral cavity is not perfect.

The principles of dental rehabilitation of patients with complications of type 2 BCS have

not been developed. The presented facts prove the relevance of research in this area of dentistry.

Purpose of the study. Development of dental rehabilitation measures for patients with type 2 diabetes mellitus due to impaired renal function, when, when assessing the condition of the teeth, the characteristics of the dentures to be removed are determined in a complex manner.

## Material and methods

Identification of pathological changes in the oral mucosa in patients with complications of type 2 diabetes mellitus with chronic kidney disease;

Determination and assessment of protective factors of the oral cavity and microbial landscape in patients with complications of type 2 diabetes mellitus with chronic kidney disease;

To study the microcirculation of the oral cavity in patients with type 2 diabetes mellitus with chronic kidney disease as a complication;

Comparative study of the effectiveness of treatment before and after prosthetics with removable dentures in patients with chronic kidney disease with complications of type 2 diabetes mellitus;

## Result and discussion

Clinical and hygienic examination included the study of life, medical history, general and local dental condition of the patient. Dental examination includes a general clinical examination.

The examination began with a life history, indicating the past, concomitant diseases and anamnesis of this disease. Particular attention is paid to the patient's complaints, the reason for treatment, violation of chewing and speech activity, violation of aesthetics. The questionnaire indicated the time when the teeth were lost and the reason for this, it was determined what the subjects used dentures, which dentures they used and for how long. In the case of using dentures, their suitability and hygienic condition were determined.

The examination of the oral cavity was carried out according to the standard technique, starting with the examination of the oral cavity in a position adjacent to the jaws. With the help of SBC, an additional examination of patients with dental defects and periodontal diseases up to type 2 QD was carried out using the developed questionnaire.

The density of bone tissue in the anterior part of the lower jaw was 29.00 ± 7.45% in the study of CT type 2 for bone density in persons with inflammatory - destructive processes of bone tissue complicated by SBC.

The value of bone density in patients with inflammatory and destructive processes with complications of type 2 BCS was 35.02 ± 7.46% compared with the control group in the mandibular region.

Analysis of the results of microbiological studies from the main groups showed that in the dynamics of early treatment (14 days) in patients of the main group, significant changes in the content of quantitative and qualitative indicators of microflora were revealed. In the dynamics of treatment with the antiseptic drug "LOROBEN", a significant decrease in the amount of Pat Kok Koklar mousebat in their quantitative indicators was revealed.

Thus, based on the results obtained, we can say that the use of the antiseptic drug "LOROBEN" in the process of adaptation to dentoalveolar prostheses with a plate, which are taken in patients with complications of SBD, differed from traditional methods of orthopedic dental therapy in terms of its effectiveness.

## Findings

With a satisfactory level of dental care in the group of uncomplicated patients with SBD type 2 diabetes mellitus and the control group, in persons suffering from type 2 diabetes mellitus with complications with chronic kidney disease, an increased incidence of necrotic lesions is observed (93%, 86%, 40%, respectively) and an increased need for dental prosthetics (90%). Patients suffering from complications of type 2 diabetes mellitus with SBC and without complications with SBC complained of cerostomy (96% and 76%), taste disturbances (30% and 26%), bleeding from the gums (86% and 63%), stomalgia ( 36% and 23%).

Inflammatory periodontal diseases accounted for 73.9%, and secondary adentia was detected in 79.6% of patients. It was found that patients with type 2 CD require active dental treatment, prophylactic and orthopedic support. With a satisfactory level of dental care in the group of uncomplicated patients with SBD type 2 diabetes mellitus and the control group, in persons suffering from type 2 diabetes mellitus with complications with chronic kidney disease, an increased incidence of necrotic lesions is observed (93%, 86%, 40%, respectively) and an increased need for dental prosthetics (90%).

Patients suffering from complications of type 2 diabetes mellitus with SBC and without complications with SBC complained of cerostomy (96% and 76%), taste disturbances (30% and

26%), bleeding from the gums (86% and 63%), stomalgia ( 36% and 23%). Inflammatory periodontal diseases accounted for 73.9%, and secondary adentia was detected in 79.6% of patients. It was found that patients with type 2 CD require active dental treatment, prophylactic and orthopedic support.

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# DISORDERS OF COGNITIVE FUNCTIONS IN CHRONIC HEART DEFICIENCY AND THEIR CLINICAL CONDITION

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✓ ***Resume***

***Cognitive impairment in patients with chronic heart failure remains one of the most pressing problems in neurology, and the urgency of the problem is determined by the frequency of complications resulting from this pathology and the lack of adequate effective treatment.***

***Keywords. cardiovascular disease, Chronic heart failure, prevalence, etiology, prognosis, mortality.***

# СУРУНКАЛИ ЮРАК ЕТИШМОВЧИЛИГИДА БОШМИЯДА КОГНИТИВ ФУНКСИАЛАРНИНГ БУЗИЛИШИ ВА УЛАРНИНГ КЛИНИК ҲОЛАТИ

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✓ ***Резюме***

***Сурункали юрак этишмовчилиги бўлган беморларда когнитив бузилишлар неврологиянинг долзарб муаммоларидан бири бўлиб қолмоқда ва муаммонинг долзарблиги ушбу патологиядан келиб чиқадиган асоратларнинг частотаси ва этарли даражада самарали даволанишнинг йўқлиги билан белгиланади.***

***Калит сўзлар. юрак-қон томир касалликлари, сурункали юрак этишмовчилиги, тарқалиши, этиологияси, прогнози, ўлим.***

# НАРУШЕНИЯ КОГНИТИВНЫХ ФУНКЦИЙ ПРИ ХРОНИЧЕСКОМ ДЕФИЦИТЕ СЕРДЦА И ИХ КЛИНИЧЕСКОЕ СОСТОЯНИЕ.

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✓ ***Резюме***

***Когнитивные нарушения у пациентов с хронической сердечной недостаточностью остаются одной из самых актуальных проблем неврологии, а актуальность проблемы определяется частотой осложнений, возникающих в результате данной патологии, и отсутствием адекватного эффективного лечения.***

***Ключевые слова. сердечно-сосудистые заболевания, хроническая сердечная недостаточность, распространенность, этиология, прогноз, смертность.***

## Relevance

The mechanism of development of cognitive impairment in patients with chronic heart failure is currently not fully understood. It is known that chronic hypoperfusion is a mechanism that can lead to brain injury in patients with chronic heart failure [1]. Some authors suggest that a decrease in heart failure is the highest cause of cognitive impairment, leading to cerebral perfusion and oxygen deprivation [7]. Chronic heart failure (CHF) is one of the most common and prognostically uncomfortable complications of cardiovascular disease [1.2]. The problem of chronic heart failure is becoming increasingly relevant in elderly patients. The trend of increasing population in the elderly, new cases of patients with chronic heart failure is constantly growing and requires the search for new approaches to optimize such patients at different

stages of care, both inpatient and in care [4]. The occurrence of somatic and affective disorders in some patients, along with cardiac pathologies, makes it difficult to make a correct diagnosis of the disease in a timely manner. The negative impact of these diseases on the course and prognosis of the disease, adherence to treatment, quality of life, the formation of an adequate response to the disease cause additional difficulties in treatment and communication problems [6].

In his scientific work, Andrei Viktorovich [3.14] considered the development of a program such as an outpatient training program for the treatment of chronic heart failure as a new method of treating patients.

Chronic heart failure is an important medical, social, and economic problem, representing a new epidemic of cardiovascular disease (SVD), affecting approximately 5.8 million people in the United States and more than 23 million citizens worldwide [9]. In Western countries, the prevalence of chronic heart failure varies from 1% to 2% (5-10 people per 1,000) and is 10% or more among people over the age of 70 [12]. In our country, the prevalence of chronic heart failure detected on the basis of clinical signs reached 11.7%, the variability in different regions ranged from 7 to 17%. In hospitalized patients, the diagnosis was confirmed in 78.8% of cases [5]. The main clinical-epidemiological and economic indicators of chronic heart failure (prevalence, etiology, prognosis, mortality) significantly affect the age, sex, ethnic and social differences of the studied population. Thus, chronic heart failure is higher in developed countries than in developing countries. However, by 2050, an increase in the number of cases of chronic heart failure will be clearly detected in underdeveloped industrialized countries [12]. The prevalence, prevalence, and mortality of chronic heart failure remain high and the prognosis remains poor. According to the American Heart Association (ANA), in 2008, chronic heart failure was identified as the leading cause of death in 283,000 people [4]. The economic costs associated with chronic heart failure are estimated at billions of dollars per year. The results of modern pharmacoeconomic analysis show that the cost of treating chronic heart failure in Europe and the US ranges from 1% to 2% of the health budget, 5 times higher than the cost of treating all forms of these safe pathologies, the frequency of hospitalization of patients with chronic heart failure is sufficiently high and stable. continues. Increased life expectancy, improved treatment of cardiovascular disease, as well as risk factors for the development of ischemic heart disease (IBS), especially in countries with transition economies, explain the increase in the prevalence and prevalence of heart failure worldwide [11].

The need for repeated hospitalization due to decompensated chronic heart failure significantly increases the financial cost of treating such patients [7.16]. Thus, despite all the achievements of modern medicine, chronic heart failure is a heavy burden both in Uzbekistan and in the world health system. For the first time, chronic heart failure began to be seen as a serious social problem. In 2003, U.S. hospital statistics set a record: the number of patients with chronic heart failure exceeded 1 percent of hospital admissions, and the frequency of initial diagnoses of chronic heart failure was 2 per 1,000 people. (13). In a Framing study (1970), it was found that the survival rate of patients with newly diagnosed heart failure was 62% in men and 42% in women [9]. Chronic heart failure is now considered a disease that can lead to other diseases in itself.

Talking about cognitive impairment in cardiovascular disease (CVD) It should be noted that in chronic heart failure, cognitive functions are the most important process of rational cognition of the complex functions of the brain. Symptoms of cognitive health include changes in concepts such as real perception of human life, intelligence, ability to concentrate on a problem, adequate self-esteem, and competence [19]. Cognitive disorders are manifested by disturbances of individual norms, such as memory, speech, counting, spatial-temporal disturbances, decreased ability to abstract thinking [17].

There is also a close association between cognitive impairment and chronic heart failure [14]. The results of the analysis in patients with heart failure, although taking into account all the additional factors of cognitive dysfunction (age, arterial hypertension, cerebrovascular disease), on average, 1 point lower than in older people with heart failure [12]. In people with severe heart failure requiring a heart transplant, the MMSE difference reaches 2 points, but cognitive impairment is significantly reduced after a successful transplant [18]. It has also been reported that long-term (9 years) acute risk disease is associated with an 80 percent increased risk of dementia and Alzheimer's disease in particular [16]. The association between cognitive dysfunction and heart failure is confirmed by the high rate of heart failure in

patients with cognitive impairment, in contrast to people with cognitive impairment [5], a decrease in brain perfusion in heart failure leads to damage to the white matter of the brain (leukoencephalopathy) or atrophy of the temporal lobes of the media, which may be particularly sensitive to hypoxia and hypoperfusion. One study found that atrophy of the temporal lobe of this media is best associated with cognitive impairment, but the severity of depression and anxiety is associated with leukocenphalopathy [14]. Ischemic brain injury in patients with heart failure may be accompanied by a decrease in cerebrovascular reactivity, neurohumoral disease, thromboembolism, and an excessive decrease in blood pressure (QB) associated with the use of antihypertensive drugs [12].

The most severe form of brain dysfunction that develops in patients with severe heart failure is called cardiac encephalopathy. It manifests itself as cognitive dysfunction with bradyphrenia, impaired attention and other regulatory processes, apathetic syndrome (Zakharov V.V. 2005). In this case, Cognitive dysfunction is usually detected when the discharge portion (BQ) of the left ventricle (CQ) is less than 30% [15]. In this case, the mechanism of development of cognitive dysfunction may be associated with a decrease in diastolic discharge of the heart, which leads to an increase in pressure in the venous system and fluid retention in the body, which can lead to an increase in intracranial venous sinuses and arteries. and its accumulation in the subarachnoid spaces, cerebral hemispheres (external hydrocephalus), and ventricles of the brain (internal hydrocephalus). In turn, this disrupts brain perfusion, leading to a decrease in heart failure [8]. An additional factor may be hypoxia as a result of small-scale circulatory disorders [15]. With removal of cerebrospinal fluid, the condition of patients after lumbar puncture can improve rapidly. However, continuous improvement in neurological function can only improve heart failure using pharmacological agents or other methods (e.g., heart transplantation). Clinical improvement may be accompanied by a decrease in the degree of hydrocephalus on computed tomography or magnetic resonance imaging [11].

In studies, it has been found that vascular dementia in patients with chronic heart failure persists primarily as amnesty and pseudoparalytic dementia [10]. In the first case, a clear impairment of memory for current events was noted. Clinically, this was manifested by a clear “forgetfulness” of patients who could not remember the treatment schedule, medication intake, and so on. In the second type of vascular dementia, Cognitive dysfunction manifested itself in a relatively mild mnesticide disorder against a background of monotonous flattering mood. But such a situation is associated with a significant decrease in critical ability. Thus, the tendency to minimize the severity of the manifestation of chronic heart failure is reflected in cognitive changes [7]. The risk of cognitive impairment is high when combined with heart failure, arterial hypertension, while affecting the general state of the cognitive process and individual cognitive functions: memory, attention, regulatory processes are impaired [18].

The modern classification of cognitive disorders divides them into mild, moderate, and severe (dementia). Criteria for identifying one or another type of disease are related to the disorder of occupational, domestic, and social adjustment, taking into account the patient’s age, social status, and level of education [14]. Mild cognitive impairments are detected only by the most sensitive neuropsychological tests and do not affect daily activities, but, as a rule, they are subjectively aware and cause anxiety [13]. Cognitive disorders of moderate severity are detected not only by special technical means, but also by daily contact with the patient. They lead to difficulties in the most difficult types of professional or social activities, and in general, such changes in patients remain independent [20]. Moderate cognitive impairment is an indicator of current stress conditions that may indicate a serious and long-term prognosis [11].

Cognitive impairments can also be seen in the background of arterial hypertension. Arterial hypertension is currently an important predictor of dementia and cognitive impairment in general [3.5]. Cognitive impairment in hypertension can only be due to extensive ischemic injury of the brain and its multiple infarct status. Often their development is followed by limited damage such as lacunar infarction in a strategically important area. Functions that are important for cognitive function include the following areas of the brain: frontal lobes; parieto-temporo-occipital regions; middle-basal parts of the temporal lobe; anterior and middle parts of the visual cortex associated with the frontal lobes and limbic system; the dentate nucleus of the posterior-inferior-lateral region and cerebellar hemisphere, opposite the dominant cerebellar hemisphere; pale nets [18].

Another morphological substrate of cognitive impairment in hypertension may be diffuse injury

of this white matter, cortical atrophy, and cerebral hypoperfusion caused by specific structural changes in small intracerebral arterioles. Cortical (granular) atrophy of the hemispheres develops due to the death of neurons, which explains the functional disorders. Several small focal lesions in the deep parts of the brain, spongiosis of the white matter, impairment of higher mental functions lead to scattering of brain structures, particularly the temporal, parietal, as well as limbic-reticular complex structures of the frontal regions [16].

A theory of “hypoperfusion dementia” has also been developed. The urgency of its occurrence depends on the complex set of changes in blood vessels and brain structure that are detected in patients with hypertension, including those associated with atherosclerosis. Specific hypertensive changes in cerebral vessels are accompanied by a decrease in perfusion, primarily in the frontal and parietal regions of the brain, and later in the temporal regions. Separate hypoperfusion is located in the deeper parts of the brain (white matter of the semi-oval center). However, in patients with cerebral circulatory disorders caused by hypertension, blood pressure levels directly affect the blood supply to the brain, and a relatively small decrease in blood pressure in cases of impaired cerebral blood flow autonomy leads to exacerbation of perfusion disorders and exacerbation of neurological disease. Steno tic injury of the main arteries is more pronounced in patients with intracranial vascular pathology than in patients with isolated hypertension [15].

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# A MODERN VIEW ON PATHOGENETIC THERAPY OF ATOPIC DERMATITIS IN CHILDREN (LITERATURE REVIEW)

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✓ ***Resume***

***The article presents modern views on rational therapy for atopic dermatitis in children. The issues of the use of antihistamines and topical anti-inflammatory drugs are discussed. Among the latter, special attention is paid to methylprednisolone. The analysis of the use of methylprednisolone aceponate in the treatment of atopic dermatitis in children was carried out. It also provides research data on the effect of the desloratadine on the course of atopic dermatitis in children. It has been shown that the inclusion of the drug in the complex therapy of atopic dermatitis in children provides a rapid clinical effect.***

***Keywords: atopic dermatitis, children, allergies, treatment, external therapy, antihistamines, glucocorticosteroids***

# СОВРЕМЕННЫЙ ВЗГЛЯД НА ПАТОГЕНЕТИЧЕСКУЮ ТЕРАПИЮ АТОПИЧЕСКОГО ДЕРМАТИТА У ДЕТЕЙ (ОБЗОР ЛИТЕРАТУРЫ)

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✓ ***Резюме***

***В статье представлены современные взгляды на рациональную терапию атопического дерматита у детей. Обсуждаются вопросы использования антигистаминных и топических противовоспалительных препаратов. Среди последних особое внимание уделено метилпреднизолону. Проведен анализ применения метилпреднизолонаацепоната в лечении атопического дерматита у детей. Также приводятся научно-исследовательские данные по изучению влияния дезлоратадина на течение атопического дерматита у детей. Показано, что включение препарата в комплексную терапию атопического дерматита у детей обеспечивает достижение быстрого клинического эффекта.***

***Ключевые слова: атопический дерматит, дети, аллергия, лечение, маҳаллий даво, антигистаминные препараты, глюкокортикостероиды***

# БОЛАЛАРДА АТОПИК ДЕРМАТИТНИ ПАТОГЕНЕТИК ДАВОЛАШНИНГ ЗАМОНАВИЙ ТАМОЙИЛЛАРИ (АДАБИЁТЛАР ШАРҲИ)

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✓ ***Резюме***

***Мақолада болаларда атопик дерматитнинг рационал даволаш бўйича замонавий маълумотлар келтирилган. Антигистамин ҳамда маҳаллий яллиғланишга қарши дори воситаларини қўллаш масалалари муҳокама қилинган. Иккинчи гуруҳ орасида метипреднизолонгаалоҳида этибор қаратилган. Болаларда атопик дерматитни даволашда метилпреднизолон ацепонатдан фойдаланиш бўйича таҳлиллар келтирилган. Шунингдек, дезлоратадиннинг болаларда атопик дерматитнинг кечишига таъсирига доир илмий-тадқиқот маълумотлар келтирилган. Болаларда атопик дерматитни комплекс даволашда ушбу препаратни қўллаш тезкор клиник таъсир кўрсатишига олиб келади.***

***Калит сўзлар: атопик дерматит, болалар, аллергия, даволаш, иммунитет, антигистамин дори воситалари, глюкокортикостероидлар***

## Relevance

In recent years, the problem of atopic dermatitis (AD) in children has been acquiring more and more medical and social significance, since the prevalence of the disease is growing steadily, making up in various countries of the world from 6% to 25% [2, 11,

Atopic dermatitis remains one of the most pressing problems in dermatology due to the widespread and growth of this dermatosis, severe course, insufficient effectiveness of existing treatment methods [33, 39].Atopic dermatitis (AD) is one of the most common human diseases. The increase in morbidity in the last decade, a chronic course with frequent relapses, insufficient effectiveness of existing methods of treatment and prevention put blood pressure among the most pressing problems of modern medicine [31]. Atopic dermatitis occurs, as a rule, in early childhood in persons with a hereditary predisposition to atopic diseases, has age-related characteristics of the localization and morphology of foci of inflammation.

Atopic dermatitis is a chronic disease, which is based on IgE-dependent inflammation of the skin and its hyperreactivity, disrupting the natural reaction of the skin to external and internal irritants. AD, as a rule, debuts in early childhood and is characterized by a severe, persistent course, frequent relapses and the development of complications [36].

The causes of atopic dermatitis are not fully understood. At various stages of AD teachings, it was invited to many concepts of disease. Basically, they reflect three hypotheses: constitutional predisposition, psychosomatic and allergic (immunological) [3, 10, 42].

The mechanisms involved in the pathogenesis of AD are multifaceted. Hereditary predisposition, disturbances in the activity of the central and autonomic nervous systems, disturbances of the immune system, metabolic, neuroendocrine and neurovascular disorders, disturbances in the functioning of the gastrointestinal tract, inappropriate nutrition, various intoxications, the influence of unfavorable environmental factors - all this together determines onset of the disease, chronic course of AD or aggravates its course [12, 26, 34].

The mechanisms of genetic predisposition are not entirely clear. It is believed that the following features of the immune system can lead to the development of atopy: direct switching of B cells to the synthesis of IgE antibodies, overproduction of key cytokines by T cells, structural features of receptors for these cytokines, and impaired formation of regulatory cells. How significant is the participation of each of these mechanisms remains poorly understood [36, 43].

Complex pathogenesis, multiple organ lesions in atopic dermatitis require an integrated approach in the treatment of patients with AD. Therapy of atopic dermatitis still continues to be one of the most difficult tasks in clinical practice. External therapy in the treatment of patients with atopic dermatitis plays an essential role: it is widely used both in complex therapy and independently [4, 43, 58].

The relevance of further study of atopic dermatitis is determined not only by the high prevalence and significant increase in the incidence of this dermatosis, but also by the inconsistency in the assessment of various pathogenetic mechanisms of its development and, as a consequence, to an insufficiently effective treatment of this dermatosis.[10, 43].

The pathogenesis of AD is based on immune mechanisms with the leading role of T-lymphocytes and Langerhans cells. The latter are the main cells of the skin's immune system, responsible for IgE-mediated accumulation of allergens in the skin and their presentation to T-lymphocytes. The number of Langerhans cells in patients with AD is significantly higher than in healthy ones. In addition, Langerhans cells play an important role in maintaining the mitotic activity of keratinocytes at a low level due to the initiation of apoptosis, which limits their pronounced proliferation [54, 56].

In recent years, Langerhans cells have been considered as specialized highly potent antigen-presenting cells of bone marrow origin. At the first contact, the antigen binds to high-affinity IgE receptors, which are located on the surface of Langerhans cells, in which the allergens undergo enzymatic cleavage and bind to HLA class II. The resulting polypeptide is specifically recognized by the T-cell receptor of CD4 + lymphocytes.Having received information, Langerhans cells move to the lymph nodes, where they interact with Th0-lymphocytes, which increases the activation of T-helpers, promotes their switching towards Th2 and is accompanied by an increase in cytokine production. In this case, Th2-helpers secrete mainly IL-4, IL-5, IL-10, IL-13 and activate B-lymphocytes with local overproduction of specific IgE [36, 37].

When the allergen re-enters, it binds to specific receptors on the membrane of mast cells, which causes degranulation of the latter with the release of inflammatory mediators and chemokines, which trigger the early phase of an

allergic reaction, clinically manifested by severe itching, hyperemia, and rashes. Under the action of IL-5, IL-6, IL-8, there is an increase in the migration of eosinophils and macrophages to the inflammation focus, which determines the rate of chronicity of allergic skin inflammation. Long-lived eosinophils, which are less susceptible to apoptosis and produce high levels of the main protein of eosinophils, are also important in the chronicity of AD; Th1-helpers are also activated with predominant production of interferon γ (IF-Hγ) [1, 37].

This process of "switching" Th2 cells to Th1 is associated with increased production of IL-12, which contributes to the chronicity of the allergic process in the skin [2, 12]. Along with the immune mechanisms in the pathogenesis of AD, damage to the stratum corneum of the epidermis and the water-lipid film as a result of allergic inflammation, leading to severe dryness of the skin, is important. Increased dryness of the skin contributes to the maintenance of itching, and itching and scratching are accompanied by additional damage to keratinocytes and mast cells, which increases allergic inflammation of the skin. Combs contribute to skin infection with pathogenic flora, mainly Staphylococcus aureus. Along with this, the gradually developing dysfunction of the nervous system, which, through neuropeptides, is directly involved in the mechanisms of the formation of itching and other manifestations of AD in children, is of paramount importance.[4, 57].

At AD, allergic inflammation develops, in which the water-lipid film and the stratum corneum of the epidermis are damaged, which significantly reduces the barrier functions of the skin and increases the risk of secondary infection. At the same time, trans epidermal water losses significantly increase, which leads to pathological dryness of the skin, increased itching, impaired physiological desquamation of the epithelium, thickening of the stratum corneum with the development of hyperkeratosis and pronounced desquamation, which determines the importance of external therapy for blood pressure in children.

The current strategy for the treatment of patients with atopic dermatitis (AD) includes the control of provoking factors, patient education, diet therapy, topical and systemic complex pharmacotherapy [18]. Among the means of systemic action, the leading place belongs to antihistamines (AHP). The widespread use of AGPs is due to their ability to reduce itching of the skin and the intensity of allergic inflammation. Despite the fact that the antipruritic effect is generally more pronounced in AHP of the first generation (AHP with a sedative effect), for long-term basic therapy of AD, only AHP devoid of the properties of tachyphylaxis, i.e., drugs of the second generation, can be used. Long-term course use of AHP is aimed at achieving an anti-inflammatory effect and inhibiting the development of a chronic process [16].

Histamine, according to both experimental and clinical studies, is one of the key components of the pathogenesis of allergic reactions and one of the most powerful pruritogens. In addition, histamine acts as a regulator of the synthesis or release by cells of some other biologically active substances (acetylcholine, serotonin), or itself, perhaps, one of the final effector molecules that mediate, for example, the action of substance P [50].

Antihistamines of the second generation, in particular desloratadin, are traditionally used in the complex therapy of itchy dermatoses, especially of an allergic nature. Modern knowledge suggests that using antihistamines, we achieve not only a direct effect of disrupting the interaction of histamine with its receptors, but also indirectly affect the metabolism and expression of other mediators of pruritogenesis [50]. In addition, prolonged use of modern antihistamines leads to a change in the permeability of the vascular wall, a decrease in the concentration of chemoattractants, as well as other biologically active substances in the focus of allergic inflammation, i.e., it has an anti-inflammatory effect [13].

The anti-inflammatory effect of desloratadine, independent of its antihistamine action, is realized through the suppression of a number of key mechanisms responsible for the severity of the early and late phases of the allergic reaction. So, desloratadine:

• reduces the intensity of release and / or expression by mast cells, basophils, endothelial and epithelial cells of the following substances - histamine, cytokines, chemokines, arachidonic acid derivatives, tryptase, cell adhesion molecules;

• inhibits adhesion and chemotaxis of eosinophils, their production of superoxide [24].

The efficacy and safety of desloratadine in the treatment of mild to moderate AD in children has been evaluated in many clinical studies [15]. It has been shown that this drug causes a decrease in the severity of not only itching, but also such manifestations of the disease as erythema, edema, papular rashes, excoriation [17].

Among the drugs for the treatment of atopic dermatitis (AD) in children, antihistamines are a mandatory component of therapy. As a pathogenetic therapy, histamine blocking therapy, as well as aimed at strengthening and stabilizing mast cell membranes, can be used. Until recently, the leading role in the treatment of atopic dermatitis was played by antihistamines of the first generation, the main used effect of which was the blocking of histamine receptors. Unfortunately, these drugs have a number of side effects. In particular, they cause drowsiness, a feeling of fatigue, impaired coordination of movements, concentration of attention, dizziness, headaches, and decreased blood pressure [20]. Antihistamines of the second and third generation are devoid of these side effects. At the same time, third-generation drugs are several times more active than second-generation drugs [19].

Today, antihistamine drugs of a new generation are considered as drugs of choice, which differ from drugs of the old generation by the presence of anti-inflammatory activity and the absence of sedative action [7, 8, 35]. Modern antihistamines are represented by active metabolites (Eden, fexofenadine, desloratadine, levoEdem) and prodrugs (loratadine, ebastine) [32, 49].

One of the most effective representatives of the former is desloratadine, an active metabolite of loratadine, a well-known second-generation selective blocker of H1-histamine receptors. Currently, the pharmaceutical company Farmak produces desloratadine under the name Edem. Among modern antihistamines that are active metabolites, Eden was the first to be created. Eden is a metabolite of hydroxyzine (Atarax). More than 15 years of clinical experience in the use of Eden and many experimental and clinical studies have demonstrated its high efficiency and safety [7].

There is an opinion among doctors that when using the drug in the form of a syrup, allergic reactions occur more often. In this regard, a study was conducted in Russia, the purpose of which was to assess the efficacy and safety of the use of the drug Edem in the form of a syrup in children with AD [32]. An open, non-comparative study was conducted, which included 36 children aged 2 to 6 years with AD. The work was attended by pediatric allergists of outpatient allergy rooms with more than 10 years of experience in their specialty. The introductory period was 7 days, during which only non-steroidal external agents were allowed for use. During the entire study period and a week before it was prohibited from taking any antihistamines, including ketotifen, as well as glucocorticosteroids in any form [8, 14].

A study to study the safety of the use of Eden and the effectiveness of its effect on the leading clinical and anamnestic manifestations in atopic dermatitis in childhood showed that all children with skin hyperemia and cutaneous hemorrhagic elements of atopic dermatitis underwent a complete reverse development. Significant positive dynamics under the influence of Eden was also registered in relation to papular allergic eruptions in persons with concomitant chronic pathology of the gastrointestinal tract.In particular, none of them showed the appearance of new elements of the rash. In 89.1% of patients in this group, including children with neurodermatitis and eczema, the rash turned pale. In 10.9% of cases, its complete extinction was stated. The study proved the presence of a significant antihistamine effect in the drug Edem, caused not only by the blockade of histamine H1 receptors, but also by a decrease in the release of the latter from mast cells as a result of stabilization of their membranes. The established circumstances make it possible to recommend Eden as a highly effective and safe treatment for various pathogenetic variants of atopic dermatitis in childhood [6].

Against the background of the therapy, which included adherence to a hypoallergenic diet and the use of non-steroidal external agents, by the beginning of treatment with Eden, the pruritus index and the SCORAD index were 5.4 and 44.8 points, respectively. By the end of the second week of treatment with Eden, the pruritus index decreased 2 times and amounted to 7 points, and the SCORAD index value - almost 2 times and amounted to 3.6 points. However, these differences were statistically insignificant. All other indicators also showed positive dynamics by the end of the second week of treatment. After completion of the 4-week course of treatment with Eden, all indicators significantly (statistically significant) decreased. The index of the prevalence of the skin process decreased by 58,0% and amounted to 3 points compared to 5.5 points before the start of treatment. The index of the intensity of the skin process decreased by 71.6% and amounted to 9.0 points compared to 31.7 points before the start of treatment. One of the convincing proofs of the high clinical efficacy of the drug in AD in children is the rapid dynamics of reducing pruritus and improving sleep. The intensity of itching decreased by 87.0% and amounted to 0.7 points versus 5.4 points before treatment. Sleep quality improved by 95.5%, amounting to 0.1 points compared to

2.2 before the start of treatment. Sleep returned to normal as itching subsided. The SCORAD index decreased by 71% by the end of the 4-week course of treatment with Eden and was 1.9 points compared to 44.8 points at the beginning of treatment. Thus, a 4-week course of treatment with Eden syrup in children with AD at the age of 6 years has achieved significant clinical improvement. The drug was well tolerated. No side effects associated with the intake of Eden have been registered [5].

The use of desloratadine in the form of a solution and syrup in the complex therapy of AD in young children ensured a rapid achievement of a clinical effect, primarily due to a decrease in erythema, edema / weeping, itching and excoriation. Both subjective and objective symptoms of AD were clearly reduced. Our clinical observation results are consistent with previously published data [9, 27]. It should be emphasized that in the study by N.A.Geppe et al. [9] observed children aged 2–5 years with mild to moderate AD. The present clinical observation demonstrates the high efficacy of desloratadine in the complex therapy of AD in children aged 12 to 24 months with a disease of moderate severity and severe course.It is noteworthy that, in spite of the indicated differences in the observation groups, in two studies, similar results were obtained regarding the symptoms of AD, especially the timing of the onset of a stable therapeutic effect. So, in the study of N.A. Geppe et al. the first signs of improvement were noted in children with moderate AD from the 2nd week of treatment, but significant or complete suppression of all symptoms by the end of the 3rd week of treatment with desloratadine [9]. Likewise, according to the results of our work, we would like to emphasize the most complete effect of desloratadine on all clinical symptoms of AD at treatment periods from 2 to 4 weeks. Of course, this indicates the advisability of including desloratadine in the treatment of AD in young children only as a means of basic, long-term therapy. For clinical practice, it is important that we revealed the absence of differences in the main parameters of the efficacy and tolerability of the two forms of desloratadine - the original drug in the form of a syrup and a generic drug in the form of a solution. Such a comparative study of the efficacy and tolerability of desloratadine in 2 forms in children from 12 months of age has not yet been carried out.

**External therapy**- an integral part of the complex treatment of blood pressure in children. It should be carried out differentially, taking into account pathological changes in the skin and the use of topical drugs and their various forms [1, 59]. Rational and timely use of topical means of external therapy for AD, in essence, determines the rate of reverse development of skin inflammation, and in parallel with the extinction of skin symptoms, subjective sensations - itching, burning and discomfort of the skin, improve significantly and the mood and quality of life of a sick child.

External treatment is reduced to relieving inflammation and itching by prescribing anti-inflammatory drugs. The purpose of the external treatment is to improve the barrier function of the skin and restore the water-lipid layer with the help of emollients and nourishing agents and to ensure proper daily skin care by prescribing cleansers and moisturizers.

With an exacerbation of AD, it is necessary to stop inflammation and itching by prescribing external anti-inflammatory drugs containing topical glucocorticoids (GC) or non-steroidal anti-inflammatory drugs. In severe cases and severe exacerbation of AD, it is necessary to use topical GCs, which act on all inflammatory cells, including Langerhans cells, have a pronounced anti-inflammatory effect and are the modern standard of anti-inflammatory therapy. GCs is prescribed in the acute period of AD in short courses of 5–7 days, and in chronic course according to the intermittent method every other day or 2 times a week. To increase the effectiveness of topical GCs in the treatment of AD, it is advisable to use them against the background of emollients and nutrients.[21, 26].

GCs is prescribed for severe AD, with a pronounced exacerbation of blood pressure in both acute and chronic course, with ineffectiveness of anti-inflammatory nonsteroidal therapy for AD for 3-5 days [26, 28].

To standardize the clinical effect and conduct a study of the effectiveness of drugs, the clinical effectiveness index (CI) was introduced. CI = clinical index of treatment was assessed in points according to the following signs: 0 - no effect; 1-improvement; 2 - significant improvement; 3 - re-mission. Such a simple approach will make it possible to develop a specific algorithm for choosing a drug for treatment [29].

Along with topical emollients, current approaches to the treatment of AD include topical corticosteroids (TC) and topical calcineurin inhibitors (TICs). TC are recommended as first-line agents for the treatment of acute and chronic inflammatory processes in AD, as well as as initial therapy drugs for moderate and severe forms of the disease. MC suppress 3 main components of the development of allergic

inflammation: the release of mediators (histamine, leukotrienes, prostaglandins), cell migration to the affected area and cell proliferation at the site of inflammation. As a result, MCs have a complex anti-inflammatory, anti-excretory and immunocorrective effect. Therefore, TC are the drugs of choice in the treatment of exacerbations of the disease, because affect the early and late phases of allergic inflammation, prevent the development of a systemic immune response with the involvement of conjugated target organs (respiratory, digestive, etc.)[30, 38, 44, 46].

Why treatment with topical glucocorticosteroids should not be postponed:

1. It is important to use TC at the first signs of AD, to apply the drug to all foci of inflammation until the symptoms are completely relieved.

2. Interruption of the course of treatment until complete control is achieved is associated with the development of new exacerbations.

3. Lack of adequate therapy leads to a prolonged course of AD, involvement of other areas of the skin and the addition of a secondary infection.

Side effects when using TC can occur when the mode of their use is violated. With prolonged application of halogenated drugs, especially on large surfaces (more than 10%) and / or highly sensitive areas of the skin (eyelids, neck, folds), the development of stretch marks, telangiectasias, skin atrophy, and among the systemic side effects - hypertension, hyperglycemia [41, 45, 53, 55].

It is possible to reduce the risk of side effects with the use of drugs that act only in the focus of inflammation. For halogenated drugs, a continuous course of steroid therapy should not exceed 2 weeks, and if indicated, an intermittent course should be used (2-week break after 2 weeks of therapy) [45, 48, 55].

According to the strength of their influence on the allergic inflammatory process, TC in Europe are divided into 4 classes (Table 1).

In patients with severe exacerbation of AD with localization of foci of allergic inflammation on the extremities and trunk, TC treatment is started from class III. For the treatment of sensitive skin areas, preference is given to non-halogenated TC or non-steroidal drugs - calcineurin inhibitors. Class IV drugs are not recommended in children under 14 years of age.

The minimum allowed age for the use of TC: Advantan® from 4 months 1 r / day (it is possible to safely apply the original drug to an area of up to 60% or within 4 weeks), for alclomethasone (contains halogens) from 6 months of age 1–3 r / day and for mometasone from 2 years of age 1 r / day [40, 51]. From TC in pediatric practice, preference is given to drugs with minimal side effects while maintaining a high degree of anti-inflammatory action. In this regard, the optimal use of the latest generation of TC - methylprednisolone aceponate (Advantan) [48, 55].

*Table 1. Classification of topical glucocorticosteroids by degree of activity (Miller & Munro, 1980, with additions)*

| Class (degree of activity) | International non-proprietary name |
|---|---|
| **Stage I (weak)** | Hydrocortisone (hydrocortisone acetate) 0.5%, 1% ointment Prednisolone 0.5% ointment |
| **Stage II (mediumstrength)** | Alclomethasone (alclomethasonedipropionat), 0.05% ointment, cream |
| **III stage (strong)** | Methylprednisolone aceponate 0.1% (Advantan®) cream, emulsion, fatty ointment, ointment Mometasone (mometasone furoate 0.1% ointment, cream, solution) Triamcinolone acetonide 0.1% ointment Fluocinolone acetonide 0.025% - naya ointment, cream, gel, liniment Fluticasone (fluticasone propionate), 0.005% ointment and 0.05% Betamethasone cream (betamethasone valerate, betamethasone dipropionate, 0.1% cream and ointment; 0.05% - cream and ointment) Hydrocortisone (hydrocortisone butyrate, 0.1% ointment, cream, emulsion, solution) |
| **IV stage (verystrong)** | Clobetasol 0.05% cream, ointment |

It is taken into account that TC are better absorbed in areas of inflammation and desquamation, they penetrate significantly better into the thin stratum corneum of the skin in young children, as well as anatomical areas with a thin epidermis. Occlusive dressings help to

moisturize the skin and significantly, by a factor of 100, increase the permeability and activity of TC. The ointment base of the drug increases the absorption of the active substance, having a more powerful effect than creams and lotions [40, 41, 45, 46, 51].

Taking into account the peculiarities of the pathological process of AD in children and the anatomo-physiological characteristics of children's skin, preference should be given to preparations in the form of an emulsion and cream. General contraindications to TC prescription are individual intolerance, infections (viral, bacterial, fungal), acne, rosacea, pregnancy (not for all drugs), lactation (not for all drugs) and skin tumors.

A multidisciplinary approach and education of patients and their families in the rules for taking TC and proper skin care is of fundamental importance. There is an obvious need, due to the practical significance, to use the developed method of TC dosing, depending on the localization of AD and the patient's age (Table 2).

Class III local TC have an optimal benefit / risk ratio. A special place in the practice of a pediatrician is occupied by methylprednisolone aceponate (Advantan), which is allowed from the age of 4 months.

Methylprednisolone aceponate (MPA) is a non-halogenated dietary 6-alpha-methylprednisolone, the high activity of which is associated with the introduction of a methyl group in the CG position. Unlike most strong halogenated MCs, the C6, C9 and C12 positions are free of fluorine and chlorine, which leads to a minimum of local and systemic side effects. Double esterification provides high lipophilicity of the molecule, the implementation of rapid permeability through the stratum corneum of the epidermis and a high therapeutic concentration in the dermis. The accumulation of the drug in the stratum corneum does not occur, so there are no side effects.

*Table 2. Dosage of glucocorticosteroid for different parts of the body depending on age*

| Child's age Skin surface area | FTU (dose, units) | TC (doseingrams) |
|---|---|---|
| **4-12 months** | | |
| **Face + neck** | 1 | 0,5 |
| **Wholearm + brush** | 1 | 0,5 |
| **Front surface gr. cells + belly** | 1 | 0,5 |
| **Back + buttocks** | 1,5 | 0,75 |
| **Wholeleg + foot** | 1,5 | 0,75 |
| **1-2 years** | | |
| **Face + neck** | 1,5 | 0,75 |
| **Wholearm + brush** | 1,5 | 0,75 |
| **Front surface gr. cells + belly** | 2 | 1 |
| **Back + buttocks** | 3 | 1,5 |
| **Wholeleg + foot** | 2 | 1 |
| **3-5 years** | | |
| **Face + neck** | 1,5 | 0,75 |
| **Wholearm + brush** | 2 | 1 |
| **Front surface gr. cells + belly** | 3 | 1,5 |
| **Back + buttocks** | 3,5 | 2 |
| **Wholeleg + foot** | 3 | 1,5 |
| **6-10 years** | | |
| **Лицо + шея** | 2 | 1 |
| **Вся рука + кисть** | 2,5 | 1,25 |
| **Передняя поверхность гр. клетки + живот** | 3,5 | 1,75 |
| **Спина + ягодицы** | 5 | 2,5 |
| **Вся нога + ступня** | 4,5 | 2,25 |

*Note. FTU - dosage unit, TC - topical glucocorticosteroid.*

The anti-inflammatory activity allows MPA to quickly and effectively stop the exacerbation of AD, which has been proven in randomized studies in children and adults. Studies conducted in animals, as well as among healthy volunteers and patients, have demonstrated that the side effects of MPA are lower than in other local TC of the same class of activity.[46, 47].

In a study of 20 healthy volunteers who applied MPA (cream) once a day, there was no thinning of the skin compared to placebo, while betamethasone valerate reduced skin thickness. Systemic side effects may be associated with the absorption of local GCS through the skin, include hyperglycemia, hypertension, leukocytosis, etc. MPA is characterized by a rapid onset of action; its metabolites are inactivated after absorption, and therefore the risk of systemic action in the drug is low. None of the above side effects were detected when using 0.1% MPA ointment for 3 months. Systemic glucocorticosteroids can suppress the function of the hypothalamic-pituitary-adrenal system, in connection with which the question arose about the possible systemic effect of local GCS. On the example of 100 healthy volunteers, no changes in the level of cortisol in blood plasma were observed after 8 days of application of 0.1% MPA (Advantan®) at a dose of 40 g on 60% of the body surface.

In other studies, with pronounced therapeutic effects of MPA (0.1%, Advantan®), no inhibition of the function of the hypothalamic-pituitary-adrenal system was found in the treatment of AD in infants and children with daily application to 5–20% of the body surface for 7 days.

Such high safety and efficacy have been proven exclusively for the original drug, since its basis is patented and included in the master's recipes in Germany.

It should also be noted that the addition of any additional components to the MPA molecule (ceramides, urea) has not been studied from the point of view of local and systemic safety. It is not known how this may affect both the efficiency and the mechanism of bioactivation of the MPA molecule.

Advantan® is available in 4 forms: cream, ointment, oily ointment and emulsion, which, combined with an excellent balance of efficacy and safety, meets the needs of children with AD of various ages. The choice of the dosage form is carried out depending on the stage and manifestations of AD.

Two forms of Advantan deserve special attention, which are most applicable in children's practice: emulsion and cream.

A distinctive feature of the emulsion is the high-water content in the base, due to which it has a cooling, antipruritic effect. In addition, additional components of the base provide a disinfecting effect, dermatoprotective effect and restore the hydrolipid mantle of the skin.

The base of the cream softens the skin and promotes the synthesis of fats in cell membranes.

Considering that the effectiveness of local GC depends on the rate of their penetration into the epidermis and dermis, the rate of penetration of MPA depends both on the dosage form used (cream, emulsion, ointment) and on the lipophilicity of the steroid itself: having a greater affinity for organic substances, accumulates in skin cells in a high concentration and more slowly enters the blood from them (that is, it has a longer local therapeutic effect without giving a systemic side effect).

Numerous comparatives and double-blind, placebo-controlled clinical studies have shown the high efficacy and safety of MPA in children with AD already after 1–4 weeks of using the drug once a day. Comparative studies of topical MPA 0.1% cream, ointment or oily ointment have shown similar efficacy with betamethasone valerate 0.1% and mometazone furoate in similar release forms. Already after 1–3 weeks of treatment, about 90% of children receiving MPA achieved remission or significant improvement in symptoms, complete remission was recorded in 45–65% of patients [25, 46, 51, 52].

In a study involving 221 adult patients with AD, MPA 0.1% cream was applied once a day until control of the disease was achieved. After randomization into groups, patients within 16 weeks. MPA was used 2 times a week together with emollients or only emo tapes. The absence of an exacerbation of the disease was noted in 87.1% of patients in the MPA group, in the group of emollients - in 65.8%. MPA was also more effective than emollients in terms of relapse rate, pruritus intensity and dermatological quality of life index in children. For 16 weeks of proactive MPA therapy, the patients showed no signs of skin atrophy, striae, telangiectasias, irritation or infection. [40].

Thus, the use of desloratadine in the form of a solution or syrup is an effective method of treating AD in children, allowing the majority of patients to achieve remission of the disease. Desloratadine solution is not inferior in effectiveness to the drug in the form of a syrup in the treatment of AD in children and both are well tolerated by patients.

The use of Edem is an effective method of treating atopic dermatitis in children and allows

the majority of patients to achieve remission of the disease. The inclusion of Eden in the form of a syrup in the complex therapy of AD in children in the first years of life ensures the achievement of a rapid clinical effect, primarily by reducing itching, excoriations, erythema and papular elements. Edem syrup is well tolerated by patients.

The pharmacokinetic profile of Advantan, low risk of side effects, and the possibility of a single dose per day make it possible to successfully use this drug for the treatment of AD in children over 4 months of age, as well as in adolescents. Advantan® is available in a variety of forms and has been validated in clinical trials with more than 15,000 patients. The drug has been used for over 20 years, has a unique bioactivation mechanism (proven only in the original drug) and is the optimal therapeutic choice in the treatment of exacerbation of AD in children of any age.

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## EARLY MARKERS FOR THE DIAGNOSIS OF INTRAUTERINE FETAL ANOMALIES

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✓ ***Resume***

***We have studied the assessment of the significance of various risk factors for the birth of a child with congenital developmental anomalies in the Bukhara region. A method for the rational formation of risk groups among pregnant women is proposed, which will increase the level of timely diagnosis of congenital malformations and reduce perinatal and infant mortality in the Bukhara region. The risk factors were folate deficiency (24.9%), vitamin D deficiency (9.8%), zinc deficiency (12.9%) and chronic iodine deficiency (7.5%). In the course of the analysis, congenital malformations of the nervous system were revealed (34.03%), the second place was taken by multiple congenital malformations - (19.9%), the third - congenital malformations of the circulatory system (2.27%).***

***Key words: congenital malformations, chromosomal abnormalities, prenatal diagnosis.***

## РАННИЕ МАРКЕРЫ ДИАГНОСТИКИ ВНУТРИУТРОБНЫХ АНОМАЛИЙ РАЗВИТИЯ ПЛОДА

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✓ ***Резюме***

***Нами было изучено оценка значимости различных факторов риска рождения ребенка с врожденными аномалиями развития на территории Бухарской области. Предложено методика рационального формирования групп риска среди беременных, что позволит повысить уровень своевременной диагностики врожденных аномалий развития и снизить перинатальную и младенческую смертность в Бухарском регионе. Факторами риска оказались фолиеводефицитное состоянии (24,9%), дефицит витамина Д (9,8%), дефицит цинка (12,9%) и хронические йод дефицитное состоянии (7,5%). По ходу анализа выявлено ВУАП нервной системы (34,03%), второе место заняли множественные врожденные пороки развития – (19,9%), третье – ВУАП системы кровообращения (2,27%).***

***Ключевые слова: врожденные пороки развития, хромосомные аномалии, перинатальная диагностика.***

## TUG'MA NUQSONLARNI RIVOJLANISHINING XAVF OMILLARINI ERTA TAHLIL QILISH

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✓ ***Resyume***

***Biz Buxoro viloyatida tug'ma rivojlanish anomaliyasi bo'lgan bola tug'ilishi uchun turli xil xavf omillarining ahamiyatini baholashni o'rganib chiqdik. Buxoro viloyatida tug'ma nuqsonlarni o'z vaqtida tashxislash darajasini oshirish va perinatal va bolalar o'limini kamaytirishga imkon beradigan homilador ayollar o'rtasida xavf guruhlarini oqilona shakllantirish usuli taklif etilmoqda. Xavf omillari folat etishmovchiligi (24,9%), D vitamini etishmovchiligi (9,8%), rux etishmovchiligi (12,9%) va yodning surunkali etishmasligi (7,5%) edi. Tahlil jarayonida asab tizimining tug'ma nuqsonlari aniqlandi***

***(34,03%), ikkinchi o'rinni ko'plab tug'ma nuqsonlar egalladi - (19,9%), uchinchi qon aylanish tizimining tug'ma nuqsonlari (2,27%).***

***Kalit so'zlar: tug'ma nuqsonlar, xromosoma anomaliyalari, prenatal tashxis.***

## Relevance

Today, intrauterine fetal abnormalities (VUA) remain an urgent problem in modern perinatology, which occupy the second place in the structure of perinatal mortality [1, 2.25]. Perinatal diagnosis of developmental abnormalities, which makes a significant contribution to infant and child mortality, disability and morbidity, is an important task of modern healthcare. According to EUROCAT data, 1 out of 33 newborns in the world annually have a congenital malformation (CRD), almost 300 thousand children with defects die in the first 4 weeks of life, approximately 3.2 million children have disabilities of varying severity due to this pathology. Despite a significant decrease in perinatal mortality in Uzbekistan in recent years, our indicators are still significantly higher than in Europe [9,11,24]. In the Bukhara region, it was shown that on average it accounts for from 6.8% to 8.7 % of congenital malformations. Improvement of methods of antenatal diagnostics, screening of pregnant women for the presence of congenital fetal pathology,
introduction of modern perinatal technologies are recognized as one of the main tasks of reducing perinatal mortality in Uzbekistan [1, 4,6,10,11,25].

Various pathogenic factors have an unequal damaging effect on the fetus and the entire fetoplacental system. In this regard, it is quite difficult to separate the degree of influence of one factor from another, to assess whether they act independently of each other or in combination [1, 15, 18, 20].

Specific preventive measures to prevent the development of most fetal birth defects do not exist, since they are mainly sporadic [10, 12, 16, 20]. Therefore, at present, prenatal diagnosis of intrauterine fetal abnormalities is the most effective measure to prevent the birth of children with congenital anomalies [10, 21, 24]. Despite the introduction of modern technologies of prenatal diagnostics in Uzbekistan (ultrasound screening, biochemical examinations for markers of fetal malformations, invasive methods of examination), the frequency of congenital pathology does not decrease, which leads to the search for new approaches to the prevention and identification of risk factors for congenital malformations of the fetus [20,24]. There is a need to form groups with different degrees of risk for the development of intrauterine fetal abnormalities, taking into account the specifics of the impact of antenatal damaging factors and optimizing prenatal diagnostics, and therefore the purpose and objectives of the study were determined [24,26].

**The purpose of the study:** To develop significant risk factors for the formation of VUA and markers of the development of VPD

## Materials and methods

To study the frequency and structure of intrauterine fetal malformations (VUA) and fetal chromosomal abnormalities detected using prenatal technologies, the study group (n=80) was formed by random sampling ("every third") of all cases of examination of pregnant women, using prenatal diagnostic methods. The women ranged in age from 19 to 40. In order to identify risk factors (predictors) of the presence of the most common VOAP and chromosomal abnormalities in the fetus, the study group was divided into the main group and the comparison group. The main group consisted of pregnant women with VUA diagnosed in the fetus during pregnancy or after the birth of the child (n=45). The comparison group consisted of patients who, according to generally accepted criteria, had a risk of having a child with VUAP during pregnancy. The control group was formed from women who applied to the screening center of the Bukhara region, who did not have a risk of having a child with intrauterine abnormalities , who were examined on their own and subsequently gave birth to healthy children (n=35). To determine the diagnostic significance of the indicators, the sensitivity, specificity, and prognostic value of the negative result were determined by the method of early diagnosis of ultrasound and biochemical markers in the screening center. The odds ratio was used as a criterion for determining whether the trait

## Result and discussion

In the course of the study, the prevalence of women aged 20-24 years in the main group was established (50.8%). The proportion of women younger and younger age (18-24 years) was 2 times (48,6% vs 24.7 per cent, $p<0.01$), while the proportion of women aged 35 years and older is 4 times lower (7,9% against 32.5%, $p<0.01$).

In the analysis of socio-geographical conditions of stay established that the vast majority of pregnant women lived on the territory with a modified (9.8 per cent) and heavily modified (86,3%) the type of living conditions ($p<0.01$), but significant differences between the main group and the comparison group in terms of the type of

conditions of accommodation were not identified. Women of the main group and the comparison group were mainly residents of cities (83%), including in 49% –the city of Bukhara, respectively, rural women made up only 17% ($p<0.01$). It should be noted that in the main group of residents of cities in the region were larger than in the comparison group (39,8% vs 28.3%, and $p<0.05$), whereas in the comparison group was dominated by women from Bukhara (55,4% and 39.1%, $p<0.01$).

In the study of occupation pregnant women of the main group and the comparison group found that prevailed employees (39.7%) and the unemployed (30,4%). In the group of patients with VAAP in the fetus (the main group), non-working women were significantly more common than in the comparison group (33.3% and 20.2%, respectively, $p<0.05$). 18.1% of pregnant women in the main group and the comparison group had professional exposure to risk factors. The structure of occupational hazards was dominated by electromagnetic radiation (50.5%), contact with biomaterial (13.3%) and chemicals (12.4%). In the main group, increased professional speech load was more often observed (18.4% and 5.4%, respectively, $p<0.01$).

One of the most significant factors determining the risk of VUA is diseases with a hereditary history. The analysis showed that the greatest share was occupied by VUA in the family history, which in the main group was 92.8% ($p<0.001$). Among the VUA in the anamnesis, the most common malformations were observed, their number was predominant in the main group (87.6%, p1-2<0.001), the number of CA (Down's disease) in the anamnesis, on the contrary, was greater in the comparison group (16.4%, p1-2<0.001). When analyzing the prevalence of chronic extragenital pathologies in pregnant women, their high frequency was found in the main group and the comparison group – 88.6%. Diseases of the respiratory system (24.0%), digestive system (26.8%), and urinary system (17.0%) predominated in the structure of chronic extragenital pathologies of pregnant women. In the main group revealed the predominance in the prevalence of allergic diseases compared with controls (18.5% and 1.9%, respectively, $p<0.01$), including drug Allergy (8,9%, $p<0.005$) and polyvalent Allergy (4,3%, $p<0.05$).

Reproductive history is burdened with a high frequency was observed among women of the main group and the comparison group (the artificial termination of pregnancy is 67.2%, spontaneous abortions, and 12.8% of cases). In these groups, preterm birth was observed more often than in the control group (6.7%, 14.5% and 1.2%, respectively, p1-3<0.05, p2-3<0.05). The analysis of the study of pregnancy parity in women of the compared groups showed that the main group was dominated by primiparous women (66.3%), mainly primiparous women (42.4%), while in the comparison group – repeat births (56.7%) and repeat pregnancies (71.9%), (p1-2<0.01, p1-3<0.05). In the main group, first-time pregnant women were 1.5 times more common than in the comparison group (42.4% and 28.1%, $p<0.005$), and second-time first-time pregnant women were 1.6 times more common (23.9% vs. 15.2%, $p<0.05$). At the same time, the control group was also dominated by first-time mothers (77.3%) and re-pregnant women (63.9%), which reflects the peculiarities of the reproductive behavior of women in the region. When analyzing the course of this pregnancy, it was found that the most frequent complication was a threatening early self-abortion (28.8%), ARVI during pregnancy was observed in 21.6% of cases, vomiting of pregnant women – in 13.4%. However, in the main group of these complications were found significantly less frequently than in the comparison group and in the control group (P1-2<0,05, P13<0,05).

In the study of pregnancy outcomes in the main group of women were naturally dominated by termination of pregnancy for medical reasons in 1-m (9.2 percent) and 2-3-m (61.9%) of the trimester of pregnancy that was determined by the necessity of elimination of the affected non-viable fetuses, delivery in time was observed in 17.7% of women (P1-2<0.01), and 2.4% were observed spontaneous abortion and antenatal fetal death. Naturally, in the comparison group, preterm birth was 3.7 times less frequent than in the main group (8.8%, $p<0.01$). The structure of chronic micronutrient deficiencies among pregnant women is dominated by folic acid deficiency (24.9%), vitamin D deficiency (9.8%), zinc deficiency (12.9%) and chronic iodine deficiency (7.5%).

In the course of the study, the structure of VUA identified in the main group was dominated by: VUA of the nervous system (34.03%), the second place was taken by multiple congenital malformations – (19.9%), the third – VUA of the circulatory system (2.27%). In the main group, in the 1st trimester of pregnancy, VOAP and ultrasound markers of chromosomal abnormalities were detected in 16.3% of cases. 83.2% of patients were diagnosed with isolated VUAP or UZD of chromosomal abnormalities, and 16.7% had combined changes. The most frequently detected VUA were those of the nervous system (22-36. 7%), VUA of the digestive system (10-31.3%), and VUA of the genitourinary system (5-9. 4%). The effectiveness of the echography method in the study conducted in the 1st trimester of pregnancy

in relation to chromosomal diseases was noted in 16.7% of cases. One of the significant risk factors for the formation of VOAP in the fetus is specific deviations from the norm of serum pregnancy markers (SMB). In the conducted study, 16-71% of patients with various types of VUA had these deviations. As a result of the analysis, it was found that in congenital pathologies they have a relatively low sensitivity and high specificity. The greatest sensitivity was a decrease in RARR (0.38), and the lowest-a decrease in AFP (0.07). The specificity ranged from 0.44 to 0.91, the highest was found for an increase in AFP (0.91), as well as for a decrease in hCG and AFP (0.88 and 0.81, respectively), the lowest – for an increase in hCG (0.44). PCO is defined as a relatively stable value for almost all SMBs (from 0.5 to 0.59), the highest – for a decrease in RARP and the lowest – for an increase and decrease in AFP. When analyzing data on individual types of congenital anomalies, it was found that in the case of VUA of the nervous system, the greatest sensitivity is an increase in AFP (0.83), in the case of multiple VUA – a decrease in RARP (0.75), in the case of CRV of the musculoskeletal system – a decrease in RARP (0.67), in the case of chromosomal abnormalities – a decrease and an increase in hCG (0.67). During the analysis of changes, their high specificity was established for almost all types of VUA (from 0.53 for reducing RARP in most VUA to 0.95 for increasing hCG in VUA of the digestive system), the highest value was noted for increasing AFP in VUA of the nervous system (0.55).

In the 2nd and 3rd trimesters of pregnancy, ultrasound was performed in the main group in 77.9%. According to our data, the greatest sensitivity was observed in the combination of several ultrasounds compared to isolated ultrasounds (1.9 times more often-13.3% vs. 9.4%). The greatest sensitivity to CA belongs to congenital heart defects (VUA): 57.1% in isolated VUA and 20.7% in combination with other ultrasound examinations. Markers such as vascular plexus cysts, diaphragmatic hernia, polyhydramnios, hypoplasia of the nasal bone were isolated in isolated cases, but their sensitivity to chromosomal abnormalities was 100%. High sensitivity to chromosomal abnormalities (50%) was noted for atresia of the duodenum 12, intestinal obstruction, cystic-adenomatous lung VOAP, as well as for fetal development delay (66.7%) and cystic neck hygroma (37%) in combination with other ultrasounds.

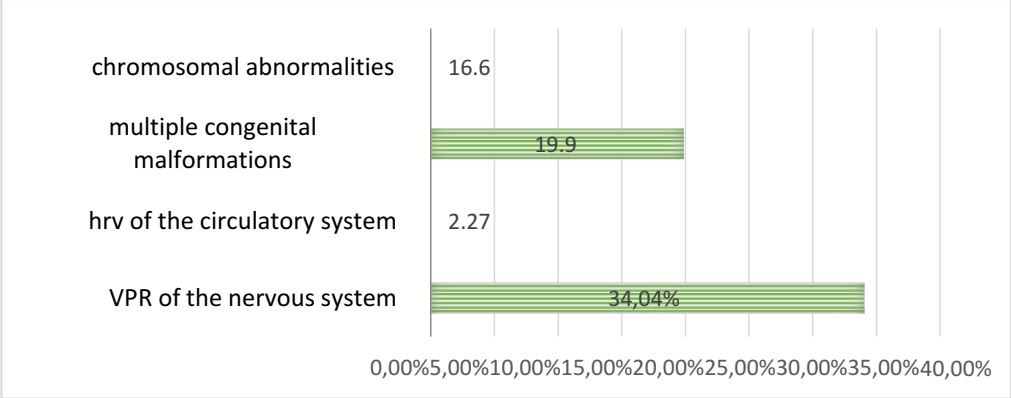


**Figure-1.Results of screening tests of the occurrence of VUAP**

## Conclusion

Summing up our study, we can conclude that the structure of VUA detected perinatally is dominated by VUA of the nervous system (34.4%), multiple malformations (19.9%) and CPR of the circulatory system (2.27%). In VUA of the nervous system, the greatest sensitivity and specificity is an increase in AFP, as well as ultrasound markers detected in the 1st trimester; in multiple VUA-a decrease in RARR and ultrasound markers in the 2nd trimester, in VUA of the circulatory system – ultrasound markers detected in the 2nd-3rd trimesters, in chromosomal abnormalities-a change in the level of hCG and ultrasound markers in the 2nd-3rd trimesters.

Predictors of the presence of the fetus in a pregnant woman with VUA are a history of VPR, deviations according to ultrasound data in the 1st and 2nd trimester, changes in RARP-A, and the age of women 16-24 years.

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# THE EFFECTIVENESS OF AN ELECTRO ACTIVATED WATER SOLUTION IN THE TREATMENT OF PURULENT DISEASES OF SOFT TISSUES ON AN OUTPATIENT BASIS

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✓ ***Resume***

***The results of a study of 130 patients with purulent soft tissue diseases on an outpatient basis were studied. Depending on the method of treatment, all observed patients were divided into two groups: I the group included 62 patients with purulent diseases of soft tissues who, as a local treatment, used wound sanitation with a 25% solution of dimethyl sulfoccide with the imposition of levomekol ointment under a gauze bandage. The main group II patients received surgical treatment of a purulent focus, sanitation and application of the wound with an electroactivated solution, Electro-activated solution Anolyte and Electro-activated solution Catholyte.***

***The research results showed that physicochemical methods of treating patients with the use of a 25% solution of dimeccide and Electro-activated solution Anolyte and Electro-activated solution Catholyte is an effective, simple and convenient way to treat purulent soft tissue diseases on an outpatient basis.***

***Key words: Electro-activated solution; Electro-activated solution Anolyte; Electro-activated solution Catholyte; dimethyl sulfoccid; purulent soft tissue disease.***

# ЭФФЕКТИВНОСТЬ ЭЛЕКТРОАКТИВИРОВАННОГО ВОДНОГО РАСТВОРА ПРИ ЛЕЧЕНИЯ ГНОЙНЫХ ЗАБОЛЕВАНИЙ МЯГКИХ ТКАНЕЙ В АМБУЛАТОРНЫХ УСЛОВИЯХ

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✓ ***Резюме***

***Было изучена результаты исследования 130 больных с гнойными заболеваниями мягких тканей в амбулаторных условиях. Все обследованные больные в зависимости от метода лечения разделены на две группы: I группу включены 62 больных гнойными заболеваниями мягких тканей которым как местное лечение использовалось санация раны с 25% раствором диметильсулфокцида с наложением мазью левомеколь под марлевой повязки. Основной II группы больные получили хирургическую обработку гнойного очага, санация и аппликацию раны электроактивированном раствором ЭАР-А и ЭАР-К.***

***Результаты проведенных исследований показали, что физико-химические методы лечения больных с применением 25% раствора димекцида и ЭАР-А и ЭАР-К является эффективным, простым и удобным способом лечения гнойных заболеваний мягких тканей в амбулаторных условиях.***

***Ключевые слова: электроактивированный раствор ЭАР; электроактиви рованный раствор А -ЭАР-А; электроактиви рованный раствор К- ЭАР-К; Димексид; Гнойные заболевание мягких тканей.***

# ЭЛЕКТРОАКТИВЛАШГАН СУВЛИ ЭРИТМАНИНГ ЮМШОҚ ТЎҚИМАЛАРНИНГ ЙИРИНГЛИ КАСАЛЛИКЛАРИНИ АМБУЛАТОР ШАРОИТДА ДАВОЛАШДАГИ САМАРОДОРЛИГИ

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✓ ***Резюме***

***Юмшоқ тўқималарнинг йирингли касалликлари билан амбулатор шароитда даволанган 130 та беморларнинг даволаниш таҳлиллари ўрганилди.Барча беморлар даволаниш усулига караб икки гурухга бўлинди: I –гурухга 62 та юмшоқ тўқималарнинг йирингли касалликлари билан беморларни йирингли жароҳатини маҳаллий даволашда димексидни 25% ли эритмаси билан ишлов бериб, левомеколь малҳами билан асептик докали боғлам қўйилди. II-гурух беморларига йирингли ўчоқга хирургик ишлов берилди ва жарохат электроактивланган эритма ЭАЭ-анолит ва ЭАЭ католитлар билан аппликация қилинди.***

***Ўтказилган текширув натижалари,юмшоқ тўқималарнинг йирингли касалликлари билан беморларни амбулатор шароитда даволашда димексидни 25% ли эритмаси хамда электроактивланган сувли эритма анолит ва католитлар ёрдамида физико-химик усулни қўллаш оддий,қулай ва самарали эканлигини кўрсатди.***

***Калит сўзлар: электроактивланган эритма; электроактивланган анолит -ЭАЭ анолит; электроактивланган католит -ЭАЭ католит; Димексид; Юмшоқ тўқималарнинг йирингли касалликлари.***

## Relevance

Purulent soft tissue disease is one of the most important problems in outpatient surgery. According to various sources of recent years, purulent diseases of soft tissues on an outpatient basis make up 46% of the total number of surgical diseases [4,6].

It is known that the problem of microflora resistance makes the fight against surgical infection much more difficult. The use of physicochemical methods in the treatment of purulent diseases of soft tissues is one of the most effective way to treat purulent diseases of soft tissues, in which there is no question of the problem of resistance, the problem of microflora [8]. We have sufficient experience in the use of a chemical preparation of a 25% solution of dimethyl sulfoccide in the treatment of purulent diseases of soft tissues. We obtained positive results in the treatment of purulent diseases of soft tissues with the use of a 25% solution of dimethyl sulfokcide in the complex of treatment. A number of authors [1,2,3,4,5,7] in their works give preference to the use of electroactivated aqueous solutions of EAR in the treatment of purulent diseases of soft tissues of various etiologies.

For the preparation of an electroactivated aqueous solution, the apparatus of NPF "Espero-1" was developed in 1998 by domestic scientists, employees of the Tashkent Institute SredazNIIgaz S.A. Alyokhin. The Espero type bioelectroactivator is approved by the Pharmaceutical Committee of the Republic of Uzbekistan to obtain drugs used in clinical practice and was widely used by employees of the VV Vakhidov Research Institute and the Tashkent State Medical Institute No. 2 clinics.

**The aim of the study** was to determine the effectiveness of using a 25% solution of Dimexide and EAR in the treatment of purulent soft tissue diseases on an outpatient basis.

## Material and methods

The paper provides the results of a study of 130 patients with purulent soft tissue diseases who received outpatient treatment at the Bukhara State Medical Institute's base of the central multidisciplinary polyclinic of the Bukhara City Medical Association in 2018-2021. All examined patients, depending on the method of treatment, were divided into two groups: Group I included 62 patients with purulent diseases of soft tissues for whom a 25% solution of dimethyl sulfoxide and Levomekol ointment under a gauze bandage were used daily for local treatment.

Group II 68 patients as a local treatment used wound sanitation with an electroactivated aqueous solution with the imposition of Levomekol ointment under a gauze bandage. In the course of the study, the clinical efficacy of treatment methods was assessed using the dynamics of the levels of clinical and laboratory indicators of endogenous intoxication (increased body temperature, the number of blood leukocytes, LII, ESR mm / h) and the timing of wound cleansing and healing.

Taking into account the properties and mechanism of action of various types of electroactive solutions to the wound process y - "electroactivated anolyte solution" EVR-A, we used purulent surgical diseases of soft tissues in the treatment of the first phase of the wound.

"Electroactivated catholyte solution" EVR-K is used in the treatment of the second phase of wounds purulent surgical diseases of soft tissues.

## Result and discussion

The control group consisted of 62 patients. Of the 62 patients in the first comparison group, 42 (67.7%) patients had purulent wounds after various purulent surgical diseases of soft tissues, such as phlegmon, abscess, suppurative hematoma, panaritium, bedsore, and 20 (32.3%) - purulent postoperative wounds ...

All patients who came to the clinic to the surgeon with purulent soft tissue diseases underwent complex treatment: antibiotic therapy was prescribed and, on the day of admission, on an emergency basis, under local anesthesia, an operation was performed to open the purulent focus and sanitize the purulent cavity with antiseptic solutions, which was also used in therapeutic tactics in patients of the comparison group ... Patients of group I as a local treatment additionally used wound sanitation with a 25% solution of dimethyl sulfoxide in combination with Levomekol ointment under aseptic gauze bandages.

The study of the dynamics of clinical and laboratory parameters in patients with purulent diseases of soft tissues of group I are shown in Table 1.

**Table 1**

**Dynamics of indicators of intoxication in patients with purulent Group I soft tissue diseases (n = 62)**

| Indicators | Observation time | | | | | |
|---|---|---|---|---|---|---|
| | day of admission | Day 3 | Day 5 | Day 7 | Day 10 | Day 14 |
| $t^0$ body | 38,9±0,08 | 38,1±0,07*** | 37,8±0,09*** | 37,4±0,06** | 37,1±0,05 | 36,4± 0,03 |
| L blood $\times 10^9$/l | 8,8±0,46 | 8,1±0,26** | 7,9±0,32 | 7,4±0,29 | 7,1±0,33 | 6,8±0, 026 |
| LII ed | 2,5±0,13 | 2,2±0,06*** | 1,7±0,08*** | 1,2±0,04*** | 1,0±0,09 | 0,8±0, 03 |
| ESR mm / h | 46,9±1,80 | 40,7±1,37*** | 32,4±1,72*** | 28,2±1,76*** | 21,,1±1,63*** | 16,6± 1,8 |

*Note: * - differences relative to the data of the previous day are significant (** - P <0.01, *** - P <0.001)*

The above table 1 shows that on the day of treatment, all the average indicators of intoxication of patients were significantly higher than normal. At the same time, body temperature averaged 38.9 ± 0.08 ° C, blood leukocytes 8.8 ± 0.46 × 109 / l, LII 2.5 ± 0.13 units, ESR 46.9 ± 1.80 mm / h. In the course of treatment, all these indicators tended to decrease by 3-5 days and thereafter. The indicator body temperature for 5 days was 37.8 ± 0.090C, which later approached subfibrillation 37.4 ± 0.06 and 37.1 ± 0.05 0C by the 7-10 days of treatment, respectively. By the 14th day of outpatient treatment of the examined patients in the control group, the body temperature returned to normal, amounting to 36.4□0.030C. The dynamic nature of the normalization of blood leukocyte counts was synchronous to the body temperature of the examined patients. If on the day of admission the average blood leukocyte count was 8.8 ± 0.46 × 109 / L, by 5-7 days of treatment they decreased to the level of 7.9 ± 0.32 and 7.4 ± 0.29 × 109 / L respectively. Subsequently, by the 10th day, 7,1 ± 0,33 × 109 / l were observed closer to normal blood leukocyte counts. By the 14th day, this indicator had a normal value of 6.8□0.026 × 109 / l. LII indices in the dynamics of treatment were identical as an indicator of blood leukocyte, which, against the background of complex treatment in dynamics, had normalization and by 14 days had normal numbers. It should be noted that the ESR indicators of blood, although they had similar dynamics with other indicators of intoxication, the time of normalization slightly lagged behind the above analyzed indicators. As can be seen from table No. 1, if by the 14th day of treatment the indicators of body temperature, blood leukocytes, LII were within the normal range, the ESR indicator of blood in this period of treatment was closer to the upper limit of the normal figure.

In 68 patients of group II with various purulent wounds, the effectiveness of topical application of EAR was studied. Of the 68 patients of the main group II, 46 (67.8%) patients had purulent wounds after various purulent surgical diseases of soft tissues, such as phlegmon, abscess, suppurative hematoma, panaritium, bedsore, and 22 (32.2%) had purulent postoperative wounds.

As noted above, in the treatment of the examined group II patients with purulent diseases of soft tissues, taking into account the antibacterial and reparative properties of EAR, EAR-A was used in the first phase of the wound, while EAR-K was used for sanitation and application of the wound during the transition of the wound process to the second phase. The results of the analysis of indicators of intoxication of the body of patients

with purulent diseases of soft tissues of group II are shown in table. 2.

**Table 2**

**Dynamics of indicators of intoxication in patients with purulent diseases of soft tissues of group II (n = 68)**

| Indicators | Observation time | | | | | |
|---|---|---|---|---|---|---|
| | day of admission | Day 3 | Day 5 | Day 7 | Day 10 | Day 14 |
| $t^0$ body | 38,8±0,1 | 38,2±0,09*** | 37,6±0,07*** | 37,2±0,05*** | 36,9±0,07 | 36,4±0,07 |
| L blood $\times 10^9$/l | 8,9±0,24 | 8,2±0,27** | 7,7±0,31 | 7,3±0,28 | 7,0±0,22 | 6,6±0,21 |
| LII ed | 2,6±0,13 | 2,1±0,06** | 1,6±0,08*** | 1,1±0,04*** | 1,0±0,06 | 0,8±0,04 |
| ESR mm / h | 46,7±1,91 | 39,8±1,47** | 31,2±1,66*** | 26,8±0,86*** | 19,7±0,32*** | 15,7±1,2 |

*Note: * - differences relative to the data of the previous day are significant (** - P <0.01, *** - P <0.001)*

On the first day of treatment, the body temperature of the patients averaged 38.8 ± 0.1 ºC. The content of blood leukocytes was on average 8, ± 0.2 x 109 / l. Similarly, there was an increase in LII and ESR indicators to the level of 2.6 ± 0.13 and 46.7 ± 1.91 mm / h, respectively.

Against the background of complex treatment with the use of local surgical treatment of wounds with EAR-A, on the third day of treatment, there was a slight decrease in these indicators of body temperature from 38.8 ± 0.1 to 38.2 ± 0.09 ºC, blood leukocytes decreased on average to 8.2 ± 0.27x109 / l.

There was a decrease in LII and ESR indices to 2.1 ± 0.06 units. and 39.8 ± 1.47, respectively. On days 9-10 of treatment, all of the above indicators characterizing the degree of intoxication of the body were much closer to normal values of indicators, and within the normal range by 13-14 days of treatment.

It should be noted that, as in the previous group of patients, of the analyzed indicators of the degree of intoxication of the body, blood ESR normalized later than others, only by 14-15 days of treatment. Dynamic control of the level of microbial contamination of purulent wounds in the analyzed group revealed the following: at the time of admission, the microbial contamination of the wound was comparable to the first group and amounted to 108 mt / g, after surgical treatment of the wound and topical application of a 25% dimethyl sulfoxide solution, it decreased by 4 orders of magnitude, in the course of treatment, its further decrease was noted, and already by 6-7 days of treatment in both groups, the microbial contamination of the wound was at the level and below the critical level, at the same time amounting to 103 mt / g - 102 mt / g of tissue.

The use of a 25% solution of dimethyl sulfoxide of group I and EAR-A and EAR-K on wounds in the complex treatment of patients in group II with purulent diseases of the soft tissues of the body contributed to the complete cleansing of wounds from infection by 7.8 ± 0.4 and 5.8 ± 0.5 days of treatment. By 7.0 ± 0.3 and 5.0 ± 0.3 days, active resorption of the infiltrate around the wound was observed. The onset of the appearance of granulations was noted by 9.5 ± 0.6 and 6.3 ± 0.4 days of treatment, and epithelialization by 12.0 ± 1.5 and -8.5 ± 0.7 days of treatment, respectively.

**Fig. 5.2. Terms of wound cleansing and healing in patients of groups I-II with purulent diseases of soft tissues (Day).**

| № | Indicators | I group | II group |
|---|---|---|---|
| 1 | Timing of cleansing from infection | 7,8±0,4 | 5,8±0,5 |
| 2 | Resorption of infiltrate | 7,0±0,3 | 5,0±0,3 |
| 3 | The appearance of granulation | 9,5±0,6 | 6,3±0,4 |
| 4 | The beginning of epithelialization | 12,0±1,5 | 8,5±0,7 |

Thus, our study showed physicochemical methods of treating patients with the use of a 25% solution of dimecid and EAR-A and EAR-K is an effective, simple and convenient way to treat purulent soft tissue disease on an outpatient basis.

**Findings**

1. The use of a solution of an electro activated solution (EAS) is an effective, simple, convenient and economical way of physicochemical method of treating purulent wounds on an outpatient basis.

2. A solution of EAR-A effectively affects the process of cleansing purulent wounds in the first phase of the wound process, EAR-K is effective for the second phase of the wound process.

3. The timing of wound cleansing and healing when using EAF has similar dynamics with an insignificant advantage of acceleration of indicators than when using a 25% dimethyl sulfide solution.

4. A solution of EAR-A and EAR-K can be successfully used in the treatment of purulent wounds on an outpatient basis.

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## EFFECT OF SURGICAL MANIPULATION TO MORPHOMETRIC DEVELOPMENT OF FACE AND JAW IN PATIENTS WITH CONGENITAL LIP AND PALATE SPLITS

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✓ ***Resume***

***The article presents the results of maxillofacial morphometry after surgery in patients with congenital cleft lip and palate.***

***Patients were divided into two groups. The results of the two groups were compared. Proportions of morphometric parameters of maxillofacial region in patients with congenital cleft lip and palate and relative changes in compliance with control group of healthy children were studied. The more perfect and age-appropriate surgical procedures in patients with congenital cleft lip and palate, the more likely it is that the morphometric parameters of the maxillofacial region will comply with the "Golden Section" principle and reduce the rehabilitation period.***

***Keywords: nasolabial angle, statistical significance, basal part, lower jaw, upper jaw, cephalometric analysis, lip and palate defect.***

## ВЛИЯНИЕ ХИРУРГИЧЕСКОГО ПОДХОДА К МОРФОМЕТРИЧЕСКОМУ РАЗВИТИЮ ЛИЦА И ЧЕЛЮСТИ У ДЕТЕЙ С ВРОЖДЕННЫМИ РАСЩЕЛИНАМИ ГУБЫ И НЁБА

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✓ ***Резюме***

***В статье представлены результаты морфометрии челюстно-лицевой области после операции у пациентов с врожденной расщелиной губы и неба.***

***Пациенты были разделены на две группы. Сравнивались результаты двух групп. Изучены пропорции морфометрических параметров челюстно-лицевой области у пациентов с врожденной расщелиной губы и неба и относительные изменения в соответствие контрольной группе здоровых детей. Чем более совершенны и соответствуют возрасту хирургические процедуры у пациентов с врожденной расщелиной губы и неба, тем больше вероятность того, что морфометрические параметры челюстно-лицевой области будут соответствовать принципу «Золотого сечения» и уменьшит срок реабилитации.***

***Ключевые слова: носогубной угол, статистическая значимость, базальная часть, нижняя челюсть, верхняя челюсть, цефалометрический анализ, дефект губы и неба.***

## TUG'MA LAB VA TANGLAY NUQSONI MAVJUD BO'LGAN BEMORLARDA JARROXLIK YONDASHUVINING YUZ-JAG' SOHASINING MORFOMETRIK O'SISHIGA BO'LGAN TA'SIRI

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✓ ***Rezyume***

***Ushbu maqolada tug'ma lab va tanglay yorig'i bor bemorlarning jarroxlik amaliyotlaridan keyingi yuz-jag' sohasining morfometrik natijalari keltirilgan.***

***Bemorlar ikki guruxlarlarga bo'lingan. Ikki guruhning natijalari takkoslashtirildi. tug'ma lab va tanglay yorig'i bor bemorlarning yuz-jag' sohasining morfometrik parametrlarning nisbati va sog'lom bolalardan iborat bo'lgan nazorat guruhi bilan nisbiy o'zgarishlari o'rganildi.***

***Jarroxlik amaliyotlari tug'ma lab va tanglay yorig'i bor bemorlarda qanchalik mukammal va yoshga nisbatan vaqtida amalga oshirilsa, yuz-jag' sohasining morfometrik parametrlari «Oltin nisbat» parametrlariga mosligi va shu bilan bemorlarning reabilitatsiya muddatini qisqartirishga erishish mumkinligi ko'rsaitadi.***

***Kalit so'zlar: burun lab burchagi, statistik ahamiyat, bazal qism, pastki jag', yuqori jag', sefalometrik tahlil, lab va tanglay nuqsoni.***

## Relevance

According to various authors, the number of newborns with severe cleft has increased, which include congenital bilateral complete cleft of the upper lip, alveolar ridge and palate. It occurs in 12-25% of cases among other forms of cleft face. Patients have severe anatomical and functional disorders, which cause a low quality of life for children and their parents. The appearance of the child causes significant stress for the parents. Parents try not to show their child to others, avoid contact with relatives, and some refuse such children.

For effective complex treatment of children with congenital clefts of the lip and palate (CRGN), it is necessary to periodically study the dynamics of growth of the jaw segments [1]. The development and growth of the nose and upper jaw complex in patients with ERHN is a widely discussed topic in any surgical procedure. Studies by Graber [2] reported three-dimensional changes in the upper jaw in patients with complete lip and palate defects, as well as in patients after surgery. The patients showed a tendency to misalignment of the bite, intersection of the anterior and posterior bites, and defects in the midline of the face. Two factors have been shown to cause abnormal facial morphology in patients with CRHN undergoing surgery: the internal development of the defect and iatrogenic factors resulting from treatment. Bishara [3] reported that the deformity of the upper jaw in patients with ERH was caused by intrinsic factors, but most authors noted that the factors of the inner jaw were secondary to surgical interventions [4,6]. If the deformity of the upper jaw is a complication of surgery, it is important to determine the optimal duration and conditions of treatment in order to close the lip and palate defects.

In the early periods, cheiloplasty is performed to improve the feeding of the baby, since his sucking function is destroyed, and most specialists pay attention to the restoration of this function, but the scars after this operation can interfere with the development of the upper jaw, which itself leads to underdevelopment of the lower jaw. To study the influence of the iatrogenic factor on the growth of the face and jaws, a morphometric study was carried out in patients with CRHN. For the study, a special compass, a gnatometer, and a meter tape were used. Determination of the cause of growth retardation in patients with RHGH has been the subject of a large number of studies, and the current initial consensus is that the iatrogenic effect of surgery is a relatively important factor [7]. In patients with ERHN, a slight increase in the upper jaw was observed before surgery, which led to greater attention to the study of iatrogenic factors.

According to some authors, the main factor in inhibition of growth is the operation performed on the palate [8]. In patients with palatal defects, the mean is usually taken into account in the criteria for assessing growth, and then correlated with other patients with palate and palate defects or with a normal population [9-10]. It is important to report the mean of treatment outcomes, but it is relatively difficult to assess individual variability. Changes in development have been noted by many authors [11-12]. These changes can depend on the type of fracture and its complexity. To date, it has not been established whether surgery actually restricts the growth of the upper and lower jaw. Therefore, in order to evaluate the effectiveness of surgical interventions on the growth of the cranial and facial regions with defects of the lips and palate, we conducted a study on patients with CRHN.

**Purpose of the study:** to study the influence of the surgical approach to the morphometric development of the face and jaw in children with congenital clefts of the lip and palate.

## Material and methods

The author carried out a scientific study at the Department of Surgical Dentistry of the Belarusian State Medical Institute in Bukhara and selected patients who applied to the BMMC with ARGN. 20 patients (14 boys, 6 girls, age: 5.6 ± 2) were divided into 2 groups. The 1st group consisted of 10 people (9 boys and 1 girl) with a third-class ARGN, based on average age. The average crack size was 5.3 ± 2.3 mm. Group 2 (control group (CG)) included 10 patients with defects (9 girls, 1 boy) of the first class. The parents of the patients were informed about the surgical procedure and research that needed to be carried out and their consent was obtained. In patients, the wall of the retropositive and laterally displaced. The cross section of the segment moved forward without compression. The cleft of the alveoli is facing up. Nasal congestion is seen in several patients. The base of the wing of the nose is retropositive in the area of the slit and is defective. The alveolar gap is shifted to the side, anterior wall and axillary cavity of the upper jaw are visible. All patients underwent cheiloplasty according to the Millard method - I.A. Kozina and palatal plastic according to the

Frolova-Makhkamova method (soft palate after 3 months, lip and palate after 6 months). Cephalometric measurements were performed at the age of 6–7 years. A comprehensive cephalometric analysis was performed to measure various growth parameters of the head and face region. Linear and angular measurements were used, which were recorded on an individual map. An individual patient record with all information has been developed. All data were analyzed and primary normal measurements were obtained. The data obtained in addition to the analysis of the mean standard deviation showed statistically significant associations and a 95% confidence interval. P <0.05 (P> 0.05) was taken into account. All measurements were repeated 6 weeks after the initial measurements to detect errors associated with linear measurements. Analysis of repeated measurements did not reveal any differences between them.

**Result and discussion**

Measurements were obtained from patients with RHGN and compared with participants in the CG. The perpendicularity of the nasion and the height of the face to point A was higher in patients with ERHN than in CG participants (P = 0.088) (P = 0.778). The values of the measurements of the remaining variables in the CG participants than in the patients with ARGN. The only differences are the length of the upper jaw (condil - point A) (P = 0.026), the length of the lower jaw (condylion-gnation) (P = 0.045), the upper 1 point (P = 0.001), the lower 1 point A to the chase (P = 0.038), upper lip thickness (P <0.001) and upper lip deformity (P <0.001) are statistically significant. There was no correlation between fracture size and its effect on maxillary retrusion.

In this study, the angle of the nasolabial fold was analyzed relative to CG participants in analog patients. In the group of patients with ERHN, low angles of the nasolabial fold were observed, and the lack of muscle development caused deformation of the lips and palate as a result of their flattening and curvature towards the fracture. These deformations are usually accompanied by a downward displacement of the collumella point near the lips [13]. In patients with ERH, this angle is more acute, but does not correspond to 90–120 °. The absence of a visible difference between patients with RVGN and CG can lead to deformation and retraction of the upper lip due to reconstructive surgery or retraction of the upper incisors and flattening of the subnasal region [14]. Other studies have observed that nasal deformities in patients correlate with diastasis between lip fragments and that the alveolar swelling of the upper jaw is located in different positions. However, other studies have shown that the convexity of the upper jaw is smoothed, which leads to lower values of the angle A [15]. Other studies have confirmed the retrusion of high incisors in patients with CRHN [16]. In patients with ERGN, the distance between the incisors of the upper jaw (TM) is relatively small, CG, which, in turn, can lead to a large differentiation of the nasolabial angle. Orthodontic treatment should be individualized, since a short nasolabial space can cause tooth extraction in the HF arch, but at the same time, other types of anomalies are observed in the bite of patients with RVGN compared to CG. The increase in HF (decrease in the length of the condiliuma point) is relatively limited in CG in patients with ERHN. Midface hypoplasia in patients with CRHN may result from surgery. Postoperative scars interfere with normal HF growth [17]. During the operation, the bone tissue is not injured, but fibrous scars in the soft tissues reconstruct the HF growth and it grows downward and forward. Depending on the size and shape of the crack in the area of the palate and lips, tissue mobilization occurs, therefore, the larger the crack, the larger the scar and the slower the upper jaw grows. Comparison of the two groups revealed a statistically significant difference in the length of the mandible (LF) (condylion - gnation). In other words, the condition and length of the NP were significantly influenced by the surgical procedures performed. These results are similar to the previous results [15]. The data indicate that the LF is relatively lagging behind, although it has a normal length. The retroposition of the jaw in this position may be a functional response to changes in the LF complex as a result of its rotation, in which the muscle in it is remodeled and attached to the gonial region (the lower jaw is indicated by the angle and flexion of the region).

An increase in the vertical tendency of HF growth was found when measuring the height of the face in patients with ERH. The lower anterior angle of the face height was increased compared to the CG patients. The results of such analyzes have already been shown by other authors [3,20,21]. An increase in the front of the facial angle may be associated with active growth of the front of the face or passive growth of the back of the face. Clinical research is needed to develop specific treatment protocols that interfere with the normal growth and development of HF in patients with CRHN.

In this study, an increase in the height of the anterior lower part of the face resulted in the LF being in the back [18]. In the surgical practice of Dehler, it was found that the patients had a small

size and relatively behind the NP, and at the same time he eliminated the defects of the lips and palate. This has been shown to improve the patient's pronunciation, but is thought to be the cause of the relatively underdeveloped upper jaw. The morphological status of LF was determined in patients with RHF who underwent surgery, and when measuring the height of the face in patients with RHF, an increase in the tendency of the vertical growth of HF was found. The lower anterior angle of the face height was increased compared to the CG patients. The results of such analyzes have already been previously shown by other authors [4,20,21]. Front face enlargement may be associated with active front face growth or passive back face growth [22]. She developed specific protocols for the treatment of factors that interfere with normal growth and development of HF in patients and there was no difference in the statistical analysis between the two groups compared to patients with ARVH who did not have the necessary practice to continue clinical trials. It was noted that the growth of the lower jaw does not depend on the method of surgery. NP is not directly related to cracks, but there may be changes in the structure of NP growth due to damage to NP itself and the functional factors present.

Changes were assessed for HF and LF, where the incisors in the LF dentition were relatively retro clinical and retrusive compared to control values. The anterior cruciate ligament is more common in patients with congenital cleft palate. After surgical procedures, it was found that the incisors were similar to those in the control group. Intensive lip plastic surgery can cause retroclination of the incisors in the upper part, but has nothing to do with the growth of the midface. The NP was found to be relatively vertical compared to the control group in the dentition, possibly due to pressure on the lower lip during swallowing and the patient's desire to achieve a flat mouth. The two groups showed significant differences in deformity and change in upper lip thickness. The upper lip ratio improved in the WRGN group. In the CG group, the thickness of the upper lip increased, and in the group with WRGN, this indicator changed significantly. Numerous studies have shown that changes not only in the front teeth, but also in lip tension, muscle tone and lip thickness significantly affect the shape and condition of the lips, especially in patients with CRHN. Hard tissue therapy can alter the response of soft tissue. Patients have consistently hypertrophy of the muscles of the lower lip to achieve bilateral lip closure.

**Output**

In patients with ERHN, the length of the HF and LF is shorter than in the control group, due to surgical interventions. Deformity and thickness of the upper lip were also less than in the control group, posterior location in the anterior teeth was also found on the HF and LF.

This suggests that surgical procedures performed in patients with ARVH affect the growth of HF and LF, and change the location of the dentition. Operation on the lips and palate affects the growth of the upper and lower jaw, which leads to a lag in the growth effect in the basal part of the jaw.

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# MODERN APPROACHES TO THE APPLICATION OF CARBON SORBENTS IN MEDICINE
## (Literature review)

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✓ ***Resume***

***At the present stage of the development of hepatology, studies aimed at improving extracorporeal detoxification technologies, in particular, the development of new high-quality hemosorbents on the basis of special types of raw materials and technologies, allowing to improve the quality of removal of toxic metabolites and reduce the risk of developing or progressing multiple organ failure. In world practice, physico-chemical characteristics, histological and morphological results of the use of various hemosorbents are continued in experimental conditions, which are able to expand the possibility of using sorption methods for blood purification during liver failure of various genes. The scientific search of methods of detoxification impact on the homeostasis system is equally important through the use of new domestic sorption materials, which will prevent the occurrence of hazardous complications that can potentially require repeated hospitalization and conducting radical treatment methods. In this direction, in particular, in improving the quality of the treatment of hepatic insufficiency, positive results were achieved by extracorporeal detox methods. At the same time, scientifically based results in the development of domestic hemosorbents and improving methods of plasmaware are required to improve the specialized medical care provided.***

***Keywords: medicine, carbon sorbents, classification, extracorporeal detoxification, plasmasorption.***

# СОВРЕМЕННЫЕ ПОДХОДЫ К ПРИМЕНЕНИЮ УГЛЕРОДНЫХ СОРБЕНТОВ В МЕДИЦИНЕ
## (Обзор литературы)

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✓ ***Резюме***

***На современном этапе развития гепатологии перспективными остаются исследования, направленные на совершенствование технологий экстракорпоральной детоксикации, в частности, разработку новых гемосорбентов высокого качества на основе специальных видов сырья и технологий, позволяющих улучшить качество удаления токсических метаболитов и снизить риск развития или прогрессирования полиорганной недостаточности. В мировой практике продолжают исследоваться в экспериментальных условиях физико-химические характеристики, гистологические и морфологические результаты использования различных гемосорбентов, которые способны расширить возможности применения сорбционных методов очистки крови при печеночной недостаточности различного генеза. Не менее важен научный поиск способов детоксикационного воздействия на систему гомеостаза путем применения новых отечественных сорбционных материалов, что позволит предупредить возникновение опасных осложнений, которые потенциально могут потребовать повторных госпитализаций и проведения радикальных методов лечения. В этом направлении, в частности, в улучшении качества лечения печеночной недостаточности экстракорпоральными методами детоксикации достигнуты положительные результаты. Вместе с тем для улучшения оказываемой специализированной медицинской помощи требуются научно-обоснованные результаты по разработке отечественных гемосорбентов и***

***совершенствованию способов плазмосорбции.***

***Ключевые слова: медицина, углеродные сорбенты, классифицирование, экстракорпоральная детоксикация, плазмосорбция.***

## УГЛЕРОД СОРБЕНТЛАРНИ ТИББИЁТДА ЗАМОНАВИЙ ҚЎЛЛАНИШГА ЁНДАШУВ

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✓ ***Резюме***

***Гепатология ривожланишининг ҳозирги босқичида экстракорпорал детоксикация технологияларини такомиллаштиришга қаратилган тадқиқотлар, хусусан, токсик моддаларни олиб ташлаш сифатини яхшилашга имкон берадиган махсус хом ашё ва технологиялар асосида янги юқори сифатли гемосорбентларни ишлаб чиқариш метаболитлар ва полиорганик етишмовчилик ривожланиш ёки кучайиш хавфини камайтиради. Жаҳон амалиётида турли хил гемосорбентлардан фойдаланишнинг физик-кимёвий хусусиятлари, гистологик ва морфологик натижалари экспериментал шароитда давом эттирилади, улар турли генларнинг жигар етишмовчилиги пайтида қонни тозалаш учун сорбция усулларидан фойдаланиш имкониятларини кенгайтириши мумкин. Гомеостаз тизимига зарарсизлантириш таъсирининг усулларини илмий излаш янги маҳаллий сорбцион материаллардан фойдаланиш билан бир хил даражада муҳимдир, бу эса такрорий касалхонага ётқизишни ва радикал даволаш усулларини талаб қиладиган хавфли асоратлар пайдо бўлишининг олдини олади. Ушбу йўналишда, хусусан, жигар етишмовчилигини даволаш сифатини оширишда экстракорпорал детоксикация усулида ижобий натижаларга эришилди. Шу билан бирга, кўрсатиладиган ихтисослаштирилган тиббий ёрдамни такомиллаштириш учун маҳаллий гемосорбентларни ишлаб чиқариш ва плазма дастурларини такомиллаштириш бўйича илмий асосланган натижалар талаб қилинади.***

***Калит сўзлар: тиббиёт, углерод сорбентлари, таснифлар, экстракорпорал детоксикация, плазмосорбция.***

### Relevance

Environmental disasters associated with environmental pollution with industrial pesticides and household waste and, as a consequence, the increase in various diseases, which are accompanied by the accumulation of toxic substances in the human body, required a radical change in approaches to the problem of maintaining homeostasis, due to the low efficiency of pharmacotherapy [2,36 ].

In this regard, one of the solutions to this problem was the use in medical practice of methods of sorption detoxification of the body, which include hemosorption, removal of toxins from plasma, lymph (plasma sorption, lymphosorption); enterosorption (detoxification of the body through the gastrointestinal tract), application of sorbents (vulnerosorption) [3,5,18,28,29]. Each of these methods of sorption detoxification is based on the ability of active sorbents to remove harmful substances of various nature from the body in case of certain diseases (oncological, autoimmune, infectious, allergic, etc.) [19,35].

One of the methods directly dependent on the quality characteristics and technological aspects of medical sorbents is hemosorption (HS). Possessing the ability to adsorb various toxic substances, HS has been widely used in patients with acute renal failure since the 60s of the XX century [13, 14]. However, significant obstacles to the use of hemosorption are the trauma of blood corpuscles, especially platelets (a decrease in the level of platelets can be from 15 to 50% of the initial level), during perfusion through the sorbent, which creates a risk of severe complications and can lead to "thrombosis" sorbent [6].

At the same time, the HS has not lost its position to this day, since in order to improve the biocompatibility of carbon sorbents, various modification options have been proposed:

heparinization of granules, coating with albumin, dextran [13,34]. Research is currently underway to improve the effectiveness of this detoxification method [10,11,26,27].

The use of sorbents is primarily aimed at neutralizing the negative effects of endo- and exotoxins on the human body [1,7,9,12,20,26]. Various violations of "biochemical homeostasis" cannot but affect the systems of detoxification, excretion, and immunity of the body. The so-called "toxic pressure" leads to a cascade of subsequent disorders that the body is unable to cope with on its own or with the help of pharmacotherapy, which often contributes to a fatal outcome or to the development of a state of chronic intoxication, which aggravates the course of pathological processes. As you know, one of the promising directions in the prevention and treatment of diseases of the gastrointestinal tract (GIT) of various etiologies is the use of enterosorbents and sorption methods of detoxification. Enterosorbents used today, which are complex compounds of organic and inorganic substances, have the ability to bind toxins of various origins and prevent their absorption from the gastrointestinal tract [15].

One of the urgent tasks of organoprotection in case of body poisoning is the development of bionanotechnology based on nanodispersed carbon (a product of thermal decomposition of hydrocarbon raw materials of oil and coal origin and natural gas). At the same time, the starting material in the genesis of oil and gas is the organic sediments of large water bodies (plankton, algae, microorganisms, small animals), which, dying, form a layer of bottom silt. As it becomes denser, biochemical processes accelerate, contributing to the formation of gaseous and liquid hydrocarbons. The creation of a wide assortment of sorbents is greatly facilitated by a variety of initial carbon-containing materials and processing methods that allow them to be transformed into porous carbon materials [15].

It should be especially noted that medical sorbents that come in contact with biological fluids of the body have special quality requirements, namely, a high degree of chemical purification, a minimum content of impurities, non-toxicity, greater mechanical strength and smooth surface relief of granules, no dust formation (release of ultrafine particles), high sorption capacity in relation to the substances to be removed, compatibility with blood and inertness in relation to blood corpuscles [12,17, 23,24].

**Sorbents used in medicine and their classification.**

Sorbents, unloading the organs of natural detoxification, extract various exo- and endotoxins from biological media:

- products of natural metabolism in high concentrations,
- activated enzymes that can damage tissues,
- inflammatory mediators, biologically active substances,
- medium-molecular peptides of various weights,
- peroxide products,
- ingredients of non-viable tissues heterogeneous in composition,
- aggressive components of complement,
-bacterial toxins (exo- and endotoxins).

So, specifically with liver pathologies, sorbents are removed from the body - bilirubin, ammonia, bile acids, bacterial toxins, medium molecules and others; for kidney diseases - products of protein and purine metabolism (urea, uric acid, creatinine), medium molecules, electrolytes, biogenic amines, catecholamines, etc. for broncho-pulmonary diseases - kinins, catacholamines, biogenic amines, regulatory peptides, hormones, prostaglandins and other biological active substances; in diseases of the gastrointestinal tract - bacterial toxins, indole, skatole, bile acids, regulatory peptides, hormones, end and intermediate products of the main types of metabolism, gases, etc. [8,21,33].

When the sorbent comes into contact with a biological fluid, the removed substance (sorbate) interacts with the absorber-sorbent. Most of the sorbents used are not specific with respect to specific toxins and metabolites [22]. Their porous structure contains all substances that have tropism to the surface of the sorbent and the corresponding sizes of molecules that allow penetration into pores of different sizes [31].

These substances differ in relative molecular weight - from hundreds to a million daltons, hydrophilic and hydrophobic properties, features of circulation in the blood, transport through membranes, and ways of excretion from the body. For their effective removal, it is necessary to select the appropriate sorbents in terms of the size and volume of pores, the size and chemical composition of the surface, and other indicators. The list of diseases for which sorption technologies are shown is extensive - acute poisoning, allergic diseases, liver and biliary tract diseases, kidney diseases, lung diseases, acute inflammatory and purulent-septic diseases, neuropsychiatric and mental diseases, withdrawal syndromes in drug addicts and alcoholics, immunodependent diseases, consequences of injuries, acute disorders of the main types of metabolism, oncological diseases,

radiation injuries. Skin diseases, endocrine diseases and others.

With regular and prolonged intake of sorbents, intestinal absorption decreases, which leads to a decrease in the energy value of food components and, as a result, to a decrease in body weight. The noted ability of dietary fiber to cause a longer feeling of satiety, to replace high-energy products, is also the basis for the use of sorbents in the treatment of obesity. At the same time, the indicators of cholesterol metabolism are restored, the abolition of the sorbent leads to an increase in the content of cholesterol, triglycerides, and the cholesterol index of atherogenicity in the blood.

These observations suggest that such a structure is one of the forms of interaction of the sorbent with biological tissue, forming a new, biomineral environment that promotes the effectiveness of sorption therapy [16].

**Sorbents based on polymers**

This type of sorbent (mainly for oral administration) includes materials based on plant raw materials [4]. For example, a finely dispersed powder of a bloody color Microcell is a preparation of microcrystalline cellulose obtained from cotton and wood cellulose (permission from the Ministry of Health of the Russian Federation, Reg. N 97/128 / 5 was obtained for its clinical use).

Enterosorbents based on plant raw materials include "Polyphepan", obtained in the form of secondary raw materials after hydrolysis of deciduous and coniferous wood species [15]. It consists mainly of its own lignin (80%) and hydrolyzed cellulose, is produced on an industrial scale, phenylpropane derivatives are the structural element of polyphepan. Polyphepan has a specific surface area of up to 20 m2 / g, on its surface there is a set of functional groups: metaxyl, carboxyl, carbonyl, hydroxyl and others. In terms of sorption of low and medium molecular toxins, Polyphepan is not inferior to coal. However, there are no data on the content of razilny metals in the sorbent. It can be assumed that Polyphepan also belongs to the number of sorbents that are difficult to standardize and, first of all, according to the raw material from which it is obtained. The development of the production of polymeric materials made it possible to create on their basis interesting sorption materials for medical purposes with a controlled composition, pore size and a set of functional groups. Known Enterosgel, which is a hydrogel of methylsilicic acid (CH3SiO 1.5 n H2O). After removing all moisture at a temperature of 1200C°, the preparation turns into a xerogel with a surface of 150-250 m2 /g, with a pore volume of 2.7-3 cm3 / g, and a pore size of 100 nm. The sorbent is effective against medium-molecular toxins, does not bind electrolytes.

Silicon organic sorbents are characterized by hydrophobicity and sufficient sorption capacity in relation to organic substances.

Food additives based on pectins, cellulose, pine needles, and algae are often positioned as sorbents [32].

**Sorbents based on carbon materials.**

Today, the main raw materials for industrial methods of obtaining porous carbon materials are wood waste (36% of porous carbon materials are produced from bark and lignin), non-coking coal materials (28% from coal and 14% from brown coals), as well as some polymeric materials, nut shells (coconut, etc.), fruit seeds (olives, peach), carbon black, pitches, cokes (petrochemical and coke products), etc. [7,12,17,25,30].

As you know, one of the main types of raw materials for obtaining carbon sorbents are pyrolysis products of hydrocarbon raw materials of oil, coal origin and natural gas [7,12,17]. Of greatest interest are petroleum and coke-chemical raw materials obtained in the process of catalytic cracking, pyrolysis of gasoline and gas oil fractions, the process of distillation and processing of coal tar [7, 12]. In addition, synthetic materials (porous styrene-divinylbenzene copolymer, furfural, etc.) are one of the valuable carbon-containing raw materials [7,12,15,17].

To date, the production of spherical carbon sorbent granules is carried out by liquid formation of furfural granules and their carbonization and steam-gas activation, followed by washing the material with distilled water. The sorbent production technology can also include the stages of coal demineralization using acid and alkali solutions and innovative dedusting technologies by treatment with surfactant solutions [7,12,17].

Hemosorbents are conventionally divided, depending on the predominant type of bonds in the system, the extractable substance - sorbent, into two main classes: 1) neutral sorbents (activated carbons, silica gels, alumogels, neutral copolymers that do not have ionic groups); 2) ion-exchange sorbents (organic and inorganic ion exchangers of synthetic and mineral origin).

For sorption medicine, carbon, carbon-mineral, specific and immunosorbents are widely used.

Of particular interest for the sorption of toxic substances of various molecular weights and nature are carbon sorbents that meet the requirements of medicine.

It should be noted that the main properties of traditional industrial brands of active carbons used in sorption medicine are determined both by the

nature of the feedstock and by the technology of their production. [7,12,15,17].

So, the most effective component of any coal sorbent is the porosity of their surface, which determines the directions of their application in sorption medicine. For example, it is advisable to use microporous carbon sorbents to remove products with a low molecular weight from biological fluids, for example, creatinine, aliphatic hydroxy acids, amino acids, uric acid, etc. [15].

The developed mesoporous structure of sorbents satisfies most of the problems of hemosorption. When removing toxic substances with a carbon sorbent with a hydrophobic surface, the main sorption mechanism is physical adsorption due to the action of dispersion forces. In this case, the efficiency of adsorption is determined by the proportionality of the molecules of the adsorbed substances and the pores (mesopores) of the sorbent.

Until recently, the regulation of the adsorption activity of the sorbent was carried out mainly by changing the porosity of the surface, i.e., the geometric modification of their structure. But. this leads to a decrease in the strength of the sorbent granules. Another way to regulate the adsorption properties of sorbents is to change the chemistry of the surface of the sorbents, to create chemically bonded functional groups on the surface of the sorbent that are capable of sorption of pathological substances of various nature.

Currently, the issue of increasing the efficiency of sorption of pathological substances is relevant in order to develop selective sorbents for their subsequent use in sorption medicine and proteomics - the science of developing methods for isolating and separating proteins from biological media and their identification.

Of particular interest are studies [15] on the use of polyarginine and betulin, which, according to the author, are priority modifiers of the carbon surface that ensure the ecological safety of sorbents (license of the Federal Service for Veterinary and Phytosanitary Surveillance of the Russian Federation for the production of veterinary medicinal products No. 00-15- 1-002530 dated 02.09.2015).

According to the author, the bifunctionality of new sorbents with betulin ("Betulin in a carbon microsphere" contains at least 98.5% carbon, at least 1% betulin and not more than 0.5% glycerin) and polyarginine ("Carbon enterosorbent with polyarginine" does not contain less than 97.5% carbon, not less than 2.5% of total nitrogen), is due to the adsorption properties of the nanoporous carbon matrix and the immunocorrective properties of the biologically active component. According to the author, the modification of the surface of the carbon enterosorbent with betulin and polyarginine leads to an increase in their adsorption properties in relation to markers of toxic substances (methylene blue and vitamin B12).

The author proved that “when using the carbon enterosorbent“ Betulin in a carbon microsphere ”at a dose of 200 mg / kg within 3 days after the antiparasitic treatment of rats with the drug Aversect-2, an increase in the indices of spontaneous and activated NBT tests was established by 11% and 15% accordingly, the prevalence of average-sized CICs in rats compared to the group of intoxicated animals. "

As for the enterosorbent modified with polyarginine, the latter “has a significantly higher adsorption capacity in relation to proteins that simulate toxic compounds of a protein nature (the degree of extraction of lysozyme is 70 ± 4%, α-lactalbumin is 63 ± 2%), compared to the original carbon sorbent ( the degree of extraction of lysozyme 59 ± 2%, α-lactalbumin 57 ± 1%) ".

Studies have shown that a carbon sorbent modified with polyarginine “reduces the content of pro-inflammatory cytokines (interleukin 6, interleukin 8, tumor necrosis factor) in the blood plasma of rats with acute 253 experimental peritonitis. Their levels after sorption decrease: for interleukin 6 to 22.20 ± 0.50 pg / ml, interleukin 8 - to 0.95 ± 0.06 pg / ml, tumor necrosis factor - to 1.20 ± 0.03 pg / ml. Before the introduction of sorbents, the levels of cytokines were, respectively: 26.40 ± 1.20, 3.10 ± 0.20 and 2.25 ± 0.75 pg / ml ".

Significant interest in the development and improvement of carbon sorbents has become the reason for a large number of dissertation research carried out in the Russian Federation over the past 10 years [7, 12, 15, 17].

For example, [12] proposed oxidative activation of carbon materials “to be considered as a topochemical reaction, including the stages of adsorption (chemisorption) of an oxidizing agent on the active sites of the substrate (the surface of the initial carbon material) and subsequent interaction with the substrate, leading to the formation of pores”. The author found that "the porous space of the formed carbon sorbent is significantly affected by the graphitization and crystallite size of the starting material." Changing the size of the crystallites can improve the characteristics of the pores of the sorbent. In another dissertation research [7], a technology was developed for obtaining a mesoporous carbon sorbent for medical use based on Sibunit ™ material, which, according to the author, “surpasses known medical carbon sorbents in terms of hemocompatibility and adsorption activity

with respect to compounds with an average molecular weight. Based on the results of clinical trials, it was recommended to use it in the treatment of diseases occurring with the formation and accumulation of precisely toxins of a given molecular weight. "

## Conclusion

Thus, the causal relationship of a violation of the synthetic, metabolic and detoxifying functions of the liver in its acute or chronic damage is the accumulation of various toxic substances, such as inflammatory cytokines, oxidative stress mediators, ammonia degradation products, bile acids, nitric oxide, lactate, products metabolism of arachidonic acid, endogenous benzodiazepines, indoles, mercaptans, which lead to systemic damage to the body - microcirculation disorders, coagulation and immunological disorders.

Over the past several decades, researchers have been looking for methods of temporary effective replacement of the functions of the damaged organ. Today, most clinical studies on organ replacement and organ protection pursue several goals: removal of toxins to create conditions for the regeneration of their own hepatocytes; resolving the issue of transplantation; creation of conditions for the restoration of the function of the donor liver after transplantation.

Currently, the methods of extracorporeal prosthetics of liver function in the complex of treatment of liver failure are divided mainly into two approaches: with the use of biological substances and without them. If biological systems include hepatocytes or whole organs (of human origin or derived from animals), then the approach without biological substrates is based on dialysis, filtration or adsorption techniques. The most common adsorptive methods of detoxification are hemo- and enterosorption, purification of plasma and lymph (plasmasorption, lymphosorption), application of sorbents (vulnerosorption). The unresolved problems of extracorporeal detoxification include the compatibility of adsorbents with blood and the specificity of the elimination effect. Most unmodified sorbents are "aggressive" with respect to blood corpuscles and "blind" with respect to adsorbing substances. Several ways of solving these problems have been identified.

So, one of them is the creation of coatings for sorbent granules or the widespread use of perfusion, in which the contact of blood corpuscles with adsorbents is completely or partially excluded. The accepted postulate when using sorbents and technologies with their use is the provision that sorbents should not have their own pharmacological action, and changes detected against the background of their use are associated with the phenomena of adsorption of metabolites, microorganisms, biologically active substances, etc., formed in internal environments.

The development and research of new, effective, non-toxic sorbents for the prevention and treatment of gastrointestinal diseases, regulation of metabolism, increasing resistance is an urgent task of medicine. Currently, in medical practice, carbon sorbents with high efficiency and safety of use are of the greatest interest. At the same time, the creation of carbon materials with increased adsorption activity in relation to toxic substances of a certain nature, with detoxifying and corrective properties by regulating the chemical nature of their surface (chemical modification) is of considerable interest, thereby expanding the spectrum of biospecific sorbents.

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# SOME EPIDEMIOLOGICAL ASPECTS OF FASCIOLIASIS IN THE FERGHANA REGION IN 2018-2019 YY.

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✓ ***Resume***

***The article presents the results of the analysis of some epidemiological aspects of fascioliasis in the Fergana region in 2018-2019. 57 cases of fascioliasis were registered in the Fergana region in 2018-2019, 20 of them in 2018 and 37 in 2019. The disease was diagnosed mainly in the rural population, 73.7% of cases were women, 77.2% were people over 18 years old. An analysis of the disease by occupation showed that housewives are more likely to face this problem. A high risk of contracting this disease is associated with the consumption of unwashed greens and fruits, as well as drinking water from surface water bodies (arycs). The monthly analysis of the dynamics of the disease showed that it was not of season character.***

***Key words: fascioliasis, Fergana region, epidemiology, risk factors.***

# ФАРҒОНА ВИЛОЯТИДА 2018-2019 ЙИЛЛАРДА АНИҚЛАНГАН ФАСЦИОЛЁЗ КАСАЛЛИГИНИНГ АЙРИМ ЭПИДЕМИОЛОГИК ЖИҲАТЛАРИ

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✓ ***Резюме***

***Мақолада Фарғона вилоятида 2018-2019 йилларда аниқланган фасциолёз касаллигининг айрим эпидемиологик жиҳатлари тахлил натижалари келтирилган. 2018-2019 йилларда Фарғона вилоятида жами 57 та фасциолёз ҳолати рўйхатга олинган бўлиб, шулардан 20 таси 2018 йилда, 37 таси 2019 йилда қайд этилган. Касаллик асосан қишлоқ аҳолисида қайд этилиб, беморларнинг 73,7% аёллар, 77,2% 18 ёшдан катталар ташкил этди.Касбга алоқадорлик ўрганилганда уй бекаларида кўп қайд этилгани, касалликни юқтириб олиш хавф омили сифатида эса яхши ювилмаган кўкатлар ва мева-сабзавотларни истеъмол қилиш, ариқ сувларидан ичиш деб топилди. Касалланиш динамикаси ойма-ой таҳлилида эса мавсумийлик хос эмаслиги аниқланди.***

***Калит сўзлар: фасциолёз, Фарғона вилояти, эпидемиология, хавф омиллар.***

# НЕКОТОРЫЕ ЭПИДЕМИОЛОГИЧЕСКИЕ АСПЕКТЫ ФАСЦИОЛЕЗА, ВЫЯВЛЕННЫЕ В ФЕРГАНСКОЙ ОБЛАСТИ В 2018-2019 ГГ.

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✓ ***Резюме***

***В статье представлены результаты анализа некоторых эпидемиологических аспектов фасциолеза в Ферганской области за 2018-2019 года. Всего в 2018-2019 годах в Ферганской области было зарегистрировано 57 случаев фасциолоза, из них 20 - в 2018 году и 37 - в 2019***

***году. Из них 73,7% заболевших составили женщины, 77,2% - люди старше 18 лет. Заболевание регистрировалось преимущественно у сельского населения. Анализ заболевания по профессиям показал, что чаще сталкиваются с этой проблемой домохозяйки. Установлен большой риск заражения при употреблении немытой зелени и фруктов, а также питье воды из арыков. Ежемесячный анализ динамики болезни показал, что она не имеет сезонности.***

***Ключевые слова: фасциолёз, Ферганская область, эпидемиология, факторы риска.***

## Introduction

At present fascioliasis is one of the global problems. According to the World Health Organization (WHO) data, more than 40 million people in more than 70 countries are infected with Trematode and 2.6 million from them suffer with Fasciola [1]. Fasciola is mainly found in East and Southeast Asian countries, as well as in South America [2]. Among Asian countries, the disease is most common in the Islamic Republic of Iran and Vietnam. The WHO has listed Iran as one of six countries with serious fascioliasis problems [3].

In humans, the disease symptoms can vary, in some cases asymptomatic form is observed for a long time, in others fascioliasis is characterized by an acute form and can lead to acute obstruction of the biliary tract. Analysis of the literature has shown that atypical variants of fascioliasis are also present [4,5].

The disease is caused by two types of trematode: *Fasciola hepatica* and *Fasciola gigantica* [6]. The life cycle of these parasites is very complex and takes place in the intermediate and primary host organisms. The parasite is leaf-shaped, size of *F.hepatica* is 20–30 mm x 13 mm and *F.gigantica* is 25–75 mm x 12 mm. [7]. Parasites are transmitted by specific freshwater *Lymnaeidae* snails (intermediate host organism) and infect many mammals, mainly herbivorous but also omnivorous species, causing severe disease in domestic ruminants and humans (primary host organisms). Human fascioliasis is included within foodborne trematodiases among neglected tropical diseases (NtD) by WHO [8].

Humans become infected with adolescent parasites as a result of consuming unboiled water or bathing in contaminated waters. In addition, adolescent parasites are transmitted to humans as a result of eating unwashed greens and vegetables, as well as eating wild-growing plants (cress-lettuce leaves) in stagnant water [9].

According to the literature data, many cases of fascioliasis where registered among the population [10, 11, 12, 13]. Such outbreak was observed in 1988 in Iran. During this outbreak more than 10,000 people were infected, 4,000 of them were children [14].

Recently, the incidence rate has been increasing in both developed and developing countries. The main reasons for this are global climate changes and the development of international tourism [8].

Due to the development of animal husbandry in Uzbekistan, fascioliasis has been studied in animals [15]. However, this disease has not been well studied in humans. Abdushukurov A.A. and co-authors reported a first case of fascioliasis in 2016 in a 6-year-old patient from Fergana region [16].

## The purpose

To study some epidemiological aspects of fascioliasis in humans in Fergana region during 2018-2019 yy.

## Materials and methods

During the study the epidemiological data of the Fergana Regional Department of Sanitary and Epidemiological Welfare and Public Health for fascioliasis in 2018-2019 were analyzed. The first case of fascioliasis in Fergana region was detected in 2016 [16]. After that case the prevalence of the disease in this region was begun to study.

For this purpose, the epidemiological maps presented the disease morbidity were analyzed. Fascioliasis in patients was confirmed by coproscopy, ultrasound examination, and macroscopic diagnosis of parasites detected after surgery. The Statistical analysis of the results was carried out in MS Excel 2003 XR.

## Results end discussion

In 2018-2019 yy. 57 cases of fascioliasis were registered in Fergana region. 20 of them were registered in 2018 and 37 in 2019. Analyzing the distribution of these cases in the Fergana region, the highest rate was found in Fergana district, accounting for 35.1% of all cases. In other regions, the incidence rate amounted to 14% - in Fergana and Quvasoy, 10.5% - in Oltiariq district, 7% - in Tashlak district, 5.3% - in Kuva and Rishtan districts, 1.8% - in Margilan, Kushtepa, Baghdad and Buvayda districts. One of the 57 officially registered cases of fascioliasis was a citizen of the Kyrgyz Republic, fascioliasis was diagnosed

during his temporarily residing in Fergana. There were no cases reported in Kokand, Besharik, Dangara, Sokh, Uzbekistan, Uchkuprik, Furkat, and Yazyavan districts of Fergana region. Analysis of regional cases showed that 17 (29.8%) and 40 (70.2%) patients were diagnosed among urban were rural residents respectively.

42 (73.7%) of the patients were women and 15 (26.3%) were men. The patients aged from 8 to 66 years, with an average age of 31.8 ±1.04. 13 of them aged under 18 years (22.8%) and 44 (77.2%) were over 18 years.

The results of the analysis of patients' profession are shown in Figure 1. Majority of patients were housewives - 36.8%, pupil - 19.3%, students - 12.3%, workers, retirees, temporarily unemployed – by 5.3%, and representatives of other sectors - 15.7%.

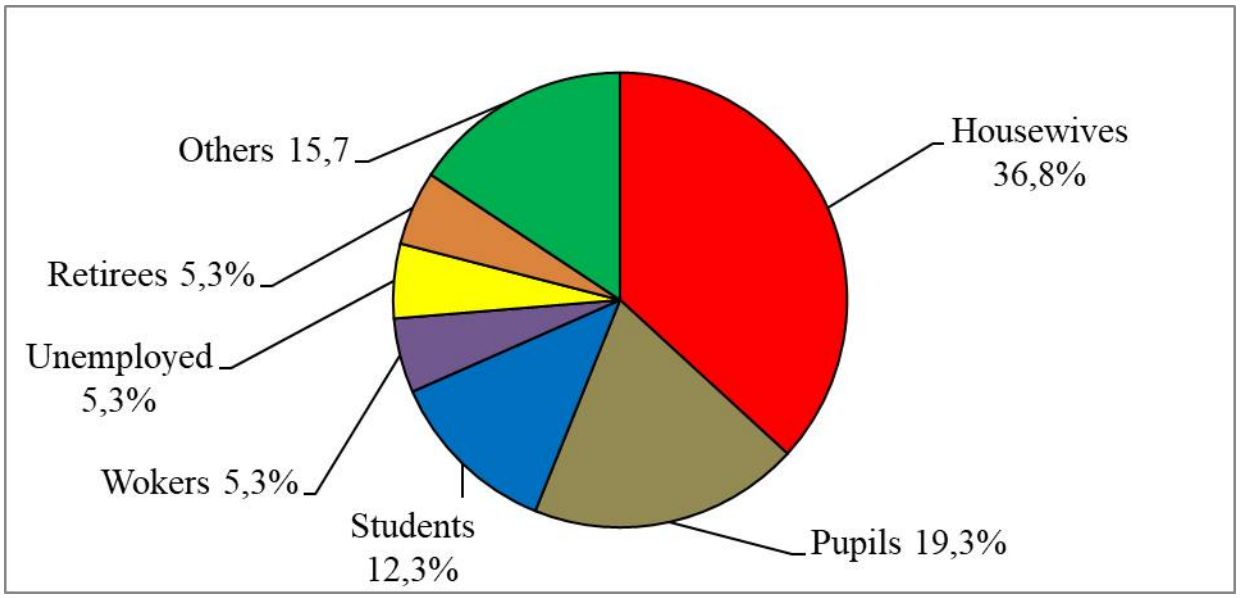


**Figure 1. Distribution of patients according with profession.**

The following factors at risk were identified according to epidemiological anamnesis, 26.3% of patients associated the disease with the consumption of unwashed fruits and vegetables, 22.8% - with consumption of greens, 17.5% of patients with drinking water. 5.3% of patients associate bathing in streams, 5.3% of patients use dirty hands, and 5.3% of patients associate with the fishing process. 17.5% of those surveyed did not link the disease with a specific cause, but the factors listed above were not ruled out too (Figure 2).

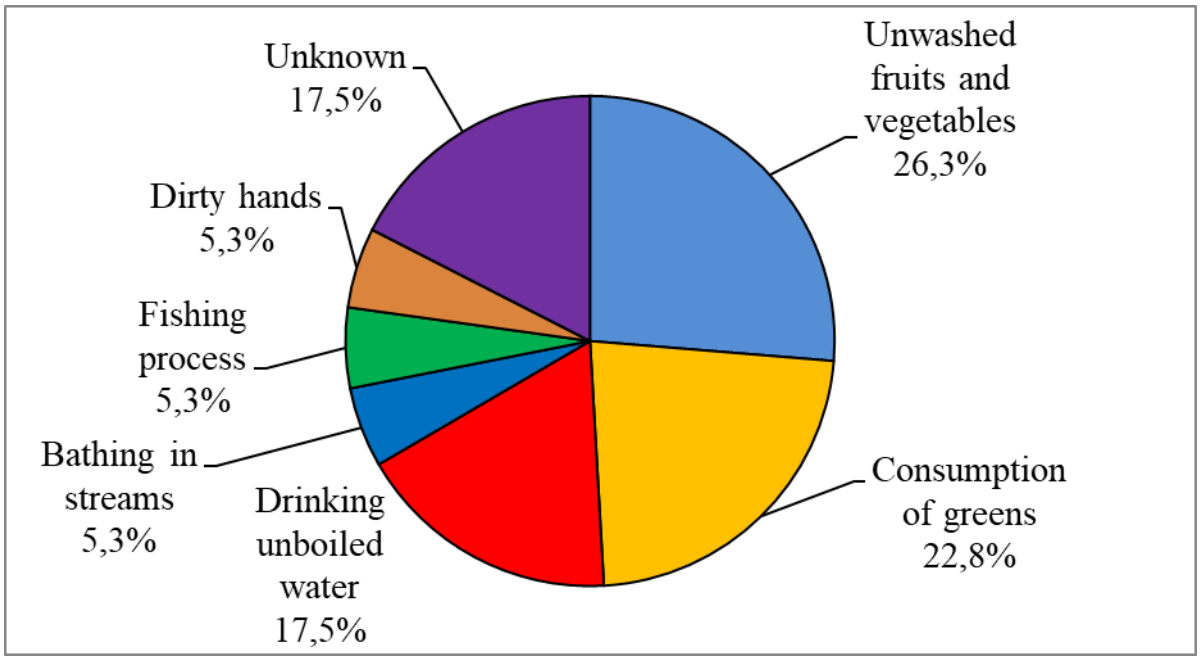

**Figure 2. Factors at risk for Fasciola infection.**

The results of fascioliasis incidence during the year are shown in Figure 3.

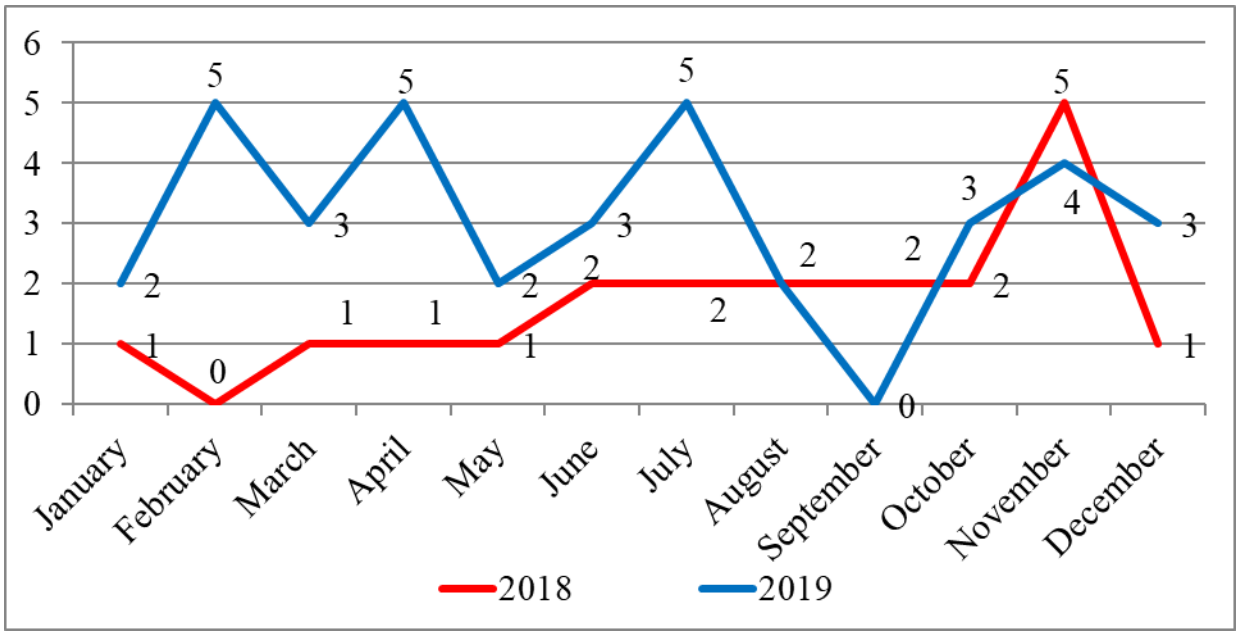


**Figure 3. Monthly dynamics of fascioliosis morbidity.**

Analysis of the data showed that a clear seasonal specificity of fascioliasis morbidity was not identified, however 5 from 20 cases were registered in 2018 (25%) were detected in November.

The incidence of fascioliasis is increasing in many countries around the world, especially in the countries along the Nile Delta [17]. In Fergana region, the incidence rate in 2019 increased by 85% compared to 2018. The incidence rate in the rural population is much higher than in the urban residents, and our results did not differ from the world literature data [18, 19].

A lot of reported data describe the prevalence of fascioliasis among men or no difference between the sexes [20], in our study, the proportion of women in the morbidity rate was 73.7%. Our study also found that the incidence of the disease is increasing with age and that it was more common in the working-age population.

Consumption of cress-lettuce leaves as a risk factor for infection has been reported in a number of articles [21, 22], and some authors suggest consuming irrigated greens from stagnant water basins, wild plants in such ponds, unboiled water contaminated with adolescent parasites, or bathing in such water sources [6]. In our study, the main risk factor of fascioliasis is associated with eating unwashed greens, fruits and vegetables, and drinking water from surface water bodies.

**Conclusion**

1. In 2018-2019, fascioliasis was registered mainly in the rural population of Fergana region, 73.7% of patients were women and 77.2% were over 18 years old.
2. In the study of occupational affiliation, Analysis of the professional activities of the patients showed that housewives belong to the risk group, apparently due to often consumed unwashed greens and fruits and drinking water from surface water bodies (arycs).
3. Monthly analysis of the morbidity dynamics did not reveal seasonal dependence.

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# MODERN MORPHOKINETIC ASSESSMENT OF EMBRYO QUALITY (literature review)

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✓ ***Resume***

***The embryological stage of ART programs is one of the most important, since the assessment of the quality of oocytes, their fertilization and in vitro cultivation to the stage of preimplantation embryos largely determine its success. Morphological evaluation of embryos remains the main method of embryo selection. Time-lapse microscopy is one of the modern methods of selecting a high-quality embryo for transfer. In the analysis of many retrospective and prospective studies, they emphasize the advantage and lack of differences compared to traditional morphological assessment of embryo quality Almost all publications devoted to time-lapse microscopy have focused on determining the timing of specific events of embryo division and then using this information to create algorithms to help select embryo for transfer.***

***Key words: assisted reproductive technologies, infertility, elective blastocyst transfer, time-lapse microscopy.***

# EMBRYO SIFATINING MODERN MORFOKINETIK BAHOLASHI (Adabiyot sharhi)

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✓ ***Rezyume***

***ART dasturlarining embriologik bosqichi eng muhimlardan biri hisoblanadi, chunki oositlar sifatini baholash, ularni urug'lantirish va ekstrakorporal usulda etishtirish embrionlarning preimplantatsiya bosqichiga qadar. Embrionlarni morfologik baholash embrion tanlashning asosiy usuli bo'lib qolmoqda. Vaqt o'tishi bilan mikroskopiya - bu ko'chirish uchun yuqori sifatli embrionni tanlashning zamonaviy usullaridan biridir. Ko'pgina retrospektiv va istiqbolli tadqiqotlarni tahlil qilishda ular embrionlarning sifatini an'anaviy morfologik baholash bilan taqqoslaganda afzallik va farqlarning yo'qligini ta'kidlaydilar. time-lapse mikroskopiya bo'yicha deyarli barcha nashrlarda embrionning bo'linishining aniq vaqtlarini belgilashga va keyinchalik ushbu ma'lumotdan foydalanish uchun embrionni tanlashga yordam beradigan algoritmlarni yaratish uchun foydalanilgan.***

***Kalit so'zlar: yordamchi reproduktiv texnologiyalar, bepushtlik, elektif blastotsist ko'chirilishi, time-lapse mikroskop***

# СОВРЕМЕННАЯ МОРФОЛОГИЧЕСКАЯ И МОРФОКИНЕТИЧЕСКАЯ ОЦЕНКА КАЧЕСТВА ЭМБРИОНОВ

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✓ ***Резюме***

***Эмбриологический этап программ ВРТ является одним из важнейших, поскольку оценка качества ооцитов, их оплодотворение и куль¬тивирование in vitro до стадии преимплантационных эмбрионов во многом определяют ее успех. Морфологическая оценка эмбрионов остается основным методом селекции эмбрионов. Time-lapse микроскопия является одним из современных способов выбора качественного эмбриона на перенос. При анализе многих ретроспективных и проспективных исследований подчеркивают преимущество и отсутствие различий по сравнению с традиционной морфологической оценкой качества эмбрионов Почти все публикации, посвященные time-lapse микроскопии, были сфокусированы на определении времени конкретных событий деления эмбриона и последующем использовании этой информации для создания алгоритмов, помогающих выбрать эмбрион для переноса.***

***Ключевые слова: вспомогательные репродуктивные технологии, бесплодие, элективный перенос бластоцисты, time-lapse микроскопия.***

**Relevance**

The most effective method of infertility treatment today is the use of assisted reproductive technologies (ART). The introduction of new assisted reproductive technologies into clinical practice has significantly expanded the possibility of obtaining offspring with seemingly previously incurable forms of infertility in marriage. Every year, assistive technologies are only improving, and today medicine and embryology have stepped far beyond the thinking of the 20th century [17]. The embryological stage of ART programs is one of the most important, since the assessment of the quality of oocytes, their fertilization and in vitro cultivation to the stage of preimplantation embryos largely determine its success. Morphological assessment of embryos remains the main method of embryo selection, according to which embryologists evaluate a number of parameters: the number of blastomeres, the correspondence of their size and shape to the developmental stage, the percentage of fragmentation, the degree of compaction of the embryo and an increase in the blastocyst cavity, the characteristics of the cells of the inner cell mass and trophoblast. Evaluation of the quality of cultured embryos is extremely in demand, since it is a kind of tool for selecting an embryo that has the highest chances of implantation [1]. Some clinics have introduced advanced technology for continuous monitoring of embryos, which allows you to examine, assess the quality and rate of development of embryos without opening the incubator and without removing them outside. The system is based on the use of the innovative time-lapse video technology Time-lapse TLT technology, during which every embryo is photographed at a given frequency from the moment of fertilization and throughout the entire incubation period. But this is not the only value of time-lapse technology [7, 8, 9]. In IVF cycles, the embryologist most often deals with several embryos. These embryos differ: some are ideal, others are less promising, and some are abnormal. One of the most important tasks facing the embryologist is the selection of the most promising embryos for transfer into the uterine cavity. To solve this problem, the embryologist evaluates the appearance of the embryos - he studies certain morphological signs. During the entire cultivation time (up to 120 hours), the embryologist can afford only a very limited number of examinations of the embryos - usually 2-4 short examinations. We can say that with the traditional method of assessment, the embryologist had only a few “frames” from the early life of the embryos, on the basis of which he must select the best ones. The rest of the time, the development of embryos was hidden from the embryologist. Traditional methods of embryo selection are still associated with a relatively low IVF success rate with a clinical pregnancy rate (PR) of ~30% per transfer [1]. This often results in more than one embryo transfer at a time, which increases the risk of multiple pregnancies and associated neonatal complications and health problems associated with maternal pregnancy [2, 3, 4]. With the advent of the technology of continuous monitoring of embryos, the embryologist receives the most detailed video chronicle of the early development of each individual embryo. In the course of its development, the embryo goes through a number of key events (stages of development) and the time it takes for the embryo to move from one stage of development to the next is an important indicator in assessing its quality and implantation potential - the kinetics of development. Thanks to the time-lapse technology, a new tool has

appeared in the embryologist's arsenal, which makes it possible to improve the selection of the most promising embryos and thereby increase the likelihood of pregnancy. Clinical researchers have focused on finding non-invasive embryonic markers that improve embryo selection and offer a consistent embryo protocol without compromising overall IVF success. Payne and colleagues [7] first applied time-lapse observations in 1997, when they documented the processes during fertilization and the first steps in the development of 38 oocytes. A decade later, Mio and Maeda [18] extended the analysis period to the blastocyst stage and characterized dynamic and morphokinetic events from fertilization to blastocyst hatching in 286 embryos. Using negative and positive predictive variables, an embryo selection algorithm based on morphokinetics was determined, categorizing embryos into 10 categories. The clinical significance of these promising results has not been confirmed, and prospective randomized trials are needed. In addition, both algorithms require large datasets to develop an embryo model, as well as validating the model in a separate dataset. Quality markers for early embryos are of particular value in clinics where extended embryo culture is not possible. Following a groundbreaking study by Payne et al., TLT allowed Coticchio and colleagues to draw up a detailed map of events during fertilization that could be putative indicators of embryo quality [2]. Twenty-eight parameters were described that were previously unknown or poorly documented. The time intervals between four morphokinetic events have been shown to predict the quality of the embryo on day 3 [2]. Further research is needed to evaluate these markers as predictors of day 5 embryo quality and clinical outcome, but TLT is the only technology available that allows embryos to be assessed based on such criteria. A comprehensive literature review has recently been published on the predictive value of morphokinetic parameters for embryo ploidy status [3]. A total of 13 studies were included that had significant heterogeneity in terms of design, inclusion criteria, embryo biopsy, statistical approach, and outcome measures. Although most studies found significant differences in the morphokinetic parameters of euploid and aneuploid embryos, none of them provided sufficient evidence to recommend the clinical use of TLT to assess embryo ploidy. To the same conclusion, another recent review was made, which discussed the relationship between morphokinetics and aneuploidy [4]. However, the combination of PGT-A with morphokinetic analysis can help in the selection of the embryo with the highest implantation potential [5]. Currently, automatic annotation has not resolved the issue of the accuracy of morphokinetic analysis. Automation requires human oversight to correct possible but recurring annotation inaccuracies that could affect the performance of prediction models for embryo selection. Therefore, as with other activities, each laboratory must implement appropriate quality control and quality assurance programs [6]. As with any new intervention, TLT should be introduced into routine clinical practice only after rigorous tests demonstrating patient benefit [7,8]. However, a clear increase in the number of successful IVF attempts using TLT has yet to be proven. The most recent Cochrane review (nine RCTs, 2955 women) [9] reported insufficient evidence for differences in live birth rates (odds ratio (OR0 1.12, 95% CI 0.92–1.36), miscarriage rate (OR 0.63 , 95%).% CI 0.45-0.89) or percentage of clinical pregnancy (OR 0.95, 95% CI 0.78-1.16) for TLT in combination with software for embryo selection versus traditional incubation and evaluation. Likewise, the putative benefit of TLT has not been demonstrated by meta-analyzes [9,10,11]. Conversely, one meta-analysis using a different methodological approach suggested a beneficial effect of TLT compared to conventional incubation and scoring, respectively, reporting significantly higher rates of ongoing pregnancy (51.0 versus 39.9%; OR 1.54, 95% CI 1.21–1.97), a significantly lower number of early pregnancy loss cases (15.3 versus 21.3%; OR 0.66, 95% CI 0.47–0.94), and a significantly increased frequency of live births ( 44.2 versus 31.3%; OR 1.67, 95% CI 1.13–2.46) [12]. The cumulative live birth rate was estimated in a recent retrospective study of 1882 cycles comparing interval versus routine incubation / score [15]: the study showed similar cumulative live birth rates for interval and standard incubation / score (51.7 versus 51.2%; OR 1 , 02, 95% CI: 0.85-1.22), although the rate of live births with fresh embryo transfer was higher for TLT cycles (36.8 versus 33.9%, adjusted OR 1.28, 95% CI: 1. 05-1.57). The main reason for controversy over the effectiveness of TLT is that it involves two distinct components, namely a continuous incubation environment and selection of embryos using imaging software. In this respect, these two components were not effectively separated in most studies, possibly masking the weight of the effect of better culture conditions or improved embryo selection on the reported results [9]. Importantly, no safety

concerns have been reported following culture of embryos in TLT incubators, and obstetric and perinatal outcomes such as duration of pregnancy, congenital malformations and birth weight are comparable [13,16,14] or better [15] compared to standard incubation.

## Conclusion

Thus, the study of the morphology and rates of development of embryos made it possible to develop morphokinetic criteria for assessing the quality of embryos, which significantly complements the traditional approaches. Although there is currently no evidence from RCTs for the clinical benefit of TLT, it is reasonable to assume that, compared to static observation, continuous monitoring of the embryo in an undisturbed environment will provide more information about embryo development and is expected to improve the identification of good outcomes - embryo prognosis for clinical use. To firmly establish the presumed beneficial effect of TLT, more well-designed and powerful enough RCTs are needed that report live births and perinatal outcomes.

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# MODERN APPROACHES TO ESTIMATING THE OVARIAL RESERVE IN THE OLDER REPRODUCTIVE AGE

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✓ ***Resume***

***The emergence and development of assisted reproductive technologies has become a new stage in the development of infertility treatment, in addition, they have provided a number of new opportunities in the study of pathogenetic, morphological, embryological, cytogenetic aspects of reproductive medicine. The question remains open, what is the cornerstone of age-related infertility - the quality of oocytes or impairment in implantation? This review discusses current approaches to assessing the ovarian reserve in older reproductive age, the remaining problems in this area, as well as promising areas of research designed to provide solutions to emerging challenges.***

***Key words: assisted reproductive technologies, in vitro fertilization, ovarian reserve, gametes***

# СОВРЕМЕННЫЕ ПОДХОДЫ К ОЦЕНКЕ ОВАРИАЛЬНОГО РЕЗЕРВА В СТАРШЕМ РЕПРОДУКТИВНОМ ВОЗРАСТЕ

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✓ ***Резюме***

***Появление и развитие вспомогательных репродуктивных технологий стало новым этапом развития лечения бесплодия, кроме того они дали ряд новых возможностей в изучении патогенетических, морфологических, эмбриологических, цитогенетических аспектов репродуктологии. Открытым остаётся вопрос, что является краеугольным камнем возрастного бесплодия - качество ооцитов или нарушение в имплантации?. В настоящем обзоре обсуждается современные подходы к оценке овариального резерва в старшем репродуктивном возрасте, сохраняющиеся в этой сфере проблемы, а также перспективные направления исследований, призванные дать решение возникающим вызовам.***

***Ключевые слова: вспомогательные репродуктивные технологии, экстракорпоральное оплодотворение, овариальный резерв, гаметы***

# KECH REPRODUKTIV YOSHDAGI OVAR REZERVLARNI BAHOLASHGA ZAMONAVIY USLUBLAR

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Toshkent tibbiyot akademiyasi

✓ ***Rezyume***

***Yordamchi reproduktiv texnologiyalarning paydo bo'lishi va rivojlanishi bepushtlik davosining rivojlanishida yangi bosqichga aylandi, shuningdek, ular reproduktiv tibbiyotning patogenetik, morfologik, embriologik, sitogenetik jihatlarini o'rganishda bir qator yangi imkoniyatlar yaratdi. ochiq, yoshga bog'liq bepushtlikning asosi nima - oositlarning sifati yoki implantatsiyaning buzilishi? ... Ushbu sharhda yoshi kattaroq reproduktiv yoshdagi tuxumdonlar zaxirasini baholashning dolzarb yondashuvlari, ushbu sohada qolgan muammolar, shuningdek, paydo bo'lgan muammolarni hal qilish uchun ishlab chiqilgan istiqbolli tadqiqot yo'nalishlari muhokama qilinadi.***

***Kalit so'zlar: yordamchi reproduktiv texnologiyalar, ekstrakorporal urug'lantirish, tuxumdonlar zaxirasi, jinsiy hujayralar***

**Relevance**

The birth of children at a late reproductive age is a reality of modern civilized society, which causes a certain concern among doctors. The average age of primiparous mothers in the Netherlands rose from 24.4 years in 1970 to 29.2 years in 1999, with the majority of women giving birth over 30 years old. Based on an analysis of the birth rate in the UK for 2001-2003. revealed a tendency of increasing the age of primiparous women over 35 years old. There is a tendency for the age of women who prefer IVF to increase in different countries from 4.9 to 37.5% [2]. According to the WHO, the age of women is considered to be reproductive from 15 to 49 years [3]. It is customary to divide the reproductive age of women: 15-19 years - the period of early reproductive activity; 20-34 years - the period of the highest reproductive activity; 35-44 children - the period of fading reproductive activity; 45-49 years is the period of late reproductive activity [4]. The average age at menopause for most women is 50, but the ability to conceive begins to decline much earlier. By the age of 37, there is a decrease in the number of premordial follicles, which can be considered a physiological process [5].

Studies have shown that a slight decrease in reproductive ability is noted already from 27-28 years, more pronounced - between 35 and 40 years, and by 45 years of reproductive ability approaches zero [6].

The term ovarian reserve is used to describe the quantity and quality of the follicle pool. A decrease in ovarian reserve means a relative decrease in the number of follicles and / or a decrease in the quality of eggs [6]. In 1983, Garcia described for the first time the phenomenon of a decrease in ovarian reserve as a decrease in estradiol levels below 300 pg / ml and a decrease in the number of punctured oocytes. To date, there is no standardized definition of the term "decrease in ovarian reserve" [7]. An inadequate assessment of ovarian reserve can lead to inadequate cancellation of the cycle, increased cost of treatment and stress for patients [8].

About 33.5% of women of older reproductive age require the use of donor oocytes [7]. Modifications to the superovulation induction regimens and the use of assisted hatching do not increase the effectiveness of the IVF program; the success of treatment is determined by the state of the ovarian reserve of patients. The ability of the ovaries to respond to gonadotropic stimulation has been termed ovarian reserve. There are no absolutely reliable tests in predicting premature ovarian aging.

Surrey et al. Proposed a decrease in follicles and / or the number of obtained oocytes less than 5 with a standard age-specific stimulation protocol as a criterion for a decrease in ovarian reserve [8]. The decrease in ovarian reserve is a biological, not a chronological factor, and it is different for each woman. Nevertheless, age is considered the most significant factor in assessing ovarian reserve [4]. To date, non-invasive methods for determining the ovarian reserve are determining the level of FSH, estradiol, AMH, inhibin B and counting the number of antral follicles on ultrasound. Some scientists believe that the level of FSH in women of older reproductive age indirectly estimates ovarian reserve, and inhibin B is an earlier and sensitive marker of decreased ovarian reserve, while other authors disagree with such data [23]. The results were quite contradictory. Seifer et al. Consider a decrease in inhibin B less than 45 pg / ml to be an indicator of a reduced ovarian reserve [22], and Creus considers inhibin B to be an insufficient predictive marker of ovarian reserve, in contrast to a woman's age and basal FSH [23]. Yong et al. Determined the correlation of inhibin Bc with the number of oocytes and suggested a significant probability of assessing the ovarian reserve upon stimulation of the ovaries with FSH preparations [24]. Fried et al. Also found a relationship between inhibin B levels and oocyte count, but did not find a relationship with pregnancy. The ratio between IGF-1: IGFBP-1 showed a significant increase in women who became pregnant [24].

Unlike age-related changes in FSH, LH, estradiol, inhibin B is currently not used in the routine diagnosis of infertility. The same applies to AMG, the insulin-like growth factor-1. Martinez suggested that low levels of peak gonadotropin reducing factor can be used as a marker of poor ovarian response [36], while vanRooij has shown that a decrease in AMH levels indicates follicular loss [24]. Other scientists consider an early marker of decreased ovarian reserve - increased FSH [53]. It has been suggested that an increase in FSH occurs in response to a decrease in the secretion of ovarian inhibins [23,24]. Thus, inhibins A and B together affect the restriction of FSH secretion.

The relationship between a decrease in fertility and a woman's age has been confirmed by many studies using ART methods. TseYeunTan, et al. [20] in a retrospective study

of 3412 IVF cycles in different age groups found that the frequency of pregnancy in women significantly decreases with increasing age. In women under 30, the pregnancy rate was 50%, the birth rate was 40%, and at 40-44 years old, it was 13.2% and 5.9%, respectively. Conclusion, pregnancy rate decreases with age, and pregnancy loss increases. This decrease was associated with the age of women, and not with the quality of sperm, proved a study based on the analysis of the results of 3990 cycles of intrauterine insemination in women of different age groups [21]. Another comparative study on IUI, which included an analysis of the outcomes of 4246 IUI cycles in women from 25 to 45 years old [22] showed that the older the woman, the total effectiveness of IUI decreased almost 3 times compared with younger patients. The conclusion of the study is that women of the older age group should be offered more effective methods of ART-IVF, ICSI. Studying a group of women entering the first IVF / ICSI protocol, scientists determined that the level of FSH and the age of women are more accurate in predicting the onset of pregnancy than inhibin V. the frequency of pregnancy [19]. The rise in serum FSH concentration is secondary to a decrease in inhibin levels. Inhibin is an indicator of the size of the population of growing follicles at the beginning of the cycle and is not detected in menopause, being a predictor of the onset of ovarian wasting. A mathematical model for calculating the total number of ovarian follicles revealed that the decrease in the number of follicles is biexponential to age. The rapid rate of decrease in the number of follicles leaves an average of 1000 follicles by 51 years of age. The effect of a stepwise reduction in the number of follicles on subsequent menstrual function was calculated by a mathematical model. So, with a decrease in the number of follicles by 50% before 30 years, it led to the achievement of a threshold of 44 years and + for six months after 37.5 years, when the rate of decrease increases, menopause is obtained at 48 years. A 90% decrease in follicle count before age 14 leads to early menopause at age 27. If the rate of atresia remained the same, the age of menopause would reach 71 years [6]. Thus, there is a theoretical possibility that slowing the rate of aging of the ovaries after the critical age will delay the onset of menopause and increase fertility in older reproductive years. The main conclusion of the work is that in order to predict the age of menopause, the ovaries must be measured biologically, not chronologically. The increase in LH occurs after 5-10 years. The factors influencing the decrease in the pool of antral follicles, according to Mitchell P. et al., Also affect the number of quality oocytes and the

There is a theory of a parallel decline in quantity and quality, which explains the significant variability in reproductive potential in women of the same age [17,20]. Patients of older reproductive age with a preserved rhythm of menstruation are heterogeneous in terms of the functional state of the reproductive system. Women with ovarian reserve parameters: FSH <10 IU / L, inhibin B - 35-40 pg / ml, ovarian volume - 5-7 ml, the number of antral follicles - 4-5 - are promising for the treatment of infertility by IVF, although the number of cases of onset pregnancy does not exceed 15%. Patients with FSH levels> 15 IU / L, inhibin-B <20 pg / ml, ovarian volume <3 ml and antral follicle count 0-1 are not promising for ovarian stimulation and obtaining their own oocytes. The influence of genetic factors and anamnesis, the environment on the ovaries of women has been proven. So, D. Nikolaou, G.S. Basir, M. Al-Ani, S. Andronikou showed a statistically significant effect of smoking and pelvic inflammatory disease on ovarian response to ovarian stimulation, also noting that body mass index, the presence of endometriosis, hepatitis and AIDS in their study had little effect on ovarian response to stimulation. The data provided by Johnson may change the concept of fertility treatment in the future. The scientist announced the discovery of ovarian stem cells in mice, which allow oocytes to renew during their life [1,3].

Perhaps the creation of an ovarian tissue bank in the future will give good chances to preserve the reproductive capabilities of women of older reproductive age, as well as in patients with cancer after chemotherapy and radiation therapy [24].

## Conclusion

There is a theoretical possibility that a slowdown in the aging of the ovaries after a critical age will delay the onset of menopause and increase fertility in older reproductive age. It should be noted that not all methodological and theoretical issues in reproductive medicine remain resolved, but this, in turn, stimulates the emergence new promising directions and research.

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## СЕРДЕЧНО-СОСУДИСТЫЙ РИСК У БОЛЬНЫХ СИСТЕМНОЙ СКЛЕРОДЕРМИЕЙ

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✓ ***Резюме***

***Проанализированы частота и особенности клинических проявлений заболеваний сердечно-сосудистой системы у больных системной склеродермией (ССД). В исследование были включены 55 пациентов в возрасте от 35 до 60 лет, у которых был диагностирован ССД. Сердечно-сосудистый риск изучили с применением шкалы SCORE, а также, были проведены инструментальные методы- ЭКГ и ЭхоКГ. Среди обследованных отмечен высокий уровень заболеваемости сердечно-сосудистыми заболеваниями. Однако субъективные жалобы были относительно редки. По данным ЭКГ установлено, что у 74,5% больных с ССД отмечались патологические симптомы, в том числе ишемические изменения у 46,3% больных. Острые сердечно-сосудистые заболевания (ИМ и ОНМК) были зарегистрированы у 15 пациентов, что составило 27,3% от общего числа больных с ССД. Полученные результаты показали, что поражения сердечно-сосудистой системы у больных с ССД проявляются низкой выраженностью симптомов.***

***Ключевые слова: системная склеродермия, сердечно-сосудистые заболевания, острые сосудистые проявления, артериальная гипертензия.***

## ТИЗИМЛИ СКЛЕРОДЕРМИЯ БИЛАН КАСАЛЛАНГАН БЕМОРЛАРДА КАРДИОВАСКУЛЯР ХАВФ

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✓ ***Резюме***

***Тизимли склеродермия (ТСД) билан касалланган беморларда юрак-қон томир тизими касалликлари клиник кўринишларининг учраш даражаси ва хусусиятлари таҳлил қилинди. Тадқиқотда ТСД билан касалланган 35 дан 60 ёшгача бўлган 55 нафар бемор олинди. Беморларда юрак-қон томир тизими касалликлари хавфини аниқлаш мақсадида SCORE шкаласи буйича таҳлил олиб борилди, шунингдек ЭКГ ва ЭхоКГ текшириш усуллари ўтказилди. Текширилганлар орасида юрак-қон томир касалликларининг юқори даражада учраши қайд қилинди. Шу билан бирга, субъектив шикоятлар нисбатан кам эди. ЭКГ маълумотларига кўра, ТСД билан касалланган беморларнинг 74,5% да патологик белгилар, жумладан, 46,3% беморларда ишемик ўзгаришлар мавжуд эканлиги аниқланди. Ўткир қон-томир касалликлари (миокард инфаркти ва ўткир қон томир етишмовчилиги) беморларнинг 15 нафарида қайд этилган бўлиб, бу ТСД билан оғриган беморлар умумий сонининг 27,3% ни ташкил этди. Олинган натижалар ТСД билан касалланганларда юрак-қон томир тизимининг зарарланиши симптоматик белгиларнинг кам ифодаланиши билан намоён бўлишини кўрсатди.***

***Калит сўзлар: Тизимли склеродермия, юрак-қон томир касалликлари, ўткир қон томир ҳодисалари, артериал гипертензия.***

## CARDIOVASCULAR RISK IN PATIENTS WITH SYSTEMIC SCLERODERMIA

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✓ ***Resume***

***The frequency and features of clinical manifestations of diseases of the cardiovascular system in patients with systemic scleroderma (DM) are analyzed. The study included 55 patients aged 35 to 60 years who were diagnosed with SSD. Cardiovascular risk was studied using the SCORE scale, as well as instrumental methods of ECG and Echocardiography. Among the surveyed, a high incidence of cardiovascular diseases was noted. However, subjective complaints were relatively rare. According to ECG data, 74.5% of patients with SSD had pathological symptoms, including ischemic changes in 46.3% of patients. Acute cardiovascular events (MI and OSN) were registered in 15 of the main groups, which accounted for 27.3% of the total number of patients with SSD. The results obtained showed that lesions of the cardiovascular system in patients with SSDS show low severity of symptoms.***

***Keywords: systemic scleroderma, cardiovascular diseases, acute vascular events, arterial hypertension.***

**Актуальность**

Сегодня сердечно-сосудистые заболевания являются наиболее распространенными в мире и остаются основной причиной инвалидности и смерти. По мнению многих экспертов, эта проблема будет сохраняться в этой тенденции в ближайшие десятилетия. По данным экспертов Всемирной организации здравоохранения, 31% всех смертей вызваны заболеваниями сердечно-сосудистой системы [2;7].

Недавние исследования показали, что основной причиной ожидаемой продолжительности жизни при ревматических заболеваниях являются сердечно-сосудистые осложнения, связанные с атеросклеротическим поражением сосудов. Согласно многочисленным исследованиям, доклиническая форма атеросклероза чаще встречается у пациентов с ревматоидным артритом и системной красной волчанкой, чем в общей популяции [2;5;8]. Эти случаи связаны с сердечно-сосудистой и аутоиммунной патологией [4;3] станет основой для изучения взаимозависимости. Однако сосудистая патология играет ведущую роль при системной склеродермии. Механизмы поражения сердечно-сосудистой системы и связанных с этим осложнений остаются неизученными [1]. Однако анализы, проведенные в 2015 г., показали, что эта патология имеет высокий риск смерти от повреждения сосудов [6]. Эти данные свидетельствуют о необходимости изучения клинических особенностей сердечно-сосудистых заболеваний при ССД.

**Цель.** Изучение и прогноз распространенности и характеристики клинических проявлений сердечно-сосудистых заболеваний при ССД.

**Материал и методы**

Исследование проводилось в отделении ревматологии Бухарского областного многопрофильного медицинского центра в 2018 году у 55 пациентов с системной склеродермией в возрасте от 35 до 60 лет. Диагноз системной склеродермии ставился на основании критериев ACR (1980) и ACR / EULAR (2010). Пациенты были взяты на обследование после подтверждения диагноза заболевания в соответствии с действующими диагностическими критериями по результатам клинических, капиллярных и иммунологических данных. У большинства пациентов (71,5%) хроническое течение ССД длилось в среднем 10 лет.

Согласно результатам крупных научных исследований (SCORE, INTERHEART, Fremenheim), коррекция факторов риска важна для снижения смертности от сердечно-сосудистых заболеваний.

Была изучена частота сопутствующих сердечно-сосудистых заболеваний у пациентов с системной склеродермией, а шкала SCORE использовалась для прогнозирования уровней риска возникновения и развития сердечно-сосудистых событий. Учитывались возраст, пол пациента, вредные привычки (курение) и систолическое артериальное давление.

Также были выполнены ЭКГ и ЭхоКГ исследования.

**Результат и обсуждения**

При исследовании состояния сердечно-сосудистой системы у обследованных пациентов было отмечено, что субъективных симптомов не так много. Большинство обследованных пациентов (61,9%) жалоб со стороны сердца не предъявляли. Однако у 21 пациента (38%) был синдром Рейно, признак повреждения капилляров. Однако у значительной части пациентов (56,1%)

признаки сердечно-сосудистых заболеваний были выявлены после целевого опроса и объективного обследования (таблица 1).

**Таблица 1. Состав жалоб на сердечно-сосудистую систему у пациентов с ССД**

| **Симптомы, связанные с сердечно-сосудистой системой** | **Выявлено** | **%** |
|---|---|---|
| Дискомфорт в области сердца | 13 | 23,6% |
| Боль за грудиной | 16 | 29,1% |
| Сердцебиение | 20 | 38,1% |
| Аритмия | 8 | 14,5% |
| Одышка | 22 | 40% |
| Отеки | 6 | 10,9% |
| Бледность, цианоз | 5 | 9,1% |
| Синдром Рейно | 21 | 38% |

Наиболее частыми клиническими признаками ССД являются одышка при физической нагрузке (40%), сердцебиение (38,1%), боль в груди (29,1%) и дискомфорт в области сердца (23,6%), и ощущение перебоев в работе сердца (14,5%).

Когда риск сердечно-сосудистых заболеваний у пациентов под контролем был проанализирован по шкале SCORE, группа пациентов с низким сердечно-сосудистым риском составила 68%, группа с умеренным - 5%, группа с высоким - 9% и группа с очень высоким. Оно составило 18% (рисунок 1).

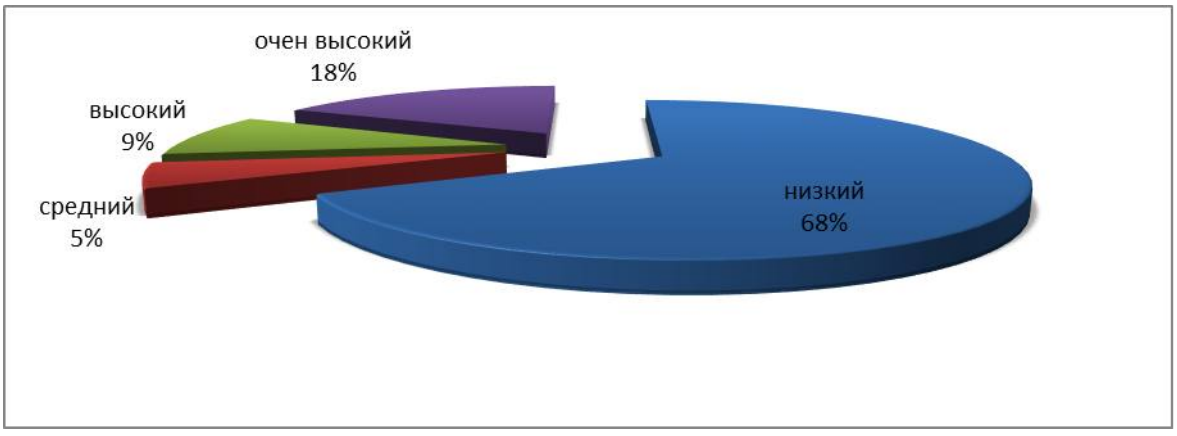


*Рисунок 1. Результаты обследования по шкале SCORE у пациентов с ССД*

Различные патологические изменения наблюдались при анализе параметров ЭКГ у 41 (74,5%) пациента. Из них у 36,6% пациентов наблюдались нарушения внутрижелудочковой проводимости (чаще блокада левой ножки пучка Гиса), желудочковая (14,6%) и предсердная (12,2%) экстрасистолия, а также нарушения процессов реполяризации миокарда левого желудочка (61%).

При ежедневном наблюдении за ЭКГ ишемические изменения сегмента ST выявлены у 19 пациентов, что составило 46,3% пациентов с патологическими

признаками при ЭКГ. Часто аналогичные изменения на ЭКГ наблюдались у пациентов с высоким уровнем активности заболевания и длительным анамнезом.

Более чем у половины пациентов (54,5%) обследование ЭхоКГ выявило признаки гипертрофии левого желудочка (ГЛЖ) (рис. 2).

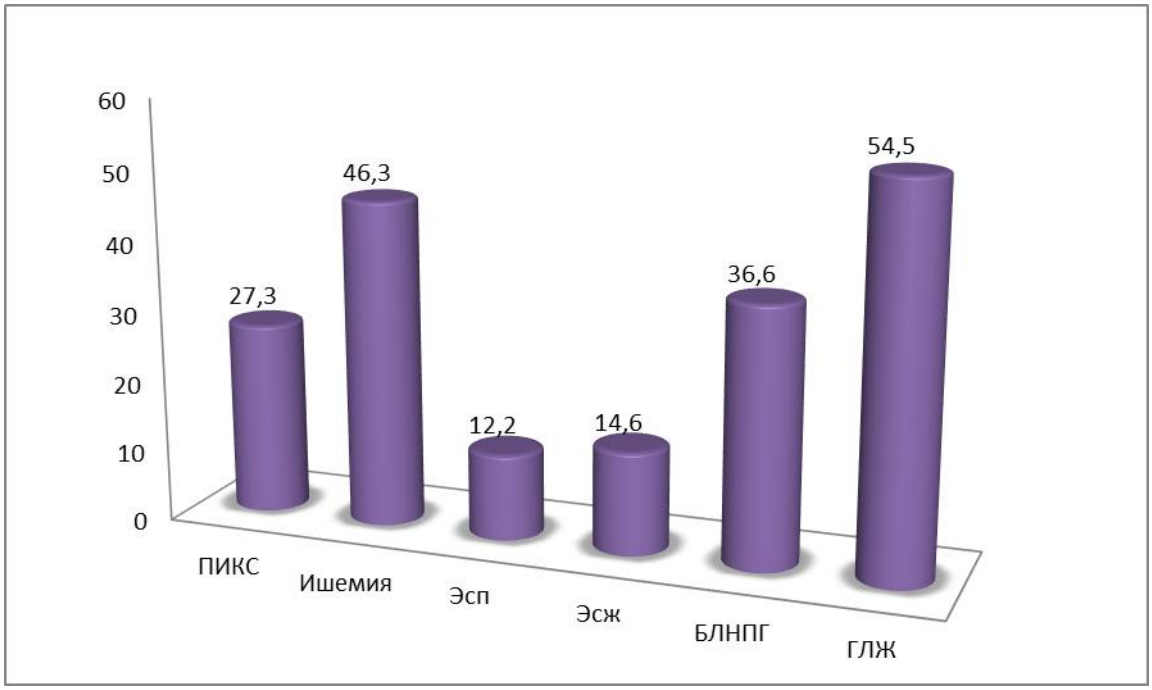


*Рисунок 2. Патологические изменения ЭКГ и ЭхоКГ обследования пациентов с ССД. Постинфарктный кардиосклероз, ЭСп-экстрасистолия предсердий, ЭСж-желудочковая экстрасистолия, БЛНПГ - блокада левой ножки пучка Гиса, ГЛЖ-гипреторофия левого желудочка.*

У 15 пациентов, то есть у 27,3% обследованных, или у 53,3% пациентов с клиническими признаками ишемической болезни сердца в группе, в анамнезе были острые сосудистые события (инфаркт миокарда и острая сосудистая недостаточность). При анализе данных было обнаружено, что инфаркт миокарда (ИМ) развивался в среднем в течение 10 лет от начала заболевания.

В большинстве случаев локализация ИМ была в передней стенке (7 пациентов) и верхушке миокарда (6 пациентов), в задней диафрагмальной стенке левого желудочка только у одного пациента. На момент поступления в больницу у всех этих пациентов были симптомы хронической сердечной недостаточности, соответствующие II функциональному классу по NYHA.

Только у 1 (6,5%) пациента этой группы в анамнезе имелись острые нарушения мозгового кровообращения, а также остаточные симптомы, такие как парез и нарушения речи (рис. 3).

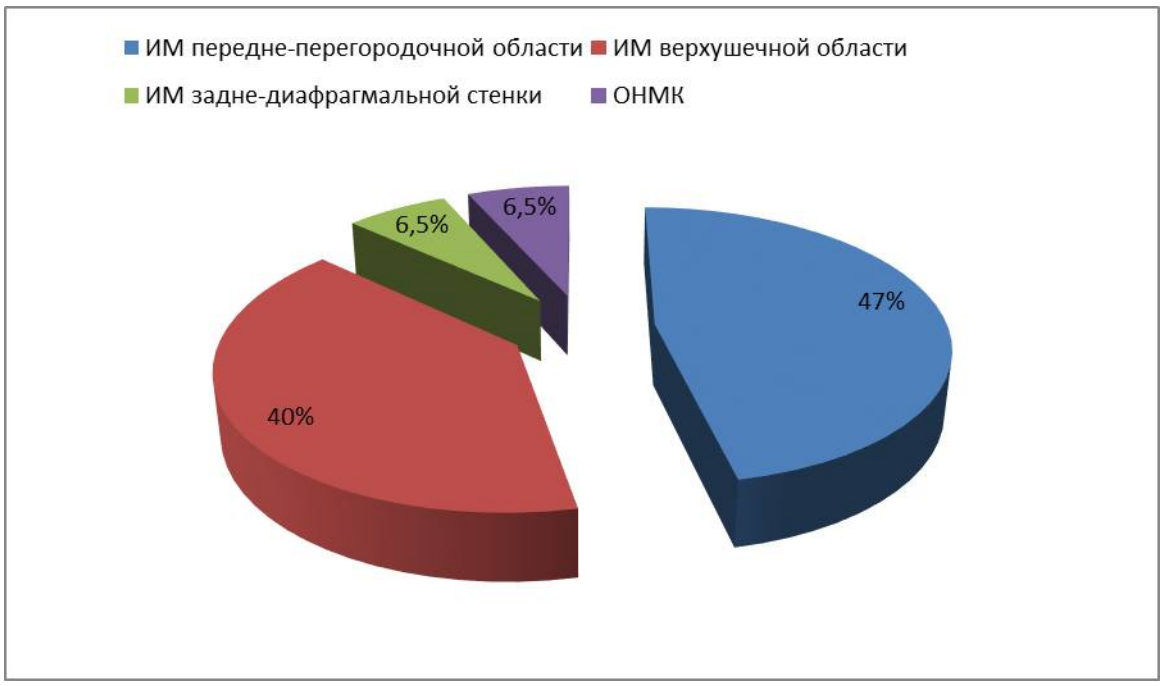


*Рисунок 3. Состав макрососудистых осложнений у пациентов с ССД (15 пациентов).*

**Вывод**

Таким образом, у многих пациентов с ССД было обнаружено наличие ишемической болезни сердца, осложненной ИМ или ОНМК.

Определение риска сердечно-сосудистых заболеваний по шкале SCORE у пациентов с ССД имеет прогностическое значение.

Такой незначительный ход сердечно-сосудистой патологии при ССД также может быть связан с маскировкой макроваскулярных клинических симптомов с помощью активной противовоспалительной и анальгетической терапии для лечения повреждений в пораженные костей, кожи, опорно-двигательного аппарата и внутренних органов.

Еще одна причина несвоевременной диагностики сердечно-сосудистых заболеваний при ССД связана с тем, что врачи считают это заболевание преимущественно заболеванием с небольшим поражением сосудов.

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# RISK FACTORS AND PECULIARITIES OF THE CLINICAL COURSE OF PURULENT INFLAMMATORY DISEASES OF THE UTERINE SUPPLEMENTS IN THE AGE ASPECT

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✓ ***Resume***

***Epidemiological and clinical analysis of the cases of inflammatory diseases of the pelvic organs in women of reproductive age showed that women older than 30 years have less manifested pain and the severity of intoxication syndrome become difficult to diagnose. The main risk factors include a history of sexually trans missed diseases, frequent artificial abortion, early sexual debut and poor contraception culture.***

***Keywords: pelvic inflammatory disease; risk assessment; clinical course.***

# ФАКТОРЫ РИСКА И ОСОБЕННОСТИ КЛИНИЧЕСКОГО ТЕЧЕНИЯ ГНОЙНО-ВОСПАЛИТЕЛЬНЫХ ЗАБОЛЕВАНИЙ ПРИДАТКОВ МАТКИ В ВОЗРАСТНОМ АСПЕКТЕ

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✓ ***Резюме***

***Эпидемиологический и клинический анализ случаев гнойно-воспалительных заболеваний органов малого таза у женщин репродуктивного возраста показал, что у женщин старше 30 клиническая картина отличается меньшей выраженностью болевого и интоксикационного синдром, что затрудняет диагностику. Основными факторами риска являются ранее перенесенные инфекции с половым путем передачи, частые артифициальные аборты, ранний дебют половой жизни и низкий уровень контрацепционной культуры.***

***Ключевые слова: гнойно-воспалительные заболевания придатков матки; оценка риска; клиническое течение.***

# ЁШ ЖИҲАТДАН БАЧАДОН ЎСИМТАЛАРИНИНГ ЙИРИНГЛИ ЯЛЛИҒЛАНИШ КАСАЛЛИКЛАРИНИНГ КЛИНИК ЙЎНАЛИШИ ХАВФ ОМИЛЛАРИ ВА ХУСУСИЯТЛАРИ

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✓ ***Резюме***

***Репродуктив ёшдаги аёлларда кичик чаноқ аъзоларининг йирингли-яллиғланиш касалликлари ҳолатларининг эпидемиологик ва клиник таҳлили шуни кўрсатдики, 30 дан ошган аёлларда клиник манзара оғриқ ва интоксикация синдроми камроқ ифодаланиши билан кечиши ташхис қўйишни қийинлаштиради. Жинсий йўл билан инфекцияларнинг юқиши, тез-тез сунъий аборт кечиши, эрта жинсий ҳаёт дебюти ва контрацептив маданият паст даражаси асосий хавф омиллари ҳисобланади.***

***Калит сўзлар: бачадон ортиқларининг йирингли-яллиғланиш касалликлари; хавфни баҳолаш; клиник кечиши.***

## Acuality

According to A.G. Kornatskaya. (2012)pelvic inflammatory disease (PID), (in the English language literature Pelvic inflammatory disease (PID)) occupy the first place (55-70%) in the

structure of gynecological morbidity and are one of the causes of violations of many functions of organs and systems of the female body [2]. The results of a number of studies indicate that the frequency of purulent-destructive forms of PID does not tend to decrease, but on the contrary, recently it has increased by 13-25% in the general population of women of childbearing age [1,3]. So in the United States, about a million cases of PID are registered annually, this pathology is the cause of 2.5 million outpatient visits and causes up to 150,000 hospitalizations annually. According to the WHO, up to 500 million new cases of infectious diseases with sexual transmission in women of reproductive age are annually registered, one in three of them may subsequently develop pelvic inflammatory disease. According to experts in developed countries, the frequency of PID among women of reproductive age is 10-20% o [4,6]. Currently, various authors name young age, promiscuous behavior, a low level of contraception culture, and living in regions with a high prevalence of sexually transmitted infections as the main risk factors for the onset of inflammatory diseases. The iatrogenic factor is of some importance. At the same time, when analyzing the frequency of pyoinflammatory diseases of the uterine appendages, various authors obtained rather contradictory data related to the difficulties of diagnosis and observation in the follow-up period [2,5]. In this regard, the problem of assessing the significance of various risk factors for the occurrence of pyoinflammatory diseases of the pelvic organs and the characteristics of their clinical course in the age aspect does not lose its relevance.

**The aim of the study** is to conduct an epidemiological and clinical analysis of cases of pyoinflammatory diseases of the pelvic organs in women of reproductive age.

## Material and methods

A retrospective study of medical documentation (case histories, morphological data and laboratory tests) of patients who were observed in the gynecological department of the Bukhara branch of the RSCEMP in Bukhara in 2018-2020 was carried out. 56 cases of pyoinflammatory diseases of the pelvic organs and subject to urgent surgical treatment were identified from the total array of analyzed medical documentation. The manifestations of generalized and local postoperative complications against the background of such pathologies were subject to analysis: purulent salpingitis, pyosalpinx, purulent tubo-ovarian formations, abscesses, parametritis, appendicular infiltrate, pelvioperitonitis and peritonitis. On the first day of hospital stay, all patients underwent operations of various volumes (extirpation of the uterus with appendages, drainage of the abdominal cavity, adnexectomy, tubectomy, tubotomy). Anamnestic data, the number of complications, and features of the course of the postoperative period were evaluated.

Statistical analysis was carried out by the method of analysis of contingency tables with the determination of the relative risk according to Mantel-Hansel in the age-stratified sample. The calculations were performed using the Statistica 12.5 software package (StatSoft Inc., USA).

## Result and discussion

The clinical picture of the studied cases was stereotyped. The patients complained of pain in the lower abdomen, fever, general weakness, dry mouth, nausea, and every fifth patient vomited at the time of admission. Signs of peritoneal irritation were found in 94.6% of patients. The age structure was dominated by women under the age of 30 (67.8% of the total number of clinical cases studied).

We explain the observed differences in clinical manifestations at the time of admission to the admission department of the clinic in patients of different ages by the peculiarities of the organism's reactivity, different intensity of the inflammatory process and microbial agent, and the age of patients.

Figure 1 shows the structure of nosological forms of pyoinflammatory diseases of the pelvic organs in the general sample of patients included in the study.

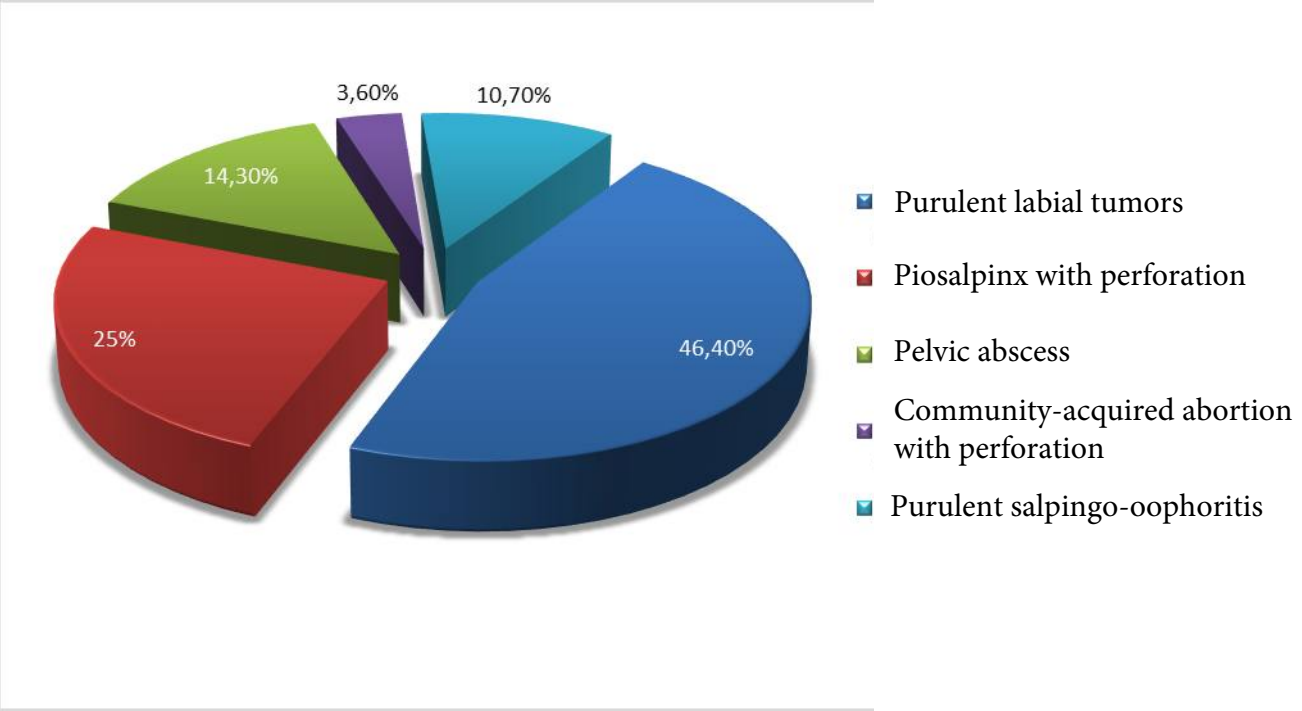


***Figure 1. Structure of purulent-inflammatory diseases of organs small pelvis***

In patients of older age groups, a less manifest clinical picture is observed: against the background of signs of general intoxication, the symptoms of peritoneal irritation were less pronounced, and in the general blood test, ESR and the number of leukocytes were lower than in patients under 30 years of age. We found the dependence of the severity of the disease on the presence of abortions in the woman's anamnesis.

**Output**

1. When assessing the relative risk, it was found that the most important for the development of pyoinflammatory diseases of the pelvic organs are previously transferred infections with sexual transmission, frequent artifactual abortions, early debut of sexual activity and a low level of contraception culture.

2. At the same time, the values of the relative risk depend on the woman's age and are maximum (2.5-6.2) for women aged 31-35 years.

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## IMMUNOLOGICAL SHIFTS IN PATIENTS WITH CHEST AND ACUTE BLOOD LOSS

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✓ **Resume**

***The research is dedicated to the investigation of some defensive functions in patients under severe combined trauma and acute blood loss, including blood level of cortisol and pro-inflammatory - TNF-α. Venous blood of patients or healthy volunteers was investigated. The concentrations of TNF-α in blood was increased in patients of all groups. It has been revealed that a low blood cortisol level in the 1st day under severe combined trauma was an unfavorable sign for prognosis, witnessing high probability of lethal outcome. The results open a possibility for implementation of a highly informative test-system for prognosis of traumatic disease course and for its purposeful correction.***

***Key words: immune response, severe combined trauma, acute blood loss, shock, stress, cytokines, cortisol.***

## ИММУНОЛОГИЧЕСКИЕ СДВИГИ У БОЛЬНЫХ С ТРАВМОЙ ГРУДНОЙ КЛЕТКИ И ОСТРОЙ КРОВОПОТЕРЕЙ

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✓ ***Резюме***

***Исследование посвящено изучению некоторых защитных функций у пациентов с травмой грудной клетки (ТГК) и острой кровопотерей, в том числе уровня кортизола в крови и провоспалительного - TNF-α. Исследовали венозную кровь больных или здоровых добровольцев. Концентрация TNF-α в крови была повышена у пациентов всех групп. Выявлено, что низкий уровень кортизола крови в 1-е сутки при ТГК является неблагоприятным признаком для прогноза, свидетельствующим о высокой вероятности развития гнойно-септических осложнений. Полученные результаты открывают возможность для прогнозирования течения ТГК и ее целенаправленной коррекции.***

***Ключевые слова: иммунный ответ, тяжелая сочетанная травма, острая кровопотеря, шок, стресс, цитокины, кортизол.***

## КЎКРАК ЖАРОХАТИ ВА ЎТКИР ҚОН ЙЎҚОТИШИ БЎЛГАН БЕМОРЛАРДА ИММУНОЛОГИК ЎЗГАРИШЛАР

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✓ ***Резюме***

***Тадқиқотда кўкрак қафаси травмаси ва ўткир қон йўқотиш, бўлган беморларда баъзи ҳимоя функцияларни ҳамда, қон таркибидаги кортизол ва яллигланишга оид TNF-α даражаларини ўрганишга бағишланган. Беморларнинг ва соғлом инсонларнинг веноз қони текширилди. Қондаги TNF-α концентрацияси беморларнинг барча гуруҳларида баланд эди. Кўкрак қафаси травмаси 1-кунида қон кортизолининг паст даражаси ёмон прогностик белги бўлиб, йирингли-септик асоратлар ривожланиш эҳтимоли юқори эканлигини билдиради. Олинган натижалар кўкрак қафаси травмаси касаллик кечишини ва уни мақсадли даволашни башорат қилиш имконини беради.***

***Калит сўзлар: иммун жавоб, оғир комбинициялашган травма, ўткир қон йўқотиш, шок, стрес, цитокинлар, кортизол.***

## Relevance

One of the most important directions in the development of modern medicine is the development of methods for diagnosing and predicting the course of diseases based on determining the degree of impairment of functional activity and the possibility of correcting the protective functions of the body. Elucidation of the nature of these disorders opens up new ways and opportunities for targeted impact on them, diagnostics and prediction of the course of diseases, including trauma [1]. After removing a patient with trauma from the acute period, there is a risk of infectious complications up to the development of sepsis, which is one of the most important causes of death of patients [2, 3]. The most common complications of infectious THC are also pneumonia and wound infection [3]. Therefore, a natural consequence of THC is changes in the activity of the functions of the immune system, which become predisposing factors for the development of various complications of infectious genesis. The immune system's response to injury begins in the first minutes after it; the severity of immunological disorders and their duration depend on the strength and duration of exposure, as well as on the scale of tissue damage. In severe THC, accompanied by the development of blood loss, immediately after exposure to an extreme factor on the body, violations of the interaction of the immune and neuroendocrine systems are observed, including increased secretion of adrenal hormones that affect the cellular and humoral links of immunity. These changes further determine the course and outcomes of trauma [4]. The development of immunodeficiency occurs within the first 3 days after severe mechanical injury, which, in turn, is the direct cause of the development of frequently occurring purulent-septic complications [2-6].

Thus, a consequence of severe concomitant injury is a violation of the protective functions of the body. The study of the mechanisms of these disorders will allow, among other things, to predict the risk of development and generalization of infectious complications even before their clinical manifestation and to develop new methods of targeted preventive and therapeutic immunocorrection.

In the department of surgery of the Bukhara branch of the RSCEMP, informative tests have been developed based on the analysis of the activity and functional reserves of immunocompetent cells, which make it possible to reveal the mechanisms of violations of protective functions under various destabilizing influences [7]. The use of functional tests contributes to the identification of those links in the immune system, changes in which reflect the severity of the process in patients and have prognostic value.

**The aim of this work is to study changes in some indicators of the activity of the body's protective functions, including the functional activity of monocytes and lymphocytes of peripheral blood, the level of cytokines: tumor necrosis factor (TNF-α), as well as cortisol in the blood of patients who have suffered severe chest trauma and acute blood loss.**

## Material and methods

The study used venous blood from patients with severe chest trauma with the development of acute blood loss, as well as the blood of healthy volunteers. All patients were treated at the Bukhara branch of the RSCEMP. Blood sampling was performed three times: the first time - within the first 24 hours after hospitalization; the second time - on the 7th day; the third time - on the 14th day of hospitalization. Direct determination of the concentration of cytokines and cortisol in the blood serum was carried out by a standard enzyme immunoassay using reagents of test systems of OOO Proteinovy contour (St. Petersburg). Statistical processing of the results was carried out using the Student's t test.

## Result and discussion

When analyzing changes in the concentration of TNF-α in the blood serum of patients who underwent severe chest trauma, a higher level of cytokine was found at all follow-up periods compared with the same indicator in healthy donors. There were no significant differences in the level of cytokine in the blood in patients of these two groups. In patients after acute blood loss, the serum TNF-α content increased on the 1st day after hospitalization, and then decreased on the 7th and 14th days, reaching values comparable to the cytokine level in healthy donors. On the 7th and 14th days of observation (as opposed to the 1st day), the concentration of TNF-α in the blood in patients with THC with acute blood loss is lower than in patients without blood loss. Thus, the concentration of the pro-inflammatory cytokine TNF-α in the blood serum of patients with severe THC is significantly higher than in patients with THC with acute blood loss, and remains elevated throughout the observation period. A distinctive feature of changes in the level of cortisol in the blood of patients in this study is its low concentration in

the blood of patients on the 1st day of observation. When determining the concentration of cortisol in the serum of the peripheral blood of healthy people and patients after severe THC, a significantly higher level of the hormone in the blood was observed in patients only on the 1st day after undergoing severe THC compared with control values in healthy people.

The concentration of cortisol in the blood serum of patients after THC with the development of acute blood loss at all periods of observation did not significantly differ from this indicator in healthy people.

The results of the study allow us to conclude that the functional activity of immunocompetent cells in patients changes after suffering severe THC and acute blood loss at different times after hospitalization of patients and depends on the severity of the injury.

With the development of THC with a high likelihood of developing septic complications, the determination of changes in the concentration of TNF-α in the blood of patients is of particular importance. The study established an increased level of this cytokine in the blood of patients with trauma during all periods of observation and patients with acute blood loss - on the 1st day. The literature data concerning the content of TNF-α in the blood of traumatized patients are contradictory. It has been suggested that the change in the concentration of TNF-α in the blood of traumatized patients is not a reliable indicator for predicting the development of complications [4,5]. According to other data, an increase in the level of TNFα in severe chest trauma is an unfavorable prognostic sign indicating a high probability of developing septic complications and death [2,7].

The results of the study of changes in the concentration of cortisol in the blood of patients allow us to conclude that a low level of cortisol in the blood serum of patients on the 1st day after severe chest trauma is a prognostically unfavorable sign indicating a high probability of developing infectious complications. These data confirm the results of clinical observations, which established a relationship between low cortisol levels and the risk of developing purulent-septic complications in patients with THC [3]. A high concentration of cortisol in the blood serum of people who have undergone severe trauma, on the contrary, is a typical, natural response of the body's neuroendocrine system to an extremely strong stressful effect caused by THC [1,5].

## Conclusion

The results of the study make it possible to assess some mechanisms of violations of the body's protective functions in case of chest trauma and acute blood loss. Revealing the mechanisms of immunity disorders opens up possibilities for the development of highly informative prediction of the course of THC with blood loss and its purposeful immune-oriented correction.

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## FEATURES OF THE CLINICAL COURSE OF ACUTE CHOLECYSTITIS IN PATIENTS WITH SUB- AND DECOMPENSATED CARDIOVASCULAR DISEASES

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✓ ***Resume***

***The work presents treatment and diagnosis for acute cholecystitis in patients with sub- and decompensated cardiovascular diseases. The main diseases of the cardiovascular system that affect the prognosis of acute cholecystitis have been enumerated. The role of specific biochemical markers of necrosis has been shown and the use of such instrumental techniques as ultrasonography, echocardiography, electrocardiogram, diagnostic laparoscopy has discussed. Sufficient detail is given to the criteria for selecting methods of surgical treatment for acute cholecystitis as well as contraindications and possible complications in the postoperative period.***

***Keywords: acute cholecystitis, echocardiography, electrocardiogram, decompensation of the cardiovascular systems.***

## ОСОБЕННОСТИ КЛИНИЧЕСКОЕ ТЕЧЕНИЯ ОСТРОГО ХОЛЕЦИСТИТА У БОЛЬНЫХ С СУБ- И ДЕКОМПЕНСИРОВАННОЙ СЕРДЕЧНО-СОСУДИСТОЙ ПАТОЛОГИЕЙ

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✓ ***Резюме***

***В работе описан лечебно-диагностический алгоритм при остром холецистите (ОХ) у больных с суб- и декомпенсированной сердечно-сосудистой патологией. Показана роль специфических биохимических маркеров некроза миокарда и методов диагностических исследований, таких как ультразвуковое (УЗИ), эхокардиография (ЭхоКГ), электрокардиография (ЭКГ), диагностическая лапароскопия. Подробно описаны критерии выбора методов хирургического лечения ОХ, а также противопоказания и возможные осложнения в послеоперационном периоде.***

***Ключевые слова: острый холецистит, эхокардиография, электрокардиография, декомпенсация сердечно-сосудистой системы.***

## SUB – VA DEKOMPETSYALANGAN YURAK-QON TOMIR KASALLIKLARI BOR BEMORLARDA O'TKIR XOLETSISTIT KLINIK KECHISHI VA DAVO O'ZIGA XOSLIGI

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✓ ***Rezyume***

***Maqolada sub- va dekompensatsiyalangan yurak-qon tomir patologiyasi bo'lgan bemorlarda o'tkir xoletsistit (O'X) uchun terapevtik va diagnostika algoritmi tasvirlangan. Miyokardiyal nekrozning o'ziga xos biokimyoviy markerlari va diagnostika usullari, masalan, ultratovush (UTT), exokardiyografiya (EchoKG), elektrokardiografiya (EKG), diagnostik laparoskopiya kabi roli ko'rsatilgan. O'tkir xoletsistitni jarrohlik davolash usullarini tanlash mezonlari, shuningdek,***

***operatsiyadan keyingi davrda mumkin bo'lmagan asoratlar va ko'rsatmalar batafsil tavsiflangan.***

***Kalit so'zlar: o'tkir xoletsistit, ekokardiyografi, elektrokardiografiy, yurak-qon tomir tizimining dekompensatsiyasi.***

**Relevance**

Severe cardiovascular diseases (CVD) are common in acute cholecystitis (AC), especially in older patients: ischemic heart disease (IHD), hypertension (HD), cardiomyopathy, cardiac arrhythmias, acute myocardial infarction (AMI), cardiovascular -vascular insufficiency, aortic aneurysm, pulmonary hypertension [1-4]. The most urgent problem is the mutual burden of AC and various manifestations of IHD, since the proportion of the latter among all concomitant pathology in such patients reaches 60%. Thus, an understanding of the features of the diagnosis of AC in patients with severe CVD is extremely necessary for the choice of the method of surgical intervention and the improvement of treatment results.

**Purpose of the study:** To study the features of the clinical course and the development of treatment for acute cholecystitis in patients with sub- and decompensated cardiovascular pathology.

**Material and methods**

The work is based on the results of treatment of 122 patients with acute cholecystitis AC with sub- and decompensated cardiovascular pathology, who were treated at the clinic from 2018 to 2020. The age of the patients ranged from 50 to 82 years, the average age was 66.7 ± 13.6 years. Among the studied patients, the most common pathology was IHD - 47 patients (38.5%), HD stage IIb and III - 17 patients (13.9%), isolated systolic arterial hypertension (AH) stage III - 22 patients (18.0 %). Severe bilateral edema of the lower extremities against the background of chronic heart failure and pulmonary hypertension (with chronic obstructive pulmonary disease (COPD) was observed in 11 patients (9.0%), cardiac arrhythmias occurred in 7 patients (5.7%). genesis was observed in 7 patients (5.7%). According to echocardiography in 3 patients (2.5%), cardiomyopathy was revealed. Postinfarction cardiosclerosis (PICS) was observed in 8 patients (6.6%). In 111 patients (90.9%)) there were 2 or more concomitant diseases. According to clinical, laboratory and instrumental data, all 122 patients were diagnosed with acute calculous cholecystitis. All patients had leukocytosis ranging from 12x109 / l to 16x109 / l with a shift of the leukocyte count to the left. The bilirubin level was within the normal range in 108 patients (88.5%), an increase to 50 μmol / L was found in 9 patients (74%), and over 100 μmol / L - in 5 patients (4.1%). In the biochemical analysis of blood in 72 patients (59.0%), an increase in the level of creatine phosphokinase (CPK) from 250 to 400 IU / L (norm 25-90 IU / L) and its cardiac fraction (CPK-MB) from 80 to 120 IU / L (norm 0-12 IU / L). In 16 patients (13.1%), the troponin I level increased to 0.068 ng / ml (the norm was 0.03 ng / ml). As already indicated, all patients, given the concomitant CVD, underwent ECG and EchoCG. According to the electrocardiogram, in 17 patients (13.9%) there was III degree atrioventricular block (AV block); subepicardial ischemia of the anterior, lateral myocardial wall with ST segment inversion in leads V2-V3 was detected in 25 patients (20.5%). PEAKS was present in 9 patients (7.4%). On the ECG, such changes are detected as cicatricial changes in the myocardium, deformation of the heart muscle. ECHOKG revealed cardiomyopathy in 3 patients (2.5%); diffuse damage to the myocardium of the right ventricle (RV) and left ventricle (LV) in 66 patients (54.1%). Mitral insufficiency (MR) II degree with right-sided hydrothorax occurred in 24 patients (19.7%); reduction of the ejection fraction to 45% (norm 55-60%); degenerative changes of the aortic valve (AK) with signs of hydropericardium were detected in 17 patients (13.9%). In 10 patients (8.2%), dilatation of the left heart chambers, a significant decrease in contractility with degenerative changes in the AK and mitral valve (MV) were noted. All this requires careful analysis in predicting the outcome of surgery. According to the ultrasound data, the signs were assessed for the state of the intrahepatic bile ducts, the width of the common bile duct, the size of the gallbladder, as well as its echogenicity, structure, contours, wall thickness, the presence of calculi, the presence of fluid around the gallbladder and free fluid in the abdominal cavity.

**Result and discussion**

The volume of surgical intervention was determined by the general condition of the patient, the severity of CVD, the state of the bile ducts and the presence of obstructive jaundice. 44 patients (34.5%) had a high perioperative risk of cardiovascular complications; in 55 patients (45.1%) - average; in 23 (18.9%) - low. Patients who were at high and medium risk were treated with β-blockers, cardiac glycosides, diuretics, ACE inhibitors, calcium antagonists, antiplatelet agents,

anticoagulants and vasodilators. The choice of the method of surgical treatment also depended on the degree of risk of perioperative cardiovascular complications. Cholecystectomy from the traditional laparotomic approach was performed in 15 patients (12.3%). This group included patients who had access conversion during laparoscopy. Conversion of the approach was performed for the following reasons: the presence of a dense infiltrate in the gallbladder neck in two patients and bleeding from the gallbladder bed in one case. 22 patients (18.0%) had a high risk of laparoscopic cholecystectomy. The creation of pneumoperitoneum was contraindicated for them, since carbon dioxide injected into the abdominal cavity causes a number of cardio-respiratory disorders: hypoxemia, hypercapnia, respiratory acidosis, arrhythmia and circulatory collapse. Given the high risk of surgery, these 22 patients underwent cholecystectomy from the minilaparotomic approach.

Laparoscopic cholecystectomy was performed in 65 patients (53.3%). This group included patients with subcompensated cardiovascular pathology, as well as with an average and low risk of perioperative cardiovascular complications. Postoperative complications were observed in only 31 patients (25.4%). A greater number of complications were observed in the group of cholecystectomy from the laparotomic approach (a total of 18 patients (14.8%)). Mortality was observed in the same group and amounted to 2.5%. The cause of death was PE. At the present stage, in most cases of AC, laparoscopic cholecystectomy is performed [2, 4, 5, 6]. Contraindications for laparoscopic cholecystectomy in this category of patients should be based on the analysis of ECG data, ECHO-KG, troponin test and markers of myocardial necrosis - CPK and CPK-MB fraction. Some authors propose several stages for the treatment of AC in this category of patients: microcholecystostomy under the control of ultrasound of the abdominal organs, adequate cardiovascular therapy and, subsequently, cholecystectomy by the laparoscopic method. Despite the minimal invasiveness, this method has its limitations in this category of patients and is inapplicable in the gangrenous form of AC [7]. Minimally invasive methods of surgical treatment of gallstone disease make it possible to shorten the period of treatment for patients by reducing the degree of trauma of the operation and the possibility of using modern methods of anesthesia to facilitate the course of the postoperative period. Following laparoscopic cholecystectomy, minilaparotomy appears as an alternative method of treating AC. The method is minimally invasive, there is no negative effect on the respiratory system and hemodynamics, it allows performing surgical interventions in patients with a high operational risk of cardiovascular complications, if the creation of pneumoperitoneum is contraindicated. Traditional operations remain a reserve method in the development of complications of acute cholecystitis (perivesicular abscess, gallbladder perforation, obstructive jaundice, etc.).

**Findings**

1. The use of minimally invasive technologies can improve the results of treatment of patients with AC against the background of concomitant cardiovascular pathology.
2. The method of choice for the treatment of acute calculous cholecystitis with concomitant subcompensated cardiovascular pathology, as well as with a low and medium risk of surgery, is laparoscopic cholecystectomy.
3. Cholecystectomy from a mini-access is considered an alternative method of treatment of acute calculous cholecystitis in patients with high risk and decompensation of the cardiovascular system.

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## PROCESSES OF INNOVATIVE MODERNIZATION OF HEALTHCARE INSTITUTIONS

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✓ ***Resume***

***Presents four strategically important areas in the management system of a health care facility, the state of which determines the effectiveness and the opportunity to develop further. Presents a strategic plan for the development of preventive agencies, including a set of events distributed in some areas. The most priority of them for health care facility are: increasing economic efficiency and profitability of the organization, the increased population coverage of the preventive services, introduction of result-oriented motivation system, focused on professional development of personnel, improvement of the quality of services and increase in productivity of employees. The effectiveness of this action plan is expressed in the possibility of providing new, innovative preventive, diagnostic and medical services. Successful implementation of the strategic development plan would depend on the implementation of and compliance with the organization's quality management principles.***

***Keywords: health care, medical organization, qualified staff, technological equipment, principles of management, effectiveness, strategic plan***

## ПРОЦЕССЫ ИННОВАЦИОННОЙ МОДЕРНИЗАЦИИ УЧРЕЖДЕНИЙ ЗДРАВООХРАНЕНИЯ

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✓ ***Резюме***

***Представлены, четыре стратегически важных сферы в системе управления учреждением здравоохранения, состояние которых определяет эффективность и возможность обеспечить дальнейшее развитие. Представлены направления развития медицинского учреждения. Приоритетными из них для медицинского учреждения являются: повышение экономической эффективности и прибыльности, увеличение охвата населения профилактическими услугами, внедрение системы мотивации, ориентированной на результат и повышение квалификации персонала, улучшение качества оказываемых услуг и рост производительности работников. Эффективность такого плана мероприятий выражена в возможности оказания инновационных профилактических, диагностических и медицинских услуг. Возможности успешной реализации указанных направлений развития зависят от внедрения и соблюдения организацией принципов менеджмента качества.***

***Ключевые слова: здравоохранение, медицинская организация, квалификация персонала, технологическая оснащенность, принципы менеджмента, эффективность, стратегический план***

## SOG'LIQNI SAQLASH MUASSASALARINI INNOVATSION MODERNIZATSIYA QILISH JARAYONLARI

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Abu Ali Ibn Sino nomidagi Buxoro davlat tibbiyot instituti

✓ ***Rezyme***

***Taqdim etilganlar sog'liqni saqlash muassasasini boshqarish tizimidagi to'rtta strategik muhim yo'nalishlar bo'lib, ularning holati samaradorlikni va kelgusi rivojlanishni ta'minlash imkoniyatini belgilaydi. Tibbiyot muassasasini rivojlantirish yo'nalishlari keltirilgan. Tibbiyot muassasasi uchun ustuvor vazifalar quyidagilardir: iqtisodiy samaradorlik va rentabellikni oshirish, aholini profilaktika xizmatlari bilan qamrab olishni ko'paytirish, natijaga yo'naltirilgan motivatsiya tizimini joriy etish va xodimlarning malakasini oshirish, ko'rsatilayotgan xizmatlar sifatini oshirish va xodimlarning ish unumdorligini oshirish. Bunday tadbirlar rejasining samaradorligi innovatsion profilaktika, diagnostika va tibbiy xizmatlarni ko'rsatish imkoniyatida ifodalanadi. Ushbu rivojlanish yo'nalishlarini muvaffaqiyatli amalga oshirish imkoniyatlari tashkilotning sifat menejmenti tamoyillarini amalga oshirishi va ularga rioya qilishiga bog'liq.***

***Kalit so'zlar: sog'liqni saqlash, tibbiyot tashkiloti, xodimlarning malakasi, texnologik jihozlar, boshqaruv tamoyillari, samaradorlik, strategik reja***

## Relevance

Numerous problems of the industry as a whole, and of individual medical institutions in particular, determine the importance of detailing individual provisions of the strategy for their development and the development of specific directions and measures that determine the main economic and social results of functioning. At present, the implementation of the relevant strategic measures is directly determined by the goals and objectives facing the institutions of the industry as a whole [1]. The key goal of the functioning of all medical institutions is determined by the role they play in society and is to provide the population with high-quality and timely medical care. In view of the above, the following strategically important directions in the management of health care institutions are identified. Firstly, this is a structural reorganization, which provides for the expansion of capacities to provide high-tech medical care of high quality standards. Secondly, the implementation of labor potential within the framework of a personnel policy based on modern management principles [3,4]. It is advisable to coordinate these elements, which requires the formation of financial policy. Financial policy measures should be aimed, first of all, at ensuring the availability of quality medical care, which is determined by the high social role of healthcare and a significant share of the state in the industry [5,7]. The increase in the volume of provision of paid medical services for health care institutions is, of course, an important strategic goal, but nevertheless, for many socio-economic factors, it is secondary in the framework of the financial policy of most institutions. These aspects should underlie the implementation of the strategic plan for the development of any medical institution.

**Purpose of the study.** Development of processes for innovative modernization and strategic development of healthcare institutions.

## Result and discussion

One of the conditions for rationalizing and more economical use of resources, including financial ones, within an institution is the organization of payment for the activities of its departments, taking into account the volume and quality of the work actually performed. This approach will lead to the optimization of the structure of the medical organization and its more efficient functioning [7].

Within a medical institution, given its prophylactic focus, it is important to rationally and fairly distribute earned funds within the institution. This will help to increase the interest of structural units and individual employees not only in their own financial well-being, but also in the successful operation of the medical organization as a whole. The main condition for this is the determination of the principles and procedure for the distribution of funds between structural divisions. The consumer of a medical service can receive better and faster diagnostic information that can provide an accurate diagnosis and quality treatment. The formation of an additional source of income allows you to develop directions within the financial policy of the institution. From the funds received, as well as the savings resulting from the optimization of the structure, reduction of unreasonable costs and deductions from income, it is possible to form several "general use" funds: reserve, institution development, life support and others [3,7]. Availability of financial reserves contributes to the stable functioning of a medical organization, providing opportunities for financing a number of areas: training of medical personnel; his financial incentives through incentives; formation of areas of social assistance. Measures in the field of structural reorganization of medical institutions include, first of all, measures in the field of increasing the efficiency of the use of fixed assets. At this stage, in many institutions, their property is the property of the state and is assigned to it on the

basis of the right of operational management. Within the framework of which the institution can use the property in accordance with the statutory activities; ensure the safety and use of property strictly for its intended purpose; ensure the repair of property; carry out depreciation and restoration of the worn-out part of the property transferred to operational management. For a step towards development and revitalization of its activities within the framework of the structural reorganization of institutions, V.A. [2] considers it necessary to implement the following measures:

- conducting marketing research of the medical equipment market;
- Formation of task plans for the purchase of medical equipment; repair, reconstruction of buildings and structures;
- formation of a plan for the replacement of worn-out equipment and its repair;
- organization of control over capital repairs of buildings and structures;
- monitoring of information on the movement of fixed assets;
- development, implementation of a program for the modernization of fixed assets;
- development and implementation of a program for metrological control and maintenance of medical equipment;
- development and implementation of the energy saving program;
- optimization of the operation of heat and power systems.

Another important factor in the modernization and increase in the efficiency of healthcare institutions in the implementation of their management strategy is staffing. At present, it is an integral part of the organizational and economic support associated with the specifics of medical activities, the professionalism of personnel, the peculiarities of the interaction of doctors, nurses and junior medical personnel in the provision of medical care, the improvement of social and labor relations (regulation of the labor market, improvement of the principles of remuneration medical personnel, updating the principles and mechanisms of social partnership) [6,8,9]. In recent years, Russian healthcare has made significant progress towards expanding high-tech medical care, which includes expensive types of diagnostics and treatment. However, in these conditions, the attending physician is responsible not only for the level of medical care, but also for spending the funds allocated for these purposes. Today, the physician has no incentive to conduct a cost-benefit analysis of a patient's treatment. It is not uncommon for the facts of unjustified use of expensive medical tests instead of cheaper screening tests. The notorious unclaimed analyzes have not been eliminated, while the specialists who appointed them, and the departments in which they work, do not bear any material responsibility (costs). Today, preventive medical organizations have a low technological potential, which is not a factor contributing to the growth of the competitiveness of medical and preventive services provided there. In this regard, we believe that the current state of fixed assets requires the development of measures within the framework of the implementation of the general development strategy, through the activation of investment processes.

**Immediate and strategic directions for the development of a medical institution**

- study of the market for preventive services and analysis of their competitiveness;
- conducting a sociological survey of the opinion of the population, forecasting the purchasing activity of consumers of preventive services
- analysis of the preventive services performed, and assessment of the potential of the resources of the medical center;
- approval of programs of prevention and health procedures.

posting information on the official website of the institution about the list of available and relevant preventive measures and health services;

- reducing costs by reducing non-production costs and optimizing the organizational structure of the center;
- increase in profitability by increasing profit margins;
- intensification of the provision of preventive and health-improving services
- improving the quality of services provided and work productivity
- amendments to the current list of paid preventive, health-improving and medical-diagnostic services;
- calculation of the cost of detailed and comprehensive preventive, health-improving and medical-diagnostic services;
- approval of prices for paid medical services provided in excess of the established task;
- optimization of business processes through the use of automated information and analytical systems.
- improvement of the motivation system and provision of advanced training of personnel
- implementation of an incentive system of remuneration of medical workers in the framework of the provision of paid services

- timely and informative posting on the official website about vacancies, requirements and remuneration;

- stimulation of advanced training of medical workers, retraining and timely certification;

- cooperation with educational medical institutions of the region in order to select personnel

This will contribute to the staffing of institutions with high-tech equipment, the availability of which determines the possibility of transition to the provision of high-quality medical care and an increase in the level of competitiveness, including in the market of paid medical services.

**Findings**

1. The effectiveness of the implementation of the strategic directions of health care development depends on the implementation and adherence of the organization to the principles of quality management, which will allow bringing, first of all, the provision of new, innovative preventive and health-improving services to a new level.
2. The existing norms and rules in the organizational and economic provision of health care, limit the modernization of the health care system, thus limiting the possibilities of increasing the efficiency of the management system of institutions as a whole.
3. The main strategic priority in the development of a medical organization is the need to switch to an innovative development model, which will contribute to improving the quality and availability of medical care for the general population.
4. However, weak staffing, blurred priorities, low investment potential, and a weak system for introducing scientific results into practical healthcare significantly hinder the processes of innovative modernization of healthcare institutions

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# STATE OF THE IMMUNE SYSTEM IN CHILDREN WITH INFECTIOUS MONONUCLEOSIS

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✓ ***Resume***

***A complex of immunological parameters was studied in 70 children with infectious mononucleosis, indications for immunocorrective therapy in these patients were substantiated, and the immunotropic activity was estimated.***

***Key words: infectious mononucleosis, immune system, cytokines, children***

# СОСТОЯНИЕ ИММУННОЙ СИСТЕМЫ У ДЕТЕЙ С ИНФЕКЦИОННЫМ МОНОНУКЛЁЗОМ

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✓ ***Резюме***

***Изучен комплекс иммунологических показателей у 70 детей с инфекционным мононуклеозом, обоснованы показания к проведению иммунокорригирующей терапии у данных больных и оценена иммунотропная активность.***

***Ключевые слова: инфекционный мононуклеоз, иммунная система, цитокины, виферон, дети.***

# ИНФЕКЦИОН МОНОНУКЛЕОЗ БИЛАН КАСАЛЛАНГАН БОЛАЛАРДА ИММУН ТИЗИМИ ҲОЛАТИ

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✓ ***Резюме***

***Юқумли мононуклеоз билан касалланган 70 нафар болада иммунологик кўрсаткичлар мажмуаси ўрганилди ушбу беморларда иммунитетни рағбатлантирувчи кўрсаткичлар асосланди ҳамда иммуннотроп дори-воситаситалари иммунотроп фаоллиги баҳоланди.***

***Калит сўзлар: юқумли мононуклеоз, иммун тизими, цитокинлар, болалар.***

## Relevance

Infectious mononucleosis is a widespread infectious disease among children and adults, caused by the Epstein-Barr virus (EBV). The virus is not eliminated from the body, has a tropism for lymphoid and reticular tissues, causing a kind of immune-pathological process, which makes EBV similar to the human immunodeficiency virus. In connection with the introduction of the virus into lymphoid cells, structural changes are formed that affect all parts of the immune system [1,6,7,8,12]. Active proliferation of virus-infected lymphocytes in all organs with lymphoid tissue promotes infiltration and histological changes in these organs (lymph nodes, liver, spleen, etc.). This causes polymorphism of clinical symptoms and complications in EBV infection [2, 5, 10,13].

Immune disorders in infectious mononucleosis are complex in nature, they relate to both the cellular and humoral links, entail an aggravation of the course, an increase in complications of the disease, which reflects the

essence of infectious mononucleosis as a disease of the immune system [3, 4 , 9,11,14,15]. The analysis of the state of the immune status in relation to changes in the cytokine spectrum in children with infectious mononucleosis has not yet been carried out in the literature available to us, which served as the basis for setting the goal of the study.

**The purpose** of our work is to develop criteria for assessing the severity and course of the disease, predicting possible outcomes and tactics of treating infectious mononucleosis in children based on the study of clinical, immunological and cytokine parameters.

## Material and methods

Comprehensive clinical studies were carried out in 70 children with infectious mononucleosis who were hospitalized in the 2nd department of the City Children's Infectious Diseases Hospital No. 1 in Bukhara. Reconvalescents of acute EBV infection were observed in the rooms of infectious diseases of the city polyclinics at the place of residence of children for periods of up to 6 months. The diagnosis of infectious mononucleosis was made on the basis of characteristic clinical manifestations, typical changes in the peripheral blood of patients and positive results of polymerase chain reaction (PCR).

All 70 patients underwent the following studies: a general blood test in the dynamics of the disease, a general urine test, a biochemical blood test (determination of total bilirubin and its fractions according to lendrassik LR et al. (1972), alanine and aspartate aminotransferases according to Kolb V.G. et al. (1976), total protein and protein fractions, thymol test). Saliva PCR was performed on all children in order to detect DNA for the Epstein-Barr virus. Bacteriological methods in order to exclude diphtheria lesions (swabs from the oropharynx and nose) were carried out on the day of admission to the hospital (in the admission and infectious wards). The ELISA method was used to determine antibodies to HIV, since patients with infectious mononucleosis are at risk for HIV.

Immunological examination included the study of the main indicators of cellular and humoral immunity. The phenotype of leukocytes was assessed by the presence of differentiated antigens on the cell surface by immunofluorescence using monoclonal antibodies (CD3 +, CD4 +, CD8 +, CD16 +, CD95 +, CD20 +, immunoregulatory index CD4 + / CD8 + were determined).

**Table № 1.**

**Immunological parameters in the control group of children and patients with infectious mononucleosis in the acute period of the disease, (M + т)**

| Indicators | Control group of children, п= 30 | Moderate form, п= 35 | severe form, п = 15 |
|---|---|---|---|
| Lymphocytes, % | 39,0 ± 9,0 | 60,97 ± 3,43* | 72,47 ± 8,18* |
| Lymphocytes, k.l.. • $10^9$/l | 2,6 ± 1,0 | 4,50 ± 0,45* | 478 ± 1,76 |
| CD3+ (T) Lymphocytes, % | 62,5 ± 7,5 | 58,0 ± 2,5 | 52,73 ± 3,12 |
| CD3+ (T) Lymphocytes, k.l. "$10^9$/l | 1,9 ± 0,4 | 2,98 ± 0,25* | 4,61 ± 0,41* |
| CD4+ (helpers -inductor), % | 35,0 ± 5,0 | 34,74 ± 3,27 | 41,0 ± 2,79 |
| CD4+ (helpers - inductor), k.l. ‘$10^9$/l | 1,0 ± 0,05 | 1,25 ± 0,09 | 2,17 ± 0,63* |
| CD8+ (Suppressors - cytotox.), % | 22,5 ± 4,5 | 24,71 ± 2,72 | 17,33 ± 3,58 |
| CD8+ (Suppressors - cytotox.), k.l. -$10^9$/l | 0,7 ± 0,03 | 1,66 ± 0,26* | 1,59 ± 0,38* |
| CD16+ (nature, killers), % | 9,0 ± 3,0 | 9,57 ± 0,69 | 9,0 ± 1,70 |
| CD16+ (nature, killers), k.l. ‘$10^9$/l | 0,2 ± 0,1 | 0,39 ± 0,07* | 0,31 ± 0,11 |
| CD95+ (FAS-ag) Lymphocytes, % | 32,5 ± 2,5 | 18,4 ± 2,П | 28,0 ± 2,37 |
| CD95+ (FAS-ag) Lymphocytes, k.l. • $10^9$/l | 0,7 ± 0,1 | 1,1 ± 0,15 | 2,0 ± 0,54* |
| Index CD4+/CD8+ | 1,7 ± 0,5 | 2,42 ± 0,49 | 4,05 ± 1,12* |
| IgA, g/l | 1,6 ± 0,9 | 2,62 ± 0,14 | 2,47 ± 0,24 |
| IgG, g/l | 10,9 ± 2,2 | 7,67 ± 1,98 | 13,43 ± 2,71 |
| IgM, g/l | 1,4 ± 0,7 | 1,99 ± 0,11 | 2,39 ± 0,30* |
| Circulating immune complexes, % | 97,5 ± 1,5 | 95,57 ± 5,02 | 97,75 ± 2,27 |
| Complement activity, CH-50 | 52,5 ± 2,5 | 47,75 ± 1,41* | 56,08 ± 2,01 |

*-reliability of differences in indicators in comparison with a group of healthy children, p <0,05.*

Among the indicators of the humoral link of immunity, the level of the main classes of immunoglobulins A, M, G was studied. The concentration of immunoglobulins was determined by the method of radial immunodiffusion in agar gel according to Mancini (1964). The concentration of immunoglobulins g / l was expressed (WHO Expert Committee, 1981). The content of circulating immune complexes was determined by a method based on nephelometry of different solubility of immunoglobulin monomers in the composition of immune complexes in the presence of polyethylene glycol (PEG 6000) in the medium. The complement system was assessed by titration of 50% hemolysis of sheep erythrocytes (Reznikova L.S., 1967). The results were evaluated in conventional units of hemolytic activity.

The levels of IL-ip, IL-6, IL-8, IF-Y and TNF-a were determined by enzyme immunoassay using monokine data sets produced by Protein contour.

Immunological studies in the acute period of infectious mononucleosis were carried out in children depending on the severity of the disease: there were 35 patients with an average severity, and 15 with a severe one.

Comparison of the effectiveness of treatment methods was carried out in two groups of children with infectious mononucleosis: 1st group - 20 patients with EBV infection, whose complex therapy included an immunomodulatory drug of the interferon series alpha-2b; 2nd group - 15 patients with infectious mononucleosis who were only on symptomatic therapy.

As a basic (symptomatic) therapy in children, antipyretic, desensitizing drugs, antiseptics for stopping the local process, vitamin therapy were used. In case of manifestations of the general intoxication syndrome in children in the acute period of illness, detoxification infusion therapy was carried out (5% glucose solution, saline, etc.). The results of treatment were assessed according to the following criteria: the state of the immune status and cytokine profile 3 months after discharge from the hospital.

Immunological and hematological studies were carried out in the control group in 30 healthy children aged from 3 to 17 years. When selecting practically healthy children, anamnestic data were taken into account: the absence of any diseases during the last three months, as well as vaccinations and injections of biologically active drugs. The development did not include children with signs of hypogammaglobulinemia, manifestations of allergic and chronic diseases.

**Results and its discussion**

Our data indicate that in modern conditions, infectious mononucleosis develops mainly in preschool children (47.1%), more often in boys (62.9%) with a predominance of moderate forms of the infectious process (78.6% ), which is consistent with the observations of S.A. Tsarkova (1987). Analysis of the anamnesic data of patients with infectious mononucleosis showed that 82.5% of them had a burdened premorbid background, in the structure of which changes from the central nervous system predominated in the form of hypertensive-hydrocephalic syndrome and perinatal lesions in 12 children (17.14%). According to our data, in the anamnesis of 10 children (14.29%) there were indications of atopy manifestation.

In four children, infectious mononucleosis proceeded against the background of hypochromic anemia, three had chronic somatic pathology from the gastrointestinal tract and kidneys. Among hospitalized patients with infectious mononucleosis, 25.71% were from the group of frequent illnesses. In patients, in a significant percentage of cases, foci of acute and chronic infection were detected. According to our data, among patients with infectious mononucleosis, concomitant infection was noted in 30% in the form of symptoms of acute bronchitis, catarrhal and purulent otitis media, sinusitis, and rhinopharyngitis. Chronic tonsillitis was detected in 17.1%, acute respiratory viral infections - in 7.1% of children.

The clinical study showed that modern infectious mononucleosis is characterized by an acute course of the disease with a predominance of moderate forms with a predominant lesion of the lymphoid and reticular tissue. Regardless of the form of severity and age of patients, the following symptoms were observed: febrile fever - in 75.7% of children, swollen lymph nodes - in 94.3%, difficulty in nasal breathing - in 65.7%, snoring in sleep - in 31.4%, swelling of the palatine tonsils - in 52.9%, sore throat - in 62%, hyperemia of the soft and hard palate was noted in 80% of children, hepatomegaly - in 91.4%, splenomegaly - in 55.7% of patients.

In the laboratory analysis of blood in acute EBV infection, moderate leukocytosis was noted in 24.3%, lymphocytosis - in 82%, monocytosis -

in 78%, increased ESR - in 91% of children. Examination of peripheral blood smears of patients revealed atypical mononuclear cells in 93.5% of cases. During the period of convalescence, most patients retained signs of asthenovegetative syndrome - in 12.3% of children, lesions of lymphoid tissue in the form of enlarged submandibular lymph nodes - in 43.1%, posterior cervical lymph nodes - in 26.2%, liver enlargement - in 10, 8% and spleen - in 6.2% of children. In a laboratory study of the peripheral blood of children during the period of convalescence, it was noted moderate leukopenia in 6.2%, lymphocytosis in 2 reconvalescents, the presence of atypical mononuclear cells was not detected in any case.

**Table № 2.**

**Cytokine indices in a healthy group of children and patients with infectious mononucleosis in the acute period of illness, (M + т).**

| Indicators | Group of healthy children, n = 30 | Moderate group, n = 35 | Severe form group, n = 15 |
|---|---|---|---|
| Interleukin ip (IL-1P) | 46,1 ± 3,9 | 54,7 ± 7,8* | 183,7 ± 14,1* |
| Interleukin 6 (IL-6) | 40,90 ± 2,60 | 88,0 ± 15,4* | 129,8 ± 17,4* |
| Interleukin 8 (IL-8) | 19,89 ± 0,38 | 72,9 ± 15,2* | 131,9 ± 19,6* |
| Interferon γ (IF-u) | 43,6 ± 1,09 | 64,5 ± 17,5* | 121,7 ± 21,4* |
| Tumor necrosis factor a (TNF-a) | 42,09 ± 2,25 | 50,9 ± 10,2* | 132,1 ± 28,8 |
| | | | |

*- reliability of differences in indicators compared with the group of healthy children, p <0,05.*

The analysis of indicators of cellular and humoral immunity in patients with infectious mononucleosis, depending on age and sex, did not reveal their significant differences.

The immunological status of patients with infectious mononucleosis in the acute period of the disease had its own characteristics (Table 1). The general pattern was an increase in the number of T-, B-lymphocytes in this disease, and in the subpopulations of T-lymphocytes, an increase in the number of cytotoxic cells, which allows us to regard infectious mononucleosis as a lymphoproliferative process. With an increase in suppressor activity, inhibition of the maturation process of immunocompetent cells was noted, which led to the development of immunodeficiency.

An increase in the level of T-lymphocytes with suppressor activity in the acute period of the disease is one of the main regulatory mechanisms of inhibition of the early stages of B-lymphocyte expression, both directly affecting them and indirectly, by suppressing the activation of T-helpers. According to the results of our research, there is an indirect inhibition of B-lymphocytes due to a decrease in the level of CD4 + (helpers) lymphocytes. In turn, a decrease in the T-helper index leads to blocking the induction of apoptosis. A specialized receptor of signals for the induction of apoptosis is CD95 + (Fasag), the level of which tended to decrease in comparison with healthy children.

Consequently, with infectious mononucleosis, the apoptosis of "spent" effector cells was slowed down and there was no obstacle to their participation in the immune response. Ultimately, in our opinion, with EBV infection there is a likelihood of the emergence of autoreactive, as well as malignant clones of cells. The mechanism against the persistence of clones of cells infected with the virus is the activation of natural killer cells. In our studies, the level of CD16 + (natural killer cells) did not differ significantly from that in the group of healthy children.

Thus, we assume that low activation of CD16 + cells in patients with infectious mononucleosis contributes to the persistence of

virus-infected cells in the patient's body for a long time.

On the part of the humoral link of immunity, in our studies, an increase in the number of immunoglobulins M and A classes was noted, the IgG content did not differ significantly from a similar indicator in healthy children. Increased secretion of immunoglobulins, according to our research, was noted especially in patients with a severe form of the disease. Analysis of correlations between the severity of the patient's condition and B-lymphocytosis makes it possible to assume that with a severe form of the disease, the percentage of B-lymphocytes infected with the virus increases.

Since T-suppressors indirectly inhibit the proliferation of B-lymphocytes, inhibiting the early stages of their differentiation, the growth of B-cells occurs, apparently, due to "infected" B-lymphocytes, not eliminated from the bloodstream by a low content of T-killers. An increase in the activity of the complement was noted in the case of a severe form of infectious mononucleosis, which is cascade activated under the conditions of introduction of foreign agents into the body. In infectious mononucleosis, such an agent is the Epstein-Barr virus. The low level of complement in children with moderate forms, in our opinion, is associated with its inclusion in the immunological process. An increase in the immunoregulatory index was revealed, despite the change in the number of CD8 + lymphocytes in the direction of their increase. Especially an increase in the values of the immunoregulatory index was observed in patients with a severe course of EBV infection, which, possibly, is associated with an increase in the proliferative response of peripheral blood lymphocytes to mitogens precisely with an increase in the severity of infectious mononucleosis in children and an increase in the activity of the pathological process. In studies of the cytokine spectrum in children in the acute period of EBV infection, there was an increasing nature of changes in the content of the studied interleukins - IL-lp, IL-6, IL-8, IFU and TNF-a (Table 2).

The state of the cytokine profile in children with severe infectious mononucleosis deserves special attention. According to the results of our studies, in severe EBV infection, there was a significant (several times) increase in the levels of cytokines in comparison with similar parameters in healthy children. This fact, apparently, reflects more severe damage to the immune system in these children, compared with children with a moderate form of the infectious process, which leads to polymorphism of clinical symptoms and complications in EBV infection, a long period of restoration of the balance between indicators of the immune system.

Thus, in patients with infectious mononucleosis, the Epstein-Barr virus causes a kind of immune-pathological process with dysfunction of immunocytes, which makes EBV similar to the human immunodeficiency virus. According to our research, an imbalance of effector and suppressor cells develops, which is based on changes in the differentiation of CD8 + cells towards effectors (cytotoxic cells) and suppressors.

Another form of imbalance of cell subpopulations is a violation of the correlation between the activities of Thl and Th2 helper types. Its reflection is the predominance among humoral products of T-helpers of sets of cytokines, which contribute to the predominant development of cellular forms of the immune response.

**Table 3.**

**Dynamics of immunological indicators in children who received an immunomodulatory drug of the interferon series alpha-2b and were on symptomatic therapy in the acute period of infectious mononucleosis (M + т)**

| Indicators | Group of healthy children, n= 30 | A group of sick children treated with interferon series alpha-2b, n = 20 | Group of sick children receiving symptomatic treatment, n = 15 |
|---|---|---|---|
| Lymphocytes, % | 39,0 ± 9,0 | 37,0 ± 7,3 | 52,9 ± 4,4 |
| Lymphocytes, k.l. • $10^9$/l | 2,6 ± 1,0 | 2,5 ± 1,1 | 4,6 ± 0,6* |
| CD3+, % | 62,5 ± 7,5 | 57,5 ± 5,3 | 59,0 ± 3,5 |
| CD3+, k.l. -$10^9$/l | 1,9 ± 0,4 | 2,0 ± 0,3 | 1,7 ± 0,2 |
| CD4, % | 35,0 ± 5,0 | 32,5 ± 2,5 | 22,7 ± 1,7 |
| CD4+, k.l. -$10^9$/l | 1,0 ± 0,05 | 1,3 ± 0,8 | 0,7 ± 0,05 |

| | | | |
|---|---|---|---|
| CD8+, % | 22,5 ± 4,5 | 25,5 ± 2,5 | 28,7 ± 6,7* |
| CD8+, кл. -$10^9$/l | 0,7 ± 0,03 | 0,8 ± 0,4 | 1,6 ± 0,26 |
| CD16+, % | 9,0 ± 3,0 | 9,4 ± 0,6 | 9,5 ± 0,7 |
| CD16+, кл. -$10^9$/l | 0,2 ± 0,1 | 0,2 ± 0,1 | 0,4 ± 0,07 |
| CD95+(FAS-ag), % | 32,5 ± 2,5 | 29,4 ± 3,1 | 27,4 ± 4,8 |
| CD95+(FAS-ag), k.l. • $10^9$/l | 0,7 ± 0,1 | 0,9 ± 0,3 | 1,2 ± 0,6 |
| Индекс CD4+/CD8+ | 1,7 ± 0,5 | 1,6 ± 0,5 | 1,4 ± 0,2 |
| IgA, g/l | 1,6 ± 0,9 | 1,7 ± 0,9 | 2,6 ± 0,14 |
| IgG, g/l | 10,9 ± 2,2 | 9,6 ± 1,9 | 5,6 ± 0,9 |
| IgM, g/l | 1,4 ± 0,7 | 1,5 ± 0,8 | 2,1 ± 0,3 |
| Circulating immune complexes, % | 97,5 ± 1,5 | 96,3 ± 2,1 | 94,3 ± 3,0 |
| Complement activity, CH-50 | 52,5 ± 2,5 | 52,9 ± 2,6 | 52,7 ± 2,7 |

- reliability of differences in indicators compared with the group of healthy children, p <0, 05.

**Table 4**

**Cytokine profile in children who received an immunomodulatory drug of the interferon series alpha-2b and were on symptomatic therapy in the acute period of infectious mononucleosis (M + т)**

| Indicators | Group of healthy children, n = 30 | Group of sick children treated with interferon series alpha-2b, n = 20 | Group of sick children who received symptomatic treatment, n = 15 |
|---|---|---|---|
| Interleukin ip (IL-1P) | 46,1 ± 3,9 | 37,6 ± 5,6 | 79,2 ± 8,7* |
| Interleukin 6 (IL-6) | 40,9 ± 2,6 | 73,2 ± 11,3** | 103,5 ± 19,1** |
| Interleukin 8 (IL-8) | 19,9 ± 0,4 | 36,1 ± 6,6** | 82,8 ± 9,9** |
| Interferon gamma (IF-u) | 43,6 ± 1,1 | 25,3 ± 5,8** | 71,9 ± 11,6* |
| Tumor necrosis factor a (TNF-a) | 42,1 ± 2,2 | 33,7 ± 3,8 | 60,2 ± 9,4* |

* — p< 0,05; ** — p< 0,01

When assessing the cellular and humoral immunity in children who received symptomatic therapy and therapy with the inclusion of immunomodulatory drug of the interferon series alpha-2b in the acute period of the disease, a distinct modulating effect of Viferon on all links of immunity was found (Table 3).

Under the influence of immunomodulatory drug of the interferon series alpha-2b, the total number of lymphocytes was restored to normal values, and the imbalance in the T-cell system was more dynamically eliminated due to the pronounced suppression of the suppressor potential. The inhibitory effect of immunomodulatory drug of the interferon series alpha-2b on B-lymphocytes infected with the Epstein-Barr virus also led to the restoration of the regulation of serum immunoglobulins M and A classes. These positive changes in the immune status in children during treatment with immunomodulatory drug of the interferon series alpha-2b were also noted in the study of the cytokine profile (Table 4).

The results of treatment with immunomodulatory drug of the interferon series alpha-2b testify to the active immunocorrective effect of this drug, which is an indication for prescribing to children in the acute period of infectious mononucleosis.

When used in the acute period of symptomatic therapy in children, there was only a tendency towards restoration of immunoregulatory

mechanisms. The persisting high level of cytokines in children of this group determines the duration and severity of the immune-inflammatory process in infectious mononucleosis. Changes in the main indicators of the immune system contribute to deeper disturbances in the cascade of immunoregulatory reactions of an organism infected with the Epstein-Barr virus, leading to a persistent course of infection.

Until now, the use of immunomodulatory drug of the interferon series alpha-2b in children in the acute period of infectious mononucleosis has been empirical. Our studies of the state of the immune system in children 3 months after the acute period of infectious mononucleosis against the background of treatment with viferon substantiated the need to use this drug in acute EBV infection and confirmed the effectiveness of prescribing viferon in infectious mononucleosis in pediatric practice.

**Summary**

1. Infectious mononucleosis in children is characterized by a typical course with a predominance of moderate forms (up to 78.57%) and a predominant spread among preschool children (from 3 to 7 years).
2. At the present stage of development, the disease retains its characteristic symptom complex: fever, lymphadenopathy, changes in the oropharynx, difficulty in nasal breathing, hepatolienal syndrome, characteristic changes in peripheral blood and symptoms of intoxication, the severity of which indicates the severity of the infectious mononucleosis.
3. In patients with infectious mononucleosis, the Epstein-Barr virus causes a kind of immune-pathological process with dysfunction of immunocytes, which makes EBV similar to the human immunodeficiency virus. With EBV infection, an imbalance of effector and suppressor cells develops, which is based on changes in the differentiation of CD8 + cells in the direction of effectors (cytotoxic cells) and cells with suppressor activity.
4. Another form of imbalance of cell subpopulations is a violation of the ratio of the activities of Thl and Th2 helper types. Its reflection is the predominance among the humoral products of T-helpers of sets of cytokines, which contribute to the predominant development of the cellular form of the immune response.
5. The signs of an immunodeficiency state in children with infectious mononucleosis revealed during the study serve as the basis for immunocorrective therapy. The immunotropic effect of immunomodulatory drug of the interferon series alpha-2b in acute EBV infection is to restore the balance in the immunocellular link and the regulation of serum immunoglobulins M and A classes.

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# CYTOKINE STATUS IN DISEASES OF THE UPPER RESPIRATORY TRACT IN CORONAVIRUS DISEASE (COVID-19)

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✓ ***Resume***

***The data of own examinations of 123 patients with laboratory and clinical and epidemiologically confirmed new coronavirus infection and inflammatory diseases of the upper respiratory tract are presented. The content of hemoglobin, the number of erythrocytes, the concentration of interleukin-6 (IL-6), interleukin-10 (IL-10), tumor necrosis factor alpha (TNF-α) and C-reactive protein (CRP) were studied. It was shown that in patients with novel coronavirus infection (COVID-19) and inflammatory diseases of the upper respiratory tract, the average values of the degree of saturation of hemoglobin with oxygen were 87.04%. Anemia was detected in 8.9% of examinations, an increase in CRP of more than 5 mg / l was noted in 81 (65.8%) patients. In 19 patients, in 24.3% of cases, the level of cytokines in the blood serum was assessed before the start of antibiotic therapy. At the same time, the content of IL-6 was increased in 17 (89.4%) patients. Demonstrated a positive correlation between the content of C-reactive protein and the level of TNF-α.***

***Key words: coronavirus; COVID-19; upper respiratory tract; cytokines; interleukin-10; interleukin-6; tumor necrosis factor-alpha; cytokine storm.***

# ЦИТОКИНОВЫЙ СТАТУС ПРИ ЗАБОЛЕВАНИЯХ ВЕРХНИХ ДЫХАТЕЛЬНЫХ ПУТЕЙ ПРИ КОРОНАВИРУСНОЙ БОЛЕЗНИ (COVID-19)

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✓ ***Резюме***

***Представлены данные собственных обследований 123 пациентов с лабораторно и клинико-эпидемиологически подтвержденной новой коронавирусной инфекцией и воспалительных заболеваниях верхних дыхательных путей. Исследованы содержание гемоглобина, число эритроцитов, концентрация интерлейкина-6 (IL-6), интерлейкина-10 (IL-10), фактор некроза опухоли альфа (TNF-α) и С-реактивного белка (СРБ). Показано, что у пациентов с новой коронавирусной инфекцией (COVID-19) и воспалительных заболеваниях верхних дыхательных путей средние значения степени насыщения гемоглобина кислородом составили 87,04 %. Анемия выявлялась в 8,9 % обследований, повышение СРБ более 5 мг/л отмечалось у 81 (65,8 %) пациентов. У 19 пациентов в 24,3 % случаев оценка уровня цитокинов в сыворотке крови проводилась до начало антибактериальной терапии. При этом, содержание IL-6 было повышенным у 17 (89,4 %) пациентов. Продемонстрирована положительная корреляционная взаимосвязь между содержанием С-реактивного белка и уровнем TNF-α.***

***Ключевые слова: коронавирус; COVID-19; верхних дыхательных путей; цитокины; интерлейкин-10; интерлейкин-6; фактор некроза опухоли-альфа; цитокиновый шторм.***

# KORONAVIRUS KASALLIGIDA YUQORI NAFAS YO'LLARINING KASALLIKLARIDA SITOKIN HOLATI (COVID-19)

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Buxoro davlat tibbiyot instituti.

✓ ***Rezyme***

***Laboratoriya va klinik-epidemiologik tasdiqlangan yangi koronavirus infektsiyasi va yuqori nafas yo'llarining yallig'lanish kasalliklari bilan kasallangan 123 bemorning o'z tekshiruvlari ma'lumotlari keltirilgan. Gemoglobin tarkibi, eritrotsitlar soni, interleykin-6 (IL-6), interleykin-10 (IL-10), o'sma nekroz omil alfa (TNF-a) va C-reaktiv oqsil (CRP) kontsentratsiyasi o'rganildi. Yangi koronavirus infektsiyasi (COVID-19) va yuqori nafas yo'llarining yallig'lanish kasalliklari bilan kasallangan bemorlarda gemoglobinning kislorod bilan to'yinganlik darajasi o'rtacha 87,04% ni tashkil etganligi ko'rsatildi. 8.9% tekshiruvlarda anemiya aniqlandi, 81 (65.8%) bemorda CRP ning 5 mg / l dan oshishi qayd etildi. 19 bemorda, 24,3% hollarda, qon zardobidagi sitokinlar darajasi antibiotik terapiyasi boshlanishidan oldin baholandi. Shu bilan birga, IL-6 ning tarkibi 17 (89,4%) bemorda ko'paytirildi. C-reaktiv oqsil miqdori va TNF-a darajasi o'rtasidagi ijobiy bog'liqlikni namoyish etdi.***

***Kalit so'zlar: koronavirus; COVID-19; yuqori nafas yo'llari; sitokinlar; interleykin-10; interleykin-6; o'sma nekrozi omil-alfa; sitokin bo'roni.***

**Relevance**

At present, the attention of researchers and clinicians is focused on the treatment of complications associated with the novel coronavirus infection (COVID-19). L.Yu. Ilchenko et al. (2020) noted that coronaviruses are widespread in nature, approximately 12-25% of colds that do not cause serious harm to health are caused by coronaviruses [1]. The history of the study of human coronavirus dates back to the second half of the sixties of the twentieth century, when the phenomenon of respiratory failure was noted in a patient with an acute respiratory viral infection [2, 3]. According to the literature, a sample of B814 was isolated from the nose of volunteers for colds, which is described as a virus strain not associated with any other previously known human respiratory tract virus [4]. In 1968, the first communication by J.D. appeared in the journal 'Nature'. Almedia and co-authors, where the researchers called this virus a coronavirus - “more or less rounded in profile, with a characteristic stripe, resemble the solar corona characteristic of the mouse hepatitis virus” [2,3]. a significant contribution to the study of diseases caused by coronaviruses [2, 3].

In the publication of V.V. Nikiforov et al. (2020) noted that until 2002, coronaviruses were considered as agents causing mild diseases of the upper respiratory tract [5]. As studies show, at the end of 2002, a coronavirus (the causative agent of SARS) appeared, causing severe acute respiratory syndrome in humans [5]. It should be emphasized that since 2004, there have been no new cases of SARS caused by coronaviruses. In 2012, the first case of inflammatory respiratory disease caused by coronaviruses was recorded, which received the official name Middle East respiratory syndrome-related coroavirus (MERS-CoV) [6]. 2519 cases of coronavirus infection caused by the MERS-CoV virus, of which 866 were fatal [5]. Every year, the cases of Middle East respiratory syndrome caused by MERS-CoV continue to be recorded: from isolated cases to dozens. that person-to-person transmission of MERS-CoV occurs through close contact with an infected patient.

At the end of December 2019, an outbreak of SARS was described in China, which led to the development of a public health emergency around the world. The massive incidence of atypical (unknown) pneumonia in January 2020, observed in the city of Wuhan, was caused by a new type of coronavirus and subsequently led to a pandemic situation around the world. In the international community, since February 11, 2020, the new coronavirus is officially called SARS-CoV-2 (severe acute respiratory syndrome coronavirus) -infection, - COVID-19 ("SogonaVirus Disease -2019" - a disease caused by the new coronavirus-2019 Exactly one month later, the World Health Organization (WHO), in connection with the massive spread of COVID-19, announced the beginning of a pandemic worldwide. As of August 21, 2020, over 22.6 million cases were registered worldwide. diseases, more than 792 thousand people died and more than 14.5 million recovered. [7] Despite the measures taken to limit contacts between people, isolation of persons with suspected COVID-19, the number of cases does not decrease.

**Etiology and pathogenesis of coronavirus disease-2019.**

Coronavirus contains ribonucleic acid (RNA) and belongs to viruses of the genus Betacoronavirus of the Coronaviridae family.

V.T. Ivashkin et al (2020) noted that for the first time coronavirus RNA was isolated in feces in 2019 in the United States [8]. According to the International Committee on Virus Taxonomy, coronavirus belongs to the II pathogenicity group. The Coronaviridae

families include 43 RNA viruses, grouped into two subfamilies, that infect mammals, including humans, birds, and amphibians. It is worth noting here that there are currently seven known human coronaviruses. As noted, the name "coronavirus" is associated with the structure of the virus, the spines of which resemble the solar corona [2, 3].

Virions are 80-220 nm in size, and the genome of the virus consists of more than 20 thousand nucleotides. It is well known that the virions of most viruses do not show any signs of biological activity until they come into contact with the host cell, after which they form a "virus-cell" complex capable of living and "producing" new virions. Coronaviruses have an RNA of about 26-30 thousand base pairs, i.e., coronaviruses have the largest non-segmented RNA among all known viruses and are the most complex in structure among known viruses. A series of review studies emphasized that coronavirus infects pneumocytes, cholangiocytes, cardiomyocytes and other cells expressing angiotensin converting enzyme 2 (ACE2 / angiotenzin converting enzyme 2, ACE2), which acts as a viral receptor [1, 5, 9- eleven]. It is also described that ACE2, which acts as a receptor for coronavirus, is expressed in intestinal epithelial cells, vascular endothelium and in the kidneys [8, 9], which explains the multiple organ dysfunction of the human body, the manifestation of which depends on the age, sex of the patient, geography, as well as from the comorbidity index.

M.L. Holshue et al (2020) reported on the detection of coronavirus RNA in a young patient on the 7th day of illness [12]. There is evidence that coronavirus RNA was detected on the mucous membrane of the esophagus, stomach, duodenum and rectum [13]. Often, gastroenterological manifestations of COVID-19 come to the fore [8]. Researchers W. Song et al (2020) described gastroenterological manifestations (diarrhea) of COVID-19 in the absence of other clinical symptoms [14]. As the authors note, the diagnosis of COVID-19 was established on the basis of X-ray studies of the chest organs (bilateral pneumonia), as well as the detection of coronavirus RNA [14]. There is evidence that no signs of coronavirus invasion into hepatocytes were found [15].

In the publication by E.A. Kogan et al (2020) described morphological and immunohistochemical confirmation of the development of lymphocytic viral myocardial damage in COVID-19. As the authors point out, the features of myocardial damage in COVID-19 are the presence of coronaritis and the possibility of a combination of myocarditis with lymphocytic endo- and pericarditis [16]. Recently, a clinical case of a 60-year-old patient was described in whom infection with a new coronavirus occurred in the immediate postoperative period after heart transplantation during therapy with methylprednisolone, tacrolimus, mycophenolate mofetil sulfamethoxazole / trimethoprim and amlodipine [17].

Numerous clinical and epidemiological studies have established that the respiratory tract is the initial “gateway to coronavirus infection,” and pneumonia is the leading clinical form of COVID-19 [1, 5, 8, 9, 18, 19]. With this, at present, the emphasis is on the clinical symptoms characteristic of lung lesions, which in most cases determine the prognosis of the disease.It would be appropriate to note the presence of pulmonary defense mechanisms in various infectious and non-infectious diseases [20, 21].

1.Mechanical barriers:

> nostril hairs filter particles larger than 10 microns;

> Mucociliary clearance and acute branching of the lower airways, which helps the mucous membrane to capture particles ranging in size from 5 to 10 microns.

2.Humoral immunity. Mucous immunoglobulins A (immunoglobulin A), alveolar immunoglobulins M (immunoglobulin M) and immunoglobulins G (immunoglobulin G) present in blood transudates.

3.Phagocytes:

> polymorphonuclear cells;

> alveolar cells;

> interstitial cells;

> intravascular macrophages;

> dendritic cells of the respiratory tract (involved in the activation and differentiation of CD8 + T cells);

> alveolar macrophages (provide the first level of protection associated with internalization and destruction of viral particles. Alveolar macrophages act as antigen-presenting and opsonin-producing cells).

4. Cellular immunity. A decrease in the number of CD4 + T cells, CD8 + T cells in COVID-19 indicates a severe course of the pathological process.

Active replication of coronavirus significantly reduces the protective functions of goblet cells

(mucus formation), which also contributes to the penetration of the virus into the human body [1]. Human infection with coronavirus occurs in the last days of the incubation period and maximum in the first three days from the onset of the disease [1]. In the publication by E.L. Nasonova (2020) showed that the replication of coronavirus has a cytopathic effect on target cells, causing the pro-inflammatory form of programmed cell death - pyroptosis [9]. At the same time, by activating immune cells, the coronavirus expresses proteins that suppress the synthesis of type I interferon, which leads to a weakening of the antiviral immune response [9]. Recall that coronavirus primarily infects type II pneumocytes. Expression of ACE2 protects the lungs from damage, but it decreases due to its binding to the ligamentous protein of the coronavirus, which increases the risk of infection [1].

It is interesting to note that increased expression of ACE2 does not exclude the possibility of increased binding to the coronavirus protein [1, 5, 9]. It should be emphasized that up to three coronaviruses can attach to one ACE2 target. The latter, infecting the endothelium of blood vessels, interacts with ACE2 located there and leads to the development of endothelial dysfunction, hyperpermeability, impaired microcirculation, the development of vascular thrombophilia and thrombosis [1, 5, 9]. It was found that in patients with COVID-19, during morphological examination in the lungs, massive infiltration of lymphocytes with a "pro-inflammatory" phenotype (CCR4 + CCR6 + Th 17 + CD4 T cells), neutrophils and macrophages, diffuse damage to alveoli with the formation of hyaline membranes, capillary microthrombi, microinfarctions and hemorrhages [22-24] Violation of alveolar ventilation and a decrease in pulmonary blood flow lead to further progression of impaired ventilation-perfusion relationship with COVID-19.

As noted, the rapid replication of the virus promotes an increase in the viral load, followed by an increase in its cytopathic action, which leads to a rapid progression of the immune-inflammatory process [9]. Many researchers have confirmed that with COVID-19, a pronounced increase in the concentration of cytokia signals the severity and critical form of this pathology [1, 5, 9]. Determination of risk groups, the spectrum of the studied cytokines and other inflammatory markers of COVID-19 finds a different solution in countries with different healthcare systems.

**Based on this, the purpose** of this work was to study the concentration of cytokines in patients with COVID-19.

## Material and methods

Our research was carried out at the clinical departments of the BukhMI named after Abu Ali ibn Sina from 06/18/2020 to 08/18/2020. It would be appropriate to emphasize that at these departments, as well as in the pulmonology department of the Bukhara multidisciplinary medical center, for several years, the cytokine mechanisms of the progression of renal, cardiovascular and pulmonary diseases have been studied. -leaving [25, 26].

The current study included 123 patients aged 16 to 80 years. The average age was 46.6 ± 14.4 years, the number of men and women was 75 (61%) and 48 (39%), respectively. In all cases, clinical and epidemiological, radiological data and the results of computed tomography of the lungs, as well as the level of antibody titers to coronaviruses, were taken into account. The indicators of saturation of hemoglobin (Hb) of blood with oxygen in the microvasculature were measured by an integral method - pulse oximetry. We also studied the content of Hb, the number of erythrocytes

and blood C-reactive protein (CRP) levels. In 78 patients (in 63.4% of cases), the cytokine status was investigated: interleukin (IL) -6, IL-10 and tumor necrosis factor-alpha (TNF-α). In 59 (75.6%) patients, the level of cytokines was assessed during the completion of antibiotic therapy. The reference values of the concentration of the studied cytokines were as follows: IL-6 - up to 10 pg / ml, IL-10 - up to 31 pg / ml, TNF-α - up to 6 pg / ml.

Statistical analysis of the obtained data was carried out using the software package "Statistica 10.0". All quantitative variables are presented as mean (M) ± standard deviation (80), median and quartiles [Me (Q25; Q75)] Correlation analysis was carried out according to Spearman's criterion, and the criterion $p < 0.05$ was taken as the critical level of reliability.

## Result and discussion

The number of patients with damage to only the upper respiratory tract and pneumonia complicated by acute respiratory distress syndrome, sepsis, septic shock or multiple organ failure was 9 and 5.6%, respectively (Figure 1). The proportion of patients with pneumonia without respiratory failure was 61.8%, and pneumonia with the development of respiratory failure, the appearance of

infiltrates in the lungs in the form of "ground glass" occupied more than half of the lungs within 24-48 hours - 23.6% (see figure 1).

As shown in Table 1, the average values of the degree of peripheral blood saturation corresponded to respiratory failure, which required low-flow oxygen therapy. According to the WHO criteria, laboratory signs of anemia were observed in 11 (8.9%) examined persons.

It is important to note that in 19 patients (24.3% of cases), the level of cytokines in the blood serum was assessed before the start of antibiotic therapy. At the same time, the content of IL-6 was increased in 17 (89.4%) patients. As for the level of IL-10, its content in the blood serum did not exceed the reference values. The proportion of persons with an increased TNF-α content in the blood serum was small.

The median and interquartile values of the studied cytokines and blood CRP are shown in Figures 2-5. The median pro-inflammatory cytokines (IL-6 and TNF-α) in blood serum were 2.3900 pg / ml and 1.3185 pg / ml, respectively. Noteworthy is the fact that the maximum level of IL-6 reached 264.0500 pg / ml.

As can be seen, the maximum content of TNF-α was 6.5090 pg / ml, while the maximum level of the anti-inflammatory cytokine IL-10 reached 16.8220 pg / ml with a reference value of 31 pg / ml. The median of this cytokine was 3.7500 pg / ml.

When considering the indicators of acute phase blood protein, the median and quarterly indicators of CRP were 4.3500 (1.1850-25.8000) mg / l.

An increase in CRP of more than 5 mg / l was detected in 81 (65.8%) patients. It must be said that the maximum CRP level in the patients examined by us, increasing many times over, reached 239.9000 mg / l. This fact served as the basis for the correlation analysis of pro- and anti-inflammatory cytokines. As shown in Table 2, a statistically significant positive relationship was found between the content of CRP and TNF-α ($r = 0.3214$; $p = 0.031$).

Meanwhile, no reliable correlation relationship between the CRP level and the content of interleukins in blood serum was obtained (see Table 2).

Discussion. Back in 2013 M.V. Shipilov published an article in the journal “Healing Business” entitled “Molecular mechanisms of a cytokine storm in acute infectious diseases.” [27] It notes that cytokines are low molecular weight proteins that are produced mainly by effector blood cells and are universal. regulators that control the most important processes of cellular homeostasis [27]. Currently, more than 100 cytokines are known. EV 'Gyulandina and DA Piskov report that “cytokine storm” is a form of systemic inflammatory body reactions, characterized by excessive synthesis of cytokines in the inflammation focus through a positive feedback mechanism (28).

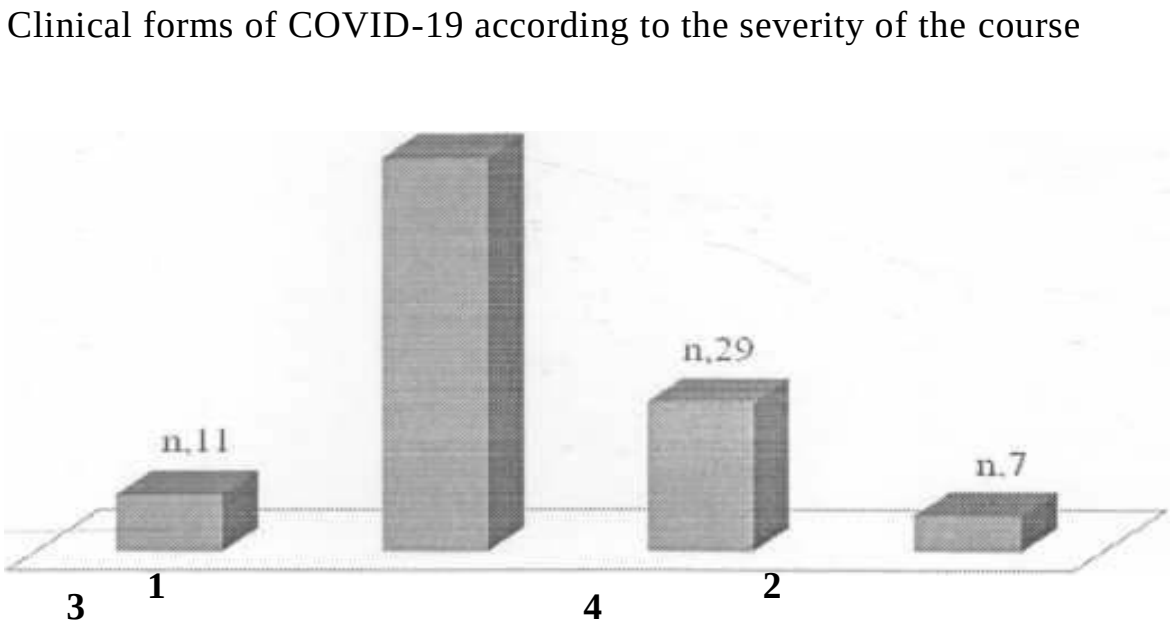


*Figure 1 - Characteristics of study participants with COVID-19*

*Note: 1-light; 2-moderate; 3-heavy; 4-very heavy; n-number of participants*

**Table 1 - Indicators of oxygen saturation and red blood**

| Indicator | Indicator value, M ± 80 |
|---|---|
| Degree of saturation of Hb with oxygen,% | 87,04 ±5,17 |
| Hb, g / l | 139,8 ± 17,1 |
| Erythrocytes, 1012 / l | 4.82 ± 0,55 |

*Note. Hb – hemoglobin*

In the medical lexicon, the term “cytokine storm” was first used by J.L. Ferrara et al. (29). In infectious pathologies, including in patients with COVID-19, activation of the population of T-lymphacytes or lysis of immune cells increases the production of TNF-α. This leads to the activation of alveolar macrophages, dendritic, immune and endothelial cells, followed by the production of cytokines (1,5,9). It is important to emphasize that alveolar macrophages and endothelial cells of the pulmonary circulation produce a large amount of IL-6, which is activated by a positive feedback mechanism.

**Table 2 - Correlation analysis between CRP and cytokines in patients with COVID-19**

| Indicators | CRP, mg / l | |
|---|---|---|
| | K = P = | P= |
| 1b-6, pg / ml | 0,1632 | 0,284 |
| 1b-! 0, pg / ml | 0,2433 | 0,107 |
| Tyr-a, pg / ml | 0,3214 | 0.031 |

*Note. CRP - C-reactive protein; IL - interleukin; TNF, tumor necrosis factor-alpha; R - correlation; P - reliability*

T-lymphocytes and other immune cells, leading to the development of a “cytokine storm” [28]. Considering the problem of "cytokine storm", it should be noted that this phenomenon is more often observed in older people suffering from chronic diseases. Many researchers are inclined to believe that, as diagnostic criteria for a "cytokine storm", first of all, attention should be paid to an increase in IL-6, IL-10 and ferritin [1, 5, 8, 9].

Researchers from the First Moscow State Medical University named after I.M. Sechenov, headed by P.V. Glybochko emphasize [30] that cytokine release syndrome should be thought of with a rapid deterioration of lung function in combination with an increasing content of CRP and ferritin, cytopenia (thrombocytopenia and lymphopenia), coagulopathy (low platelet count and decreased fibrinogen levels, as well as increased content of D-dimer), signs of liver damage (increased activity of lactate dehydrogenase and aminotransferases) [30]. It is obvious that the development of a "cytokine storm" in patients with COVID-19 indicates the addition of complications, or a protracted nature of the course of the infectious and inflammatory process. Determination of the leading cytokines will allow a targeted effect on the pathogenesis of the “cytokine storm” and prevent the development of a reaction cascade in the early stages of the development of systemic inflammation in COVID-19.

In our study, the content of IL-6 was increased only in 17 (89.4%) patients out of 19 (100%). It should be emphasized here that in these patients the cytokine indices were studied prior to the initiation of antibiotic therapy. In addition, in our work, persons with a very severe / critical form of COVID-19 were few (see Figure 1). The accumulated results of clinical studies indicate the important role of IL-

6 in the immunopathogenesis of COVID-19, as well as an increase in the content of this cytokine in the blood serum of patients, primarily in severe disease [21-26]. From a clinical point of view, it is important to note that according to computed tomography data, with COVID-19, an increased content of IL-6 in the blood serum indicates a large volume of lung damage (> 50%), a pronounced decrease in the number of CD4 + and CD8 + cells [ 27], and also speaks of a significant association with the need for mechanical ventilation [14-16], the risk of thromboembolic complications and increased mortality [22, 23].

In the above study, it was shown that an increase in IL-6 content occurs more often in severe COVID-19 [9]. As noted earlier, an increase in the level of IL-10 in the blood serum is also characteristic of the “cytokine storm” [28,29]. However, among the examined individuals, we did not observe pathological changes in IL-10. Perhaps this is due to blood sampling after antibiotic therapy, a small sample size, and the small number of patients with severe forms of COVID-19. Outside of the inflammatory reaction and the immune response, cytokines in the blood are contained in extremely small amounts [20]. Enhanced synthesis of cytokines begins in response to the penetration of microorganisms into the body or tissue damage [21]. In addition to IL-6, in patients with COVID-19, an increase in the content of CRP is recorded as a “surrogate biomarker” reflecting the hyperproduction of proinflammatory cytokines [9].

Analyzing changes in cytokines in persons with COVID-19, we revealed a correlation between CRP and TNF-α (see table 2). Extremely high levels of CRP indicate the presence of a bacterial infection (100 mg / l and higher), and further dynamics of the content of this indicator makes it possible to judge the effectiveness of therapy. Our study showed that the maximum CRP level in the examined patients was 239.9000 mg / L.

T.Yu. Salina and T.N. Morozov reported that TNF-α is a polypeptide mediator and cytokine of the immune response, which plays an important role in the pathogenesis of inflammation and maintenance of homeostasis [42]. It was found that TNF-α takes an active part in the development of the immune response as a cofactor of growth cytokines, causing the proliferation and cooperation of T- and B-lymphocytes, activating macrophages. TNF-α induces the release of IL-1, has a regulatory effect on the activity of fibroblasts, and enhances the migration of immunocompetent cells to the inflammation focus [43]. Under natural conditions, TNF-α is produced by polymorphonuclear leukocytes, mast cells and basophils, fibroblasts, vascular endothelial cells and is the most important pleiotropic cytokine that regulates the functioning and maintenance of the immune system [24].

However, the mechanisms of development of COVID-19 with the participation of TNF-α are very diverse and require further study. The foregoing suggests that the content of TNF-α may reflect the activity of the immunological process in COVID-19, and its excessive production in combination with an increase in the level of CRP negatively affects the overall prognosis. Currently, the problem of COVID-19 is being actively and comprehensively studied, and the results of clinical and epidemiological, socio-economic research show the need for a multidisciplinary approach, taking into account the climatic, geographical and ethnic characteristics of the region.Limitations of the study. The study is limited to the simultaneous determination of the content of cytokines in the blood serum when it is impossible to take into account all factors affecting the severity and outcome of COVID-19, the absence of PCR analysis data for a new coronavirus infection.

In fairness, it should be noted that in real clinical practice, patients during a pandemic independently take various drugs (anti-inflammatory, antibacterial and others) in the hope of recovery. However, taking these drugs not only changes the clinical picture of the disease, but also affects the final results of a biochemical blood test. This fact was also not excluded in our study.

Conclusion. Thus, our study shows that patients with COVID-19 have an increase in the level of interleukin-6 and CRP in the blood serum. The content of TNF-α is closely correlated with the level of CRP. In this connection, in patients with COVID-19, it is necessary to monitor the content of TNF-α and CRP as predictors of the adverse consequences of the new coronavirus infection. Despite the knowledge gained in the field of studying the functions of cytokines in COVID-19, intensive interdisciplinary studies of this disease in the human body are highly relevant. Through the efforts of researchers and scientists, important directions for future fundamental research in COVID-19 have been identified, which include a deeper understanding of the molecular mechanisms of cytokine-induced signaling pathways in the cell.

## Conclusion

Thus, our study shows that patients with COVID-19 have an increase in the level of interleukin-6 and CRP in the blood serum. The content of TNF-α is closely correlated with the level of CRP. In this connection, in patients with COVID-19, it is necessary to monitor the content of TNF-α and CRP as predictors of the adverse consequences of the new coronavirus infection. Despite the knowledge gained in the field of studying the functions of cytokines in COVID-19, intensive interdisciplinary studies of this disease in the human body are highly relevant. Through the efforts of researchers and scientists, important directions for future fundamental research in COVID-19 have been identified, which include a deeper understanding of the molecular mechanisms of cytokine-induced signaling pathways in the cell.

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## CLINICAL AND EPIDEMIOLOGICAL ASPECTS OF HYMENOLEPIDOSIS AMONG CHILDREN

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✓ ***Resume***

***The data showed that the proportion of hymenolepiasis in different age groups of children about the same and vary from 19,0 ± 3,9 to 31,4 ± 7,8 %. In this rather alarming high rate among children aged less than 4 years (19,0 ± 3,9 %). Indicators symptomatic clinical form hymenolepiasis a^ had severe confinement and age ranged from 21,5 ± 5,1 to 30,8 ± 5,7 %, with subclinical form hymenolepiasis ranged from 12,3 ± 5,5 to 31,4 ± 7,8. Symptoms such as regular acute abdominal pain due to trauma of the mucous membrane of the intestinal wall hooks embedded parasite, subfebrile body temperature (usually marked increase to 37,5°, at least until 38,0°), moderately expressed normal and hypochromic anemia (marked reduction hemoglobin in the blood to 100 g / l or less), moderate enlargement of the liver pr., observed with high frequency in many children - up to 65,7 ± 8,1; 83,1 ± 4,7 %.***

***Key words: hymenolepiasis, helminthiasis, children***

## КЛИНИКО-ЭПИДЕМИОЛОГИЧЕСКИЕ АСПЕКТЫ ГИМЕНОЛЕПИДОЗА СРЕДИ ДЕТЕЙ

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✓ ***Резюме***

***Приведенные данные показали, что удельный вес гименолепидоза в разных возрастных группах детей примерно одинаковый и варьирует от 19,0 ± 3,9 до 31,4 ± 7,8 %. При этом настораживает довольно высокий показатель среди детей в возрасте менее 4 лет (19,0 ± 3,9 %). Показатели манифестной клинической формы гименолепидоза также не имели выраженной возрастной приуроченности и варьировали от 21,5 ± 5,1 до 30,8 ± 5,7 %, при субклинической форме гименолепидоза варьировали от 12,3 ± 5,5 до 31,4 ± 7,8. Такие симптомы, как регулярные острые боли в животе в результате травматизации слизистой оболочки стенок кишечника крючьями внедренного паразита, субфебрильная температура тела (обычно отмечается повышение до 37,5°, реже до 38,0°), умеренно выраженная нормо- и гипохромная анемия (отмечается снижение уровня гемоглобина в крови до 100 г/л и меньше), умеренное увеличение печени и пр., наблюдались с высокой частотой у многих детей - от 65,7 ± 8,1 до 83,1 ± 4,7 %. При манифестной форме отмечаются эпилептиформные судороги, частая диарея с примесью крови, дисбактериоз, которые были зафиксированы у большинства детей - от 67,7 ± ,8 до 87,7 ± 4,1 % случаев.***

***Ключевые слова: гименолепидоз, гельминтозы, дети***

## BUXORO AHOLISI BOLALAR O'RTASIDAGI GİMENOLEPIDOZ KLINIK VA EPIDEMIOLOGIK ASPEKTLARI

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***Taqdim etilgan ma'lumotlar shuni ko'rsatdiki, bolalarning turli yosh guruhlarida gimenolediyozning nisbati taxminan bir xil va 19,0 ± 3,9 dan 31,4 ± 7,8% gacha. Shu bilan birga, 4 yoshgacha bo'lgan bolalar orasida juda yuqori ko'rsatkich qo'rqinchli (19,0 ± 3,9%). Gimenolepidozning aniq klinik shakli ko'rsatkichlari ham aniq chegaralangan emas va 21,5 ± 5,1 dan 30,8 ± 5,7% gacha o'zgargan, gimenolepidozning subklinik shakli 12,3 ± 5,5 dan 31,4 ± 7,8 gacha.***

***Ichki devorlarning shilliq qavatiga singib ketgan parazit ilgaklari, tana haroratining subfebrilligi (odatda 37,5 ° gacha ko'tariladi, kamdan-kam hollarda 38,0 ° gacha ko'tariladi) natijasida o'rtacha o'tkir qorin og'rig'i, o'rtacha normo- kabi belgilar. va gipoxromik anemiya (qonda gemoglobin darajasining 100 g / l ga kamayishi va undan kam), jigarda o'rtacha o'sish va boshqalar ko'p bolalarda yuqori chastotada kuzatilgan - 65,7 ± 8,1 dan. 83,1 ± 4,7%. Manifest shaklda epileptiform tutilishlar, ko'pincha qonda aralashgan diareya, disbiyoz, aksariyat bolalarda qayd etilgan - 67,7 ± .8 dan 87,7 ± 4,1% gacha.***

***Kalit so'zlar: gimenolepidoz, gelmintozlar, bolalar***

## Relevance

Hymenolepiasis is one of the most widespread human helminthiases, and is one of the urgent problems for practical health care, due to the imperfection of the complex of health-improving measures. Currently, there are no scientifically based measures for its prevention [1,2,3,9]. The peculiarities of the mechanism of transmission of hymenolepiasis (contagious helminthiasis) make it a difficult disease to control. It is very widespread even in a comparatively good hygienic setting. The widespread decrease in the immune status among children, on the one hand, and the acquisition of anthelmintic resistance by pathogens, on the other hand, contributes to the fact that the clinical picture of hymenolepiasis undergoes changes [4,5,6,7,8]. Some symptoms subside or subside altogether, and other symptoms appear instead. As a result of this, timely and reliable clinical diagnosis of hymenolepiasis and especially the differentiation of its main forms on the part of practitioners is **In** complicated. **this regard, the purpose of** our study was to study the clinical forms of hymenolepiasis among the child population .

## Material and methods

The work was carried out among 65 children with manifest and 35 children with subclinical forms of hymenolepiasis at the age of 4-15 years, identified during parasitological examination in preschool institutions in the city of Bukhara. As a result of repeated observations and examinations, detailed questioning of children and their parents, clinical symptoms of various forms of hymenolepiasis were recorded.

Hymenolepiasis was diagnosed by coproovoscopy. Feces were taken 3 times with an interval of 2-3 weeks due to the peculiarities of the development cycle of the causative agent of hymen-lepidosis - dwarf tapeworm. Moreover, it is necessary to examine fresh material (morning feces sampling). Statistical analysis of the data was carried out using the Microsoft Excel spreadsheet program, which were generated in accordance with the requests of the study.

## Result and discussion

It is accepted to judge the state of providing qualified medical care for parasitic infestations by the age distribution of diseases among children. We also used this method and distributed the identified children with hymenolepiasis by age groups (Table 1).

At the same time, statistical data (outpatient cards) are not informative enough, since they cannot be used to judge the true prevalence of hymenolepiasis among children=-zxcV BN,M…. The analysis of the objective

linical symptoms of hymenolepiasis, revealed by a thorough clinical and parasitological examination of children, is given in table. 2.

**Table 1**
**The specific gravity of various forms of hymenolepiasis based on the analysis**

| Age groups, years | Hymenolepiasis | | | | | |
|---|---|---|---|---|---|---|
| | Total (*n* = 100) | | Manifest form (n = 65) | | Subclinical form (n = 35) | |
| | abs. | % | abs. | % | abs. | % |
| < 4 | 19 | 19,0 ± 3,9 | 14 | 21,5 ± 5,1 | 5 | 12,3 ± 5,5 |
| 4-7 | 26 | 26,0 ± 4,4 | 18 | 27,7 ± 5,6 | 8 | 22,9 ± 7,1 |
| 8-11 | 24 | 24,0 ± 4,3 | 13 | 20,0 ± 4,9 | 11 | 31,4 ± 7,8 |
| 12-15 | 31 | 31,0 ± 4,6 | 20 | 30,8 ± 5,7 | 11 | 31,4 ± 7,8 |
| Total | 100 | 100,0 | 65 | 65,0 ± 4,7 | 35 | 35,0 ± 4,7 |

There is no definite pattern in the data given in the table. Thus, the proportion of hymenolepiasis in different age groups is approximately the same and varies from 19.0 ± 3.9 to 31.4 ± 7.8% (C2 = 2.50; p> 0.05). However, the rather high rate among children under 4 years of age (19.0 ± 3.9%) is alarming, which is associated with the contact transmission mechanism.

Indicators of the manifest clinical form of hymenolepiasis also do not have a pronounced age-related relationship and vary from 21.5 ± 5.1 to 30.8 ± 5.7% (% 2 = 3.36; p> 0.05). Although this form, as the age of children increases, it should increase due to the accumulation of pathogens, in addition, with this form, the indicator among children under the age of 4 is too high (21.5 ± 5.1%). The above fully applies to the subclinical form of hymenolepiasis, varying from 12.3 ± 5.5 to 31.4 ± 7.8 (c2 = 0.36; p> 0.05). Hence, the fact of existing flaws in the diagnosis of hymenolepiasis is obvious, especially in the differentiation of their clinical forms. On the basis of this, the state of the provision of helminthological care to children in general can be assessed as satisfactory. However, the lower turnover of the population to medical institutions and the preference for treatment at home should be seriously alarming, and therefore it is necessary to identify the reasons for this situation. Even more unsightly is the fact that the cases of self-treatment by parents of children with helminthiases have become more frequent. And only after repeated unsuccessful attempts, according to the outpatient

Objective clinical symptoms, as well as subjective ones, are also very informative in diagnosing hymenolepiasis. Symptoms such as regular acute abdominal pain as a result of trauma to the mucous membrane of the intestinal walls by hooks of an embedded parasite, subfebrile body temperature (usually there is an increase to 37.5 ° C, less often to 38.0 ° C), moderately expressed norm - and hypochromic anemia (there is a decrease in the level of hemoglobin in the blood to 100 g / l and less), a moderate increase in the liver, etc., were observed with a high frequency in many children - from 65.7 ± 8.1 to 83, 1 ± 4.7% (c2 = 3.87; p <0.05).

In addition, this symptomatology is available to doctors of the parasitological service, and with a careful examination of children, the diagnosis of helminthiasis is not associated with great difficulties and should not lead to erroneous results. In addition, in table. 2 shows the indicators of symptoms, which, along with the diagnosis of hymenolepiasis, also make it possible to differentiate its clinical forms.

In the manifest form, such symptoms include epileptiform seizures, frequent diarrhea with an admixture of blood, dysbiosis, which were recorded in the majority of children - from 67.7 ± .8 to 87.7 ± 4.1% of cases (c2 = 7.50; p <0.01). The incidence of these symptoms in the subclinical form is much less (c2 = 7.16; p <0.01), and therefore their significance in the diagnostic relation is small - from 8.6 ± 4.8 to 40.0 ± 8, 4% (C2 = 9.40; p <0.01).

**Table 2**

**Analysis of objective clinical symptoms among children with different forms of hymenolepiasis**

| Symptom | Clinical forms | | | | Significance of the difference | |
|---|---|---|---|---|---|---|
| | Manifest form (n = 65) | | Subclinical form (n = 35) | | | |
| | abs | % | abs | % | $c^2$ | p |
| Subfebrile body temperature | 53 | 81,5 ± 4,9 | 26 | 74,3 ± 7,5 | 0,53 | > 0,05 |
| Dyspeptic manifestations: | | | | | | |
| - nausea, vomiting | 10 | 15,4 ± 4,5 | 3 | 8,6 ± 4,8 | 0,93 | > 0,05 |
| -diarrhea mixed with blood | 44 | 67,7 ± 5,8 | 10 | 28,6 ± 7,7 | 14,02 | < 0,01 |
| - loss of appetite, thirst | 21 | 32,3 ± 5,8 | 22 | 62,9 ± 8,3 | 8,66 | < 0,01 |
| Asthenoneurotic syndrome: | | | | | | |
| - asthenia, irritability | 31 | 47,7 ± 6,2 | 6 | 17,1 ± 6,5 | 9,11 | < 0,01 |
| - headache | 27 | 41,5 ± 6,2 | 10 | 28,6 ± 7,7 | 1,64 | > 0,05 |
| - dizziness | 7 | 10,8 ± 3,9 | 19 | 54,3 ± 8,5 | 22,39 | < 0,01 |
| Allergic manifestations: | | | | | | |
| - urticarial rash | 23 | 35,4 ± 6,0 | 12 | 5,7 ± 4,0 | 10,68 | < 0,01 |
| - vasomotor rhinitis | 36 | 55,4 ± 6,2 | 21 | 34,3 ± 8,1 | 4,06 | < 0,05 |
| - itchy skin | 6 | 9,2 ± 3,6 | 2 | 60,0 ± 8,4 | 29,75 | < 0,01 |
| Dysbacteriosis | 53 | 81,5 ± 4,9 | 3 | 8,6 ± 4,8 | 49,16 | < 0,01 |
| Unstable stool | 12 | 18,5 ± 4,9 | 32 | 91,4 ± 4,8 | 49,16 | < 0,01 |
| Bowel trauma | 54 | 83,1 ± 4,7 | 29 | 82,9 ± 6,5 | 0,01 | > 0,05 |
| Moderate anemia | 52 | 80,0 ± 5,0 | 27 | 77,1 ± 7,2 | 0,36 | > 0,05 |
| Epileptiform seizures | 57 | 87,7 ± 4,1 | 14 | 40,0 ± 8,4 | 25,13 | < 0,01 |
| Weight loss | 21 | 32,3 ± 5,8 | 29 | 82,9 ± 6,5 | 23,25 | < 0,01 |
| Abdominal cramps | 3 | 4,6 ± 2,6 | 33 | 94,3 ± 4,0 | 79,40 | < 0,01 |
| Moderate enlargement of the liver | 47 | 72,3 ± 5,6 | 23 | 65,7 ± 8,1 | 0,74 | > 0,05 |

Reliably frequent in the manifest form and the following symptoms - asthenoneurotic syndrome: general asthenia, headache, dizziness - from 41.5 ± 6.2 to 55.4 ± 6.2% (c2 = 2.49; p> 0.05). It is noticeably less in the subclinical form (c2 = 0.86; p> 0.05) - from 17.1 ± 6.5 to 34.3 ± 8.1% (c2 = 1.14; p> 0.05).

Specific, diagnostically significant symptoms are also characteristic of the subclinical form of hymenolepiasis. So, among children, symptoms are very frequent - the presence of weight loss, skin itching, loss of appetite, unstable stool - from 60.0 ± 8.4 to 91.4 ± 4.8% (c2 = 9.40; p <0.01). The frequency of these symptoms in the manifest form was less, and therefore they are of little use in the diagnostic relation (c2 = 7.16; p <0.01) - from 9.2 ± 3.6 to 32.3 ± 5.8% (c2 = 10.52; p <0.01). We have already stopped on the rest of the symptoms of the subclinical form, which are less common. Especially it is necessary to dwell on the most common objective symptom of this form - abdominal cramps, which are acute attacks with interruptions of several days or constant dull aching pain, which occurs in 94.3 ± 4.0% of children.

## Conclusion

The revealed symptoms of hymenolepiasis is a clear indication of how much this invasion is of a systemic nature, has a pathogenic effect on the organs and systems of the body. It is easy to guess (and the latest literature data indicate this) that such a high incidence of hymenolepiasis and its pronounced pathogenic effect on the body is possible with a weakened immune system of children, weakness of nonspecific protective functions of their body.

It is well known the importance of timely and reliable diagnosis of helminthiasis, including hymenolepiasis, since the earlier its qualified treatment is carried out, the higher the achieved therapeutic effect. Even more important is the timely differentiation of the clinical forms of this invasion. The fact is that if the advanced stages of the subclinical form of invasion can be completely cured with the correct specific selection of specific anthelmintic drugs, then the launched forms of its manifest form are difficult to treat and pose a serious threat to the health of children.

In this regard, practical parasitologists should be armed with accessible and objective cadastral indicators that allow, when examining children, both on an outpatient basis and at home, to diagnose in them not only the type of helminthiasis itself, but also its clinical forms and not slow to start treating the invasion, and in its severe cases, send children to specialized children's medical institutions. It should be added to the above that the work of parasitologists at the polyclinic level should be of an active preventive nature, i.e. as sick children call for medical help or call doctors at home. Our experience shows that with periodic visits to territorially timed children's institutions, it is possible to identify a significant number of children with helminthiases who, for various reasons, do not currently seek medical help. The effectiveness of such a formulation of work is due to the fact that most children under 7 years old attend preschool childcare institutions and almost all children aged 7-15 years attend schools. In addition, when visiting territorial children's institutions, it is possible to cover the parents of children with appropriate sanitary and educational work, who willingly make contact and then themselves bring even healthy children for parasitological examination.

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# OPTIMIZATION METHODS OF LOCAL TREATMENT OF PURULENT-NECROTIC LESIONS OF THE FOOT IN DIABETES MELLITUS

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✓ ***Resume***

***Analyzed the results of complex treatment of 145 patients with purulent-necrotic lesions of the foot in diabetes mellitus. Application of local laser vacuum therapy in the complex treatment allowed a short time to achieve the cleansing of the wound surfaces from pathogenic organisms, to ensure the normalization of the signs of intoxication in a shorter time compared with the traditional treatment, reduction of the numbers of the progression of the pathological process in the foot from 27,1% to 6,6%, and reduced the number of deaths from 10,0% to 2.6%.***

***Keywords: diabetes mellitus, lower extremities, local vacuum therapy, antibacterial therapy, apoptosis.***

# ОПТИМИЗАЦИЯ МЕТОДОВ МЕСТНОГО ЛЕЧЕНИЯ ГНОЙНО-НЕКРОТИЧЕСКИХ ПОРАЖЕНИЙ СТОПЫ ПРИ САХАРНОМ ДИАБЕТЕ

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✓ ***Резюме***

***Проанализированы результаты комплексного лечения 145 больных с гнойно-некротическими поражениями стопы при сахарном диабете. Применение местной лазерной вакуум терапии в комплексном лечении позволило в короткие сроки добиться очищения раневых поверхностей от патогенной микрофлоры, обеспечению нормализации признаков интоксикации в более короткие сроки по сравнению с традиционным лечением, уменьшению чисел прогрессирования патологического процесса на стопе с 27,1% до 6,6%, а также снижению количества летальных исходов с 10,0% до 2,6%.***

***Ключевые слова: сахарный диабет, нижних конечностей, вакуум терапия, антибактериальная терапия, апоптоз.***

# QANDLI DIABETDA TOVONNING YIRINGLI NEKROTIK ZARARLANISHINI MAHALLIY DAVO TAKTIKASINI TAKOMILLASHTIRISH

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Abu Ali ibn Sino nomidagi Buxoro davlat tibbiyot instituti

✓ ***Rezume***

***Qandli diabet fonidada tovonning yiringli nekrotik zararlanishi kuzatilgan bo'lgan 145 nafar bemorni kompleks davolash natijalari tahlil qilindi. Vakuum bilan davolashdan foydalanish,patogen mikroflora hosil qilgan yara yuzalarining bitishi an'anaviy davolash bilan solishtirganda qisqa vaqt ichida samarali natija berdi, oyoqdagi patologik jarayonlarning progressiyasining sonini kamaytirish 27,1% dan 6,6% gacha, shuningdek, o'lim sonini 10,0% dan 2,6% gacha kamaytirishga erishildi.***

***Kalit so'zlar: qandli diabet, pastki muchalar, mahalliy vakuum terapiya, antibakterial terapiya, apaptoz.***

## Relevance

The beginning of the development of the doctrine of wounds is lost in the depths of centuries, and during all this time, an incalculable number of methods of treating wounds were proposed. Despite the successes achieved by medical science, the issues of treatment of patients with purulent-septic pathology of the lower extremities in diabetes mellitus do not lose

their relevance. The problem of rational standardized surgical tactics for purulent-necrotic foot lesions is also not solved, due to the lack of identical criteria for assessing the localization and prevalence of local lesions, the severity of local and general manifestations of inflammation and infection. Bacterial contamination of the wound supports inflammation and significantly slows down the course of reparative processes. The resistance of pathogenic microorganisms to antibacterial therapy and the problems of hospital infection remain an unsolved problem [1,2,7]. In this regard, the development of alternative technologies and methods of local treatment of wound infection continues. Local treatment of purulent processes aims to: stop or significantly reduce pain, create unfavorable conditions for the development of microbes, limit the spread of necrotic processes, prevent resorption of bacterial and tissue decay products, ensure regular outflow of inflammatory exudate from the purulent focus, and thereby reduce purulent intoxication, stimulate the processes of reparative regeneration [3,4,5]. Every year, many publications are published on the treatment of purulent wounds. At the same time, neither experimental data nor numerous clinical and special studies have allowed us to find a method that would bring us closer to solving the problem of treating wound infection. Vacuum therapy (LVT) is one of the most promising methods of treating patients with purulent-necrotic diseases. According to a number of authors, this direction is the leading one, which requires careful and further development. [3,6,8,10]. The essence of the method is that many biological objects (tumor cells, microbes, etc.) accumulate certain dyes-photosensitizers, as a result of which they become sensitive to the effects of light energy, as well as low-intensity laser radiation of the appropriate wavelength. In sensitized tissues and cells, a photochemical reaction develops with the release of singlent oxygen, free radicals, and highly active biological objects that have a detrimental effect, in particular, on tumor cells, microorganisms, etc. In recent years, there have been scientific publications devoted to the use of LVT for the treatment of purulent wounds, which note the advantages of LVT compared to traditional therapy, in particular, a pronounced antibacterial and anti-inflammatory effect [1,5,9]. It should be emphasized that the effectiveness of LVT does not depend on the spectrum of sensitivity of microorganisms to antibiotics, it is harmful even for antibiotic-resistant strains of microorganisms. Pathogenic microorganisms do not develop resistance to LVT, while photodynamic damage is local in nature, and the bactericidal effect is limited to the zone of laser irradiation of sensitized tissues, which avoids the side effects observed when using traditional methods of treating surgical infection.Despite the large number of proposed methods of LVT application, it should be carried out according to a two-step protocol: the first is the delivery of the photosensitizer to the target cells, as well as the creation of conditions for the penetration of the photosensitizer into the cells, the second is the irradiation of the target tissue location area with light of the appropriate wavelength. All subsequent reactions lead to the formation of reactive oxygen species (ROS). This, in turn, leads to the death of the cells that have accumulated the sensitizer. The uniqueness of LVT is that after exposure, both methods of death in target cells can be triggered: apoptosis, and necrosis. Necrosis, or passive cell death, is an irreversible process that is mainly accompanied by a loss of membrane integrity and metabolic homeostasis due to uncontrolled cellular disintegration. Apoptosis or "active cell death" is a regulated cellular suicide. The process of apoptosis is controlled by both intracellular and extracellular factors. Regardless of the factor that triggers the process, it always ends with a characteristic sequence of morphological, biochemical, and energy changes [1,6,7]. The process of apoptosis prevents the uncontrolled release of intracellular material into the surrounding space and prevents damage to neighboring cells and tissue inflammation.A number of authors have experimentally proved that the use of photodynamic therapy for purulent wounds of soft tissues is a promising development that increases the success in the treatment of purulent processes of soft tissues, is pathogenetically and economically justified, and reduces the patient's stay in the hospital [1,6,7,8]. Another undeniable advantage of this method is its ease of use and the absence of significant material and physical effort.

**Objective:** To improve the results of complex treatment of purulent-necrotic foot lesions in diabetes mellitus by using local vacuum therapy.

## Material and methods

We analyzed the results of a comprehensive examination and treatment of 145 patients with purulent-necrotic lesions of the lower extremities in diabetes mellitus who were inpatient treatment in the department of purulent surgery of the clinic of the Regional Multidisciplinary Medical Center, Department of Purulent Surgeryfrom

2015 to 2020. Among the examined patients, men were 80 (55.17%), women – 65 (44.83%), the age of patients varied from 35 to 75 years. The revealed changes of the foot were represented by the following morphological forms: focal tissue necrosis-12; purulent-necrotic ulcers of the toes-19; purulent-necrotic phlegmon of the foot-25; Osteoarthropathy in combination with destructive osteomyelitis of the foot bones – 17; gangrene of the toes (dry and wet) – 37; gangrene of the distal parts of the foot (dry and wet) – 35. The time from the onset of the disease and before treatment and hospitalization in the hospital averaged 7.5±1.5 days. 95.4% of the patients had one or more concomitant diseases, with IHD, PIX, and arterial hypertension prevailing, and 10.5% of them had a history of acute cerebrovascular accident. Complications such as diabetic retinopathy and nephropathy were detected in 27.5% of patients. The examination of patients included general clinical methods, laboratory methods, instrumental methods of studying the arterial bed of the lower extremities, microbiological studies of wound exudate. Depending on the methods of complex treatment, all patients were divided into 2 groups. The first control group consisted of 70 patients with purulent-necrotic lesions of the lower extremities, who underwent a complex of therapeutic measures, including surgical accommodation, antibacterial therapy, infusion, detoxification therapy, drugs that improve microcirculation, correction of glycemia levels, and symptomatic treatment of concomitant diseases. Local treatment was carried out in the traditional way. The second group consisted of 75 patients who, in addition to the above-mentioned complex therapeutic measures, after surgical treatment of a purulent focus, local treatment was supplemented by laser vacuum therapy (LVT). Local laser LVT was performed as follows: after washing with antiseptic solutions and drying, a photosensitizer was applied to the wound – a 0.05% solution of mytilene blue belonging to the group of phenothiazines (cationic azines) with a maximum absorption of λ Max (nm) – 620-660 nm. with an exposure of 15-20 minutes. Then, after washing off the wound surface of the photosensitizer, the wound surface was illuminated with laser radiation using the ALT-Vostok 03 device. The distance from the end of the light guide to the wound surface was 0.5-3.0 cm in the absence of thermal discomfort in the patient. The total exposure time depended on the area of the wound surface and ranged from 15 to 20 minutes. For a large area of the wound, polypositional irradiation of the wound surfaces was used.

**Results and discussion**

The analysis of the results of the studies showed that at admission to the hospital, all patients had signs of intoxication of varying severity, as evidenced by changes in the leukocyte formula and an increase in the leukocyte intoxication index (LII) to 5.5±0.3 standard units. During bacteriological studies, it was found that the main microorganisms that made up the microbial landscape of the wounds were: Staphylococcus aureus, epidermal C., Ps. Pseudomonas aeruginosa, as well as representatives of the family of enterobacteria – Klebsiella, proteus, Enterobacter cloaceae and the family Bacillaceae. It should be noted that in most cases, the flora of purulent wounds were represented by microbial associations. When studying the antibiotic sensitivity of the isolated strains, it was revealed that all of them had polyvalent resistance to many antibacterial drugs. High levels of bacterial contamination of wounds (107 -109 CFU/ml) were detected in both study groups of patients prior to treatment. An analysis of the results obtained in patients of the first-control group who were locally applied after surgical placement with ointments on a water-soluble basis showed that the normalization of the temperature curve occurred on 4.5±0.5 days, a decrease in perifocal inflammation and hyperemia of the tissues surrounding the wound was observed on 5.0±0.5 days, a decrease in local edema was noted on average on 3-4 days, and infiltration in the area of the wound edges on 5-6 days. The leukocyte intoxication index in patients of the control group had the following values: on day 4-5, 3.5±0.2 usl. units, on day 7, 1.7±0.10 usl. units, and only on day 9-10 of treatment, there was a tendency to normalize LII indicators with the following values: 1.1±0.11 usl. units. The indicators of microbial contamination of wounds during complex treatment in patients of the control group were as follows: on the 3rd day of treatment, microbial contamination of wounds averaged 106 -107 CFU / ml, on the 5th day 105 -106 CFU/ml, on the 7th day 103 -104 CFU/ml, on the 9th-10th day of treatment 102-103 CFU / ml. The reduction in the area of the wound surface by 3-5 days averaged 4.5±0.3%, by 6-7 days it reached 5.5±0.5% per day, by 9-10 days 7.0±0.5%. Of the 70 patients treated in the control group, 19 (27.1%) showed a progression of the pathological process on the foot against the background of a complex of traditional methods of treatment, who, according to vital indications, were forced to perform high amputations of the lower extremities (12 patients at the level of the middle third of the thigh, 7 patients underwent an

improved method of myoplastic amputation at the level of the upper third of the lower leg). 9 (12.8%) patients developed septic shock with signs of multiple organ failure, which was fatal in 7 (10.0%) cases. As mentioned above, the second main group consisted of 75 patients who, in addition to the above complex therapeutic measures, after surgical treatment of a purulent focus, local treatment was supplemented by laser vacuum therapy (VT). Analysis of the results of complex treatment in patients of the main group showed that the normalization of the temperature curve occurred on 2.5±0.5 days, a decrease in perifocal inflammation and hyperemia of the tissues surrounding the wound was observed on 3.0±0.5 days, a decrease in local edema was observed on average on 2-3 days, and infiltration in the area of the wound edges on 3-4 days. The leukocyte intoxication index in patients of the main group had the following values: on the 3rd day, 2.5±0.3 usl. units, 4-5 days, 1.7±0.2 usl. units, on the 7th day, 1.0±0.10 usl. units, that is, normalized. The indicators of microbial contamination of wounds during complex treatment in patients of the main group were as follows: on the 3rd day of treatment, microbial contamination of wounds averaged 103 -104 CFU/ml, on the 5th day 102 -103 CFU/ml, on the 6th –7th day of treatment, the cultures of wound exudate did not give microbial growth. The reduction in the area of the wound surface by 3 days averaged 5.5±0.5%, by 5 days it reached 9.5±0.5% per day, by 7 days 12.0±0.5%. Against the background of laser photodynamic therapy in patients of the second-main group of lisch, in 5 (6.6%) patients, the progression of the pathological process of the foot was observed, the cause of the progression was critical ischemia of the lower extremities due to atherosclerotic multilevel lesions of the arteries of the limb. 3 (4.0%) patients underwent myoplastic amputation at the level of the upper third of the lower leg for vital indications. In 2 (2.6%) patients with progressive signs of multiple organ failure, cardiac arrest was observed leading to a fatal outcome.A comparative analysis of the results of complex treatment of purulent-necrotic lesions of the foot in diabetes mellitus showed that the use of laser photodynamic therapy reduces the time of cleaning wounds from infection by 1.5-2 times, accelerates the normalization of signs of intoxication of the body, as well as rapid relief of local edema, infiltration in the area of the edges of wounds.

**Thus,** the use of local vacuum therapy in the complex treatment of purulent-necrotic pathology of the foot in diabetes mellitus helps to reduce the time of cleaning wounds from infection by 1.5-2 times.The use of laser vacuum therapy is a promising development that increases the success in the treatment of purulent-necrotic lesions of the foot, being pathogenetically and economically justified, and reduces the patient's stay in the hospital. The method of vacuum therapy is simple, pathogenetically justified, and highly effective, which is one of the advantages compared to traditional treatment that does not require significant material and physical effort.

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# AUDITORY ADAPTATION IN PATIENTS WITH PERIPHERAL AND CENTRAL HEARING IMPAIRMENT

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✓ ***Resume***

***In 79 normally hearing and in 328 patients with peripheral and central hearing impairment, the reverse adaptation time (VAD) was measured after 2-minute stimulation with a tone of 2000 Hz and 60 dB intensity above the threshold of hearing at the same frequency. It was shown that in patients with peripheral lesions of the sound-receiving apparatus, the value of the VAD did not differ from the norm. It was found that in patients with local brain lesions, the VAD increased sharply with damage to the brain stem and diencephalic structures, as well as in cases where the existing lesion could affect these structures (cerebellopontine angle).This test is proposed to be used in the general complex of otoneurological diagnostics of local brain lesions.***

***Key words: sensorineural hearing loss, audiometry, diencephalic structures***

# СЛУХОВАЯ АДАПТАЦИЯ У БОЛЬНЫХ С ПЕРИФЕРИЧЕСКИМИ И ЦЕНТРАЛЬНЫМИ ПОРАЖЕНИЯМИ СЛУХА

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✓ ***Резюме***

***У 79 нормально слышащих и у 328 больных с периферическими и центральными поражениями слуха измеряли время обратной адаптации (ВАД) после 2-минутной стимуляции тоном частотой 2000 Гц и интенсивностью 60дБ над порогом слышимости на той же частоте. Показано, что у больных с периферическими поражениями звуковоспринимающего аппарата величина ВАД не отличалась от нормы. Установлено, что у больных с локальными поражениями мозга ВАД резко возрастало при поражении ствола головного мозга и диэнцефальных структур, а также в случаях, когда имеющееся поражение могло оказать влияние на эти структуры (мостомозжечковый угол). Этот тест предлагается использовать в общем комплексе отоневрологической диагностики локальных поражений головного мозга.***

***Ключевые слова: нейросенсорная тугоухость, аудиометрия, диэнцефальные структур***

# БЕМОРЛАРНИ ПЕРИФЕРИК ВА МАРКАЗИЙ ЭШИТУВ НЕРВИНИ БУЗИЛИШИДАГИ ЭШИТУВ АДАПТАЦИЯСИНИ ТЕКШИРИШ

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✓ ***Резюме***

***Периферик ва марказий эшитув фаолияти бузилган 328 бемор ва 79 эшитувчиларни қайта мослашиш вақти (КМВ) ни текширилди икки дақиқадан сўнг 2000 Гц ва 60 Дб ли эшитув бўсағаси стимуляциясидан кейин текширувлари ўтказилди. Текширувлар шуни кўрсатдики периферик товуш қабул қилувчи орган бузилган беморларда КМВ кўрсаткичи нормадан фарқи бўлмади. Аниқландики КМВ бош миядаги маҳаллий бузилган беморларда миқдорий кўрсаткичи бирдан кўтарилган бу ҳолат диэнцефал структуралар бузилганида***

***ҳамда кўприк мияча бурчагидаги паталогик ўзгаришларда ҳам кузатилади. Бу тест отоневрологик ташхислашда бош миянинг маҳаллий ўзгаришини умумий текширув усули деб ҳисобласа бўлади.***

***Калит сўзлар: Нейросенсор эшитиш пастлиги, аудиометрия, диэнцефал структуралар.***

**Relevance**

Among the phenomena that characterize the auditory system, adaptation to a decrease in auditory sensitivity, which occurs as a result of sound exposure, occupies a special place [3,5]. In clinical practice, for the differential diagnosis of hearing loss, such parameters of auditory adaptation are used as the value of the shift in the hearing threshold, the recovery time of the threshold sensitivity after sound load [4,7,8]. Traditional treatment of various forms of sensorineural. Hearing loss does not satisfy clinicians and is effective only in the acute onset of the disease, while the methods of electronic hearing aid with implantation of frequency-modeling stimulators in the cochlea inspire some hope, but their results are still far from ideal [1,4]. All this indicates that the treatment in almost all cases is at the later stages of the development of the disease. And this is a consequence of the late diagnosis of the disease, primarily associated with the use of traditional methods for diagnosing hearing impairment, which by now already indicates insufficient methodological support for solving the existing problem and requires the development of fundamentally new approaches to the diagnosis of hearing impairment, which would make it possible to detect the disease on that stages of development, when violations are still reversible [2,5]. In recent years, there has been an active search for new methods for studying the peripheral and central mechanisms for analyzing sounds by frequency, intensity, duration, binaural interaction, which form the basis of the high noise immunity of the auditory system in a wide frequency and dynamic ranges of hearing. In most clinical studies of auditory adaptation, it was noted that the maximum adaptive changes were observed in patients with sensorineural hearing loss of the peripheral type. In contrast to these concepts, in a number of psychoacoustic, psychopharmacological and electrophysiological studies, data were obtained linking adaptation to processes occurring in the central parts of the nervous system [1,5,9]. In recent years, it has been repeatedly suggested that adaptation is related to the state of the central parts of the auditory analyzer [2,5,8,9].

**The purpose of** this study was undertaken to study the features of auditory adaptation in patients with lesions of various parts of the brain.

**Material and methods**

The study was carried out on an AP-5 audiometer manufactured by Peterss (England). After registering the tonal audiogram to clarify the level of hearing damage, the patient was subjected to a comprehensive examination, which included the following tests: threshold adaptation, index of intensity increments, duration effect, automatic audiometry, discomfort thresholds. In some patients, the phenomenon of lateralization was studied by the method of A. Ya. Altman. Then, the shift of the hearing threshold and the recovery time of the threshold sensitivity (time of reverse adaptation in blood pressure) were determined according to the method adopted in clinical audiometry. The hearing threshold was measured by the 5 dB boundary method, after which the subject was monaurally applied for 2 min with a sound load with a tone of 1000 and 2000 Hz and 60 dB above the hearing threshold. Repeated measurements of the hearing thresholds for a tone of the same frequency were carried out immediately after the termination of the sound load. The audible signal was given for 2-3 seconds at intervals of 2 seconds. The intensities of the presented signals were changed from lower to higher and after reaching the threshold of hearing in the opposite order. The magnitude of the shift in the hearing threshold was determined as the difference between the intensity value of the first signal received after the sound load and the threshold signal intensity determined before the sound load, where the time elapsed from the moment the sound load was stopped until the initial hearing threshold was restored was taken as the recovery time of the threshold sensitivity (THR) ...

The study was conducted on 79 healthy subjects, 152 patients with impaired sound conduction and impaired sound perception of the peripheral type and 97 patients with brain lesions. A total of 328 people, among patients with brain lesions, 14 had a tumor and 83 had focal epilepsy. In addition to neurological, psychiatric, otoneurological and neuro-ophthalmological studies, electroencephalography was performed in all patients with brain lesions.

**Result and discussion**

At the beginning of the study, VAD and threshold shifts were determined in healthy

individuals and in patients with peripheral hearing impairments; in the future, when analyzing the data, only the results of VAD measurements will be given, since when determining this parameter, the differences between the studied groups of patients were most clearly revealed. It turned out that the average value of VAD in healthy individuals was 20.9 e, in patients with sensorineural hearing loss of the peripheral type - 22 s, in patients with otosclerosis - 76.2 s. A significant increase in VAD was observed in patients with otosclerosis. These changes were noted by K. L. Khilov and N. A. Preobrazhensky and other researchers.

It should be emphasized that in sensorineural hearing loss, VAD was short-lived and differed relatively little from the data in healthy people. Thus, the obtained results show that a pathological increase in VAD is not characteristic of peripheral lesions of the sound-perceiving apparatus; therefore, further studies of auditory adaptation were undertaken in patients wth central lesions.

**Table 1. VAD in patients with peripheral and central lesions of the auditory analyzer.**

| Study groups | Recovery time laziness, with | Significance of the difference | |
|---|---|---|---|
| | | with norm P | with sensorineural hearing loss P |
| Healthy faces | 20,9± 2,4 | | |
| Sensorineural hearing loss | 22,0± 1,8 | >0,05 | |
| Otosclerosis | 76,2± 4,5 | <0,05 | |
| Tumor of the temporal lobe | 21,9 ±1,9 | >0,05 | >0,05 |
| Frontal lobe tumor | 30,3± 1,1 | >0,05 | >0,05 |
| Parietal lobe tumor | 28,4 ±2,3 | >0,05 | >0,05 |
| Lesion of diencephalic structures | 83,5± 6,1 | <0,05 | <0,05 |
| Arachnoiditis of the cerebellopontine angle | 73,2± 6,3 | <0,05 | <0,05 |
| Brainstem lesions | 62,3± 22,9 | <0,05 | <0,05 |

Table 1 shows the average VAD values in patients with different localization of brain lesions. For comparison, the results of measurements are shown in healthy people, in patients with otosclerosis and in patients with sensorineural hearing loss. Compared with the data in healthy individuals and in patients with sensorineural hearing loss, the most pronounced increase in VAP was observed with lesions of the diencephalic structures, the cerebellopontine angle, and the brainstem. The revealed differences were statistically significant (P <0.05).

For many years, the otorhinolaryngological literature has been dominated by the idea that auditory adaptation is a process directly related to the cochlea [2,8]. The aforementioned authors between the magnitude and the accelerated increase in loudness, characteristic of damage to the hair cells of the spiral organ Undoubtedly, the researchers included patients with lesions of both peripheral and central parts of the auditory analyzer in the group of patients with sensorineural hearing loss, this could not be otherwise, since the level of development of audiology did not allow differential diagnosis of these forms of hearing loss.

Over the past decades, studies of domestic and foreign authors have expanded the possibilities of differential diagnosis of various forms of lesions of the sound-receiving apparatus. With the most careful differential diagnostic selection of patients with peripheral lesions of the sound-receiving apparatus, in contrast to the data of some previous researchers, we were unable to find a significant increase in the value of adaptation in these patients. The absence of a distinct increase in time in case of peripheral disturbances of the sound-perceiving apparatus makes one think that the adaptation process develops in the overlying parts of the auditory analyzer.

The authors of single studies conducted on patients with brain tumors noted an increase in VAD in most patients, including those with tumors of the posterior cranial fossa. It is quite obvious that the brain stem located in the posterior cranial

fossa could not remain intact and in most cases was involved in the pathological process [7,9].

It can be assumed that with other localizations of brain tumors, as a rule, functional, neurodynamic disorders occurred due to compression, dislocation and hypoxia in the cortex, in the subcortical nodes, in the hypothalamic-pituitary system and other structures of the brain, which in their turn could lead to the emergence of pathological adaptation. Despite the fact that the methods for measuring adaptation were almost identical, in the present study we failed to find an increase in VAP in a number of examined groups of patients with brain lesions. In particular, with lesions of the temporal, frontal, parietal regions of the brain, the duration of the recovery process remained normal, which, apparently, is associated with the predominance of focal epilepsy among the patients we examined. This circumstance, to a certain extent, limited the localization of the lesion focus.

At certain localizations of the lesion focus, VAD in patients with focal epilepsy increased markedly, most of all this was expressed in lesions of the diencephalic structures, the cerebellopontine angle, and the brain stem. The fact that an increase in adaptation was observed in stem and diencephalic lesions suggests that the regulation of the recovery process after sound stimulation is provided by the stem and hypothalamic parts of the central nervous system. As for the increase in VAD in patients with lesions of the cerebellopontine angle, in some cases, such lesions also affect the brain stem. In favor of the assumption about the connection of adaptation with the brainstem and hypothalamic parts of the brain, evidenced by the results of psychopharmacological experiments with the help of which it was shown that the value of auditory adaptation is determined by the state of the nonspecific system of the reticular formation of the brainstem and posterior hypothalamus.

**Findings**

Adaptation decreases markedly when taking drugs that suppress the activity of these structures and increases with the action of drugs that enhance the activity of the reticular formation and the hypothalamus. Thus, the auditory adaptation caused by moderate levels of sound stimulation can serve as an indicator characterizing the state of some central parts of the brain. All of the above suggests that the use of adaptation tests for diagnosing lesions of the hearing organ and for professional selection requires significant correction.

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# A MODERN APPROACH TO STUDYING THE PREVALENCE OF MENTAL DISEASES IN CHILDREN BORN OF CLOSE-KINDED MARRIAGES

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✓ ***Resume,***

***Children born in closely related marriages with and without hereditary burdens have a high percentage of neuropsychiatric complications, while children born outside of a close relationship suffered from minor deviations due to perinatal factors.***

***Key words: children, mental disorders, closely related marriages, hereditary burden.***

# СОВРЕМЕННЫЙ ПОДХОД К ИЗУЧЕНИЮ РАСПРОСТРАНЕННОСТИ ПСИХИЧЕСКИХ ЗАБОЛЕВАНИЙ У ДЕТЕЙ, РОЖДЕННЫХ ОТ БЛИЗКОРОДСТВЕННЫХ БРАКОВ

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***У детей, рожденных в близкородственных браках с наследственной отягощенностью и без таковой, отмечается высокий процент психоневрологических осложнений, в то время как дети, рожденные вне близкого родства, страдали незначительными отклонениями, обусловленными перинатальными факторами.***

***Ключевые слова: дети, психические расстройства, близкородственные браки, наследственная отягощенность.***

# YAQIN QARINDOSHLAR ORASIDAGI NIKOHLARDAN TUG‘ILGAN BOLALARDA RUHIY KASALLIKLARNING TARQALISHINI O‘RGANISHGA ZAMONAVIY YONDASHUV

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***Irsiyati og’irlashgan, yaqin qarindoshlar nikohdan tug'ilgan bolalarning asab-psixiatrik asoratlari yuqori foizga ega, yaqin qarindoshlar nikohisiz tug'ilgan bolalar esa perinatal omillar tufayli kamroq psihonevrologik o’zgarishlarga duch kelishgan.***

***Kalit so'zlar: bolalar, ruhiy buzilishlar, yaqin qarindoshlar nikohi, irsiyat og’irlashishi.***

## Relevance

Scientists from Northern Ireland argue that compared to the general population, children born in a marriage between cousins have a significantly increased risk of developing depression and schizophrenia [3].

The ban on closely related marriages (between blood relatives of the first line) is rooted in antiquity. Such a ban sharply reduces the likelihood of miscarriage, stillbirth and the development of hereditary diseases in offspring [1]. On the other hand, marriages between cousins (fourth-line relatives) are not uncommon in many countries - but children from such marriages are at increased risk of developing mental illness in adulthood [2].

In European countries, cousin marriages are not uncommon, however, according to researchers from Queen's University Belfast, among children born in the marriage of "cousins" and "cousins", clinical depression and schizophrenia [4].

Published April 4 in the online journal JAMA Psychiatry, the authors analyzed data on the health status of living Northern Irish citizens who were born between 1971 and 1986.

In a cohort of 363,960 people, 0.2% were children born in related marriages [3].

After adjusting for other risk factors, the researchers found that, compared with the general population, children of cousins and siblings were much more likely to take antidepressants and anxiety medications (35.8% in the study group and 26.0% in the general population) [2].

In addition, the children of cousins and cousins were more often prescribed antipsychotic drugs (8.5% of offspring of related marriages and 2.7% of the general population of the corresponding age took antipsychotics).

Scientists from Belfast determined that compared with the general population, the risk of developing schizophrenia in offspring of cousin marriages was 2 times higher, and the likelihood of developing depression in children born in such marriages increased 3 times [4].

However, the researchers found no increased risk of depression and schizophrenia in children born in second cousin marriages.

**Purpose of the study.** Analysis of the modern scientific base on the problem of kindred marriages, assessment of their impact on the development of a particular pathology in children.

## Material and methods

From the number of patients registered at the Andijan Regional Psychoneurological Dispensary (AOPSD), 100 children were selected who were born in closely related marriages at the age of 3 to 15 years. Of these, 47 are boys and 53 are girls.

Group I surveyed consisted of 52 children from families from closely related marriages with hereditary burden.

Group II - 48 children from families from closely related marriages without hereditary burden.

The control group consisted of 50 children, whose parents were not related and did not have a hereditary history of mental illness. The group was selected on the basis of a 10% representative sample using the random number method.

## Result and discussion

Mental disorders were observed in all children in the form of mental retardation, the presence of seizures, affective disorders, pathology of behavior, signs of organic brain damage, expressed in neurological deficits of varying severity

When examining children in case patients of group I in the presence of related marriages and hereditary burdens, the following mental disorders were revealed: the largest percentage is mental retardation of varying severity - 52%, the second most common pathology is epilepsy and non-epileptic seizures - 19%, behavioral disorders were observed in 15% of cases, children with organic lesions of the central nervous system accounted for 14% of cases.

Mental disorders of group II patients differed from the first group in the prevalence of convulsive syndromes and epilepsy (46%), as well as organic brain damage (28%), in the 3rd and 4th places, respectively, mental retardation (16%) and behavioral pathology (10%) ...

When examining children in the control group, the following mental disorders were revealed: mental retardation (PD) -40%, minimal cerebral dysfunction (MMD) -36%, mental retardation-3%, convulsive syndromes and epilepsy-9%, behavioral disorders-2%, organic damage to the central nervous system-10%.

When examining children in the control group, the leading positions are occupied by the MR (38%) and MMD (36%). In second place are organic brain lesions (10%) and epilepsy (10%). The smallest percentage is occupied by mental retardation (4%) and pathology of behavior (2%). It should be especially noted that children of I and II groups of nosologies MMD and ZPR are absent.

Thus, in children born in closely related marriages with hereditary burden, mental retardation is most common. Epileptic syndrome is leading in children born from closely related marriages without hereditary pathology, often against the background of organic lesions of the central nervous system. In children born out of closely related marriages and without hereditary burden, minimal cerebral dysfunction and mental retardation prevail.

## Conclusions

Despite a number of positive social and economic aspects of consanguineous marriages, from the point of view of genetics and medicine, one should take into account the negative impact of consanguineous marriages, which consists in an increased genetic risk for offspring and a high incidence of congenital pathology in newborns. An assessment of the socio-demographic aspects of closely related marriages shows that their wider prevalence is in many cases explained by the poor economic situation, lack of education and low level of social security.

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## CLINICAL TYPOLOGY OF THE PERSONALITY OF PATIENTS WITH INCOMPLETE SUICIDES AND ALGORITHM FOR PREVENTING REPEATED SUICIDAL ACTIONS

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***Auto-aggressive behavior, one of the manifestations of which is suicidal actions, in recent decades has significantly spread in most countries of the world, which puts this problem at one of the leading places in modern psychiatry.***

***For effective psychoprophylactic work among adolescents who have committed suicidal attempts, it is advisable to organize crisis assistance centers in educational institutions (schools and technical schools) to carry out coordination work on early detection, urgent correction, subsequent rehabilitation and prevention of suicidal behavior.***

***Depending on the suicidal activity of adolescents, the centers should be created in each specific educational institution or one for several according to the principle of territorial expediency.***

***Key words: clinical typology, incomplete suicide, personality changes, suicidal actions, prevention.***

## КЛИНИЧЕСКАЯ ТИПОЛОГИЯ ЛИЧНОСТИ ПАЦИЕНТОВ С НЕЗАВЕРШЕННЫМИ СУИЦИДАМИ И МЕТОДЫ ПРОФИЛАКТИКИ ПОВТОРНЫХ СУИЦИДАЛЬНЫХ ДЕЙСТВИЙ

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***Аутоагрессивное поведение, одним из проявлений которого являются суицидальные действия, в последние десятилетия значительно распространилось в большинстве стран мира что выдвигает указанную проблему на одно из ведущих мест в современной психиатрии.***

***Для эффективной психопрофилактической работы среди подростков, совершивших суицидальные попытки, целесообразно организовывать в учебных заведениях (школах и техникумах) центры кризисной помощи для осуществления координационной работы по раннему выявлению, ургентной коррекции, последующей реабилитации и профилактике суицидального поведения.***

***В зависимости от суицидальной активности подростков, центры должны создаваться в каждом конкретном учебном заведении или один на несколько по принципу территориальной целесообразности.***

***Ключевые слова: клиническая типология, незавершенный суицид, изменения личности, суицидальная дейтствия, профилактика.***

## TUGALLANMAGAN SUITSIDLARNI AMALGA OSHIRGAN SUITSIDENTLARDA SHAXSLARNING KLINIK TIPOLOGIYA VA ULARDA QAYTA SUITSIDAL URINISHLARNING OLDINI OLISH USULLARI

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✓ ***Rezyume***

***Suicid ko'rinishlaridan biri bo'lgan avtoagressiv xatti-harakatlar so'nggi o'n yilliklarda dunyoning aksariyat mamlakatlarida sezilarli darajada tarqalib ketdi, bu esa ushbu muammoni zamonaviy psixiatriyada etakchi o'rinlardan biriga qo'ydi.***

***O'z joniga qasd qilishga uringan o'spirinlar o'rtasida samarali psixoprofilaktik ish olib borish uchun o'z joniga qasd qilish xatti-harakatlarini erta aniqlash, shoshilinch ravishda davolash, reabilitatsiya qilish va oldini olish bo'yicha muvofiqlashtirish ishlarini olib borish uchun yordamchi markazlarini tashkil etish maqsadga muvofiqdir.***

***O'smirlarning o'z joniga qasd qilish faoliyatiga qarab, markazlar har bir aniq ta'lim muassasasida yoki bir nechta uchun hududiy maqsadga muvofiqligi printsipiga muvofiq tuzilishi kerak.***

***Kalit so'zlar: klinik tipologiya, to'liq bo'lmagan o'z joniga qasd qilish, shaxsning o'zgarishi, o'z joniga qasd qilish harakati, oldini olish.***

**Relevance**

Currently, for most states, suicide continues to be one of the most acute medical and social problems. According to modern concepts, a combination of various factors - biological, personality-psychological, social-environmental, ethnocultural, stressful, psychopathological - is involved in the genesis of suicidal behavior, which allows us to consider suicidology a multidisciplinary field of knowledge [4,8].

In developed countries (USA, Great Britain, Germany, etc.), suicide ranks third among the causes of death of the most able-bodied population after cardiovascular and oncological diseases. The problem of suicide among adolescents is also acute, since among persons aged 15-19, suicide is the third cause of death among girls and the fourth among boys [1,9].

Despite the fact that prevention plays a significant role in the prevention of suicidal behavior, it remains important to provide direct medical and psychological assistance to persons who have attempted suicide.

Research on the mental health of suicides has attracted unrelenting attention. According to some authors, persons with non-psychotic forms of mental disorders predominate among suicides, who, after committing a suicidal attempt, are usually not hospitalized in a psychiatric hospital and remain without timely provision of psychiatric care [11].

Long-term studies of this problem allowed us to develop a model for the differentiated prevention of suicidal behavior. When creating it, we were based on the modern concept of medical prevention of the World Health Organization, which distinguishes its three main forms - universal, selective and indicative. Taking into account the peculiarities of suicidal behavior, we have identified four levels of prevention: universal, selective, anti-crisis and indicative.

Universal prophylaxis is focused on the general population and has a medico-social character [10]. Its purpose is to prevent the primary occurrence of suicidal behavior by influencing the main "targets" of the risk of its development.

Selective prevention is selective in nature, being aimed at actively identifying individuals in suicidal risk groups and providing them with adequate preventive care in order to prevent the onset or further development of the suicidal process [2,3,6].

Anti-crisis prevention is carried out in the pre-suicidal and immediate post-suicidal periods. Its tasks are: prevention of the implementation of suicidal intentions (actually suicidal actions) in the pre-suicidal period, as well as stopping suicidal intentions in persons who have committed an incomplete suicide, in the next (first week after the attempted murder) post-suicidal period. This form of prevention includes a complex of medicinal and psychotherapeutic effects, taking into account the nature of clinical manifestations and the type of suicidal process [4,8].

Indicative prophylaxis begins in the late post-suicidal period (more than one week after the attempt) and lasts for at least one year. Its purpose is to prevent recurrence of suicidal behavior and repeated suicidal actions. The main tasks of indicative prevention include: strengthening the anti-suicidal barrier of the suicidal personality; psychocorrectional work with his closest microsocial environment, as well as dynamic observation and treatment of a suicide in case of mental illness [7,9].

Thus, today the prevention of suicide is one of the least developed problems in psychiatry and suicidology. There is a high need to determine the clinical, personality-psychological and social determinants, typology and dynamics of suicidal behavior in order to create effective methods for its primary prevention and prevention of repeated suicidal actions in persons who have committed suicide attempts. All this determines the theoretical and practical significance of this study.

**Purpose of the study.** The purpose of this study is to study the patterns of formation and dynamics of the development of suicidal behavior caused by mental disorders, to analyze the features of the provision of suicidological care and to develop effective therapeutic, prophylactic and psychosocial measures to prevent suicide.

## Material and methods

Will be studied 150-200 patients aged 18 to 50 years (100-150 main group, 50 control group (healthy people - volunteers, workers, office workers, students).

To solve the set tasks, persons who were after a suicide attempt in the toxicological, neuro-intensive care and burn departments of the Andijan branch of the RCEM will be examined, as well as according to the archival data of forensic medical examinations.

## Result and discussion

The study of the features of the pre-suicidal period in persons suffering from mental disorders showed:

The pre-suicidal period was predominantly affectively tense (90.2%) and was more common in patients with neurotic and personality disorders, organic brain damage. The affectively reduced variant of pre-suicide (9.8%) was recorded in suicides with endogenous mental pathology.

The revealed predominance of the chronic pre-suicidal period (58.4%>) against the acute (38.5%) and subacute (3.1%) course indicates insufficient prevention of suicidal behavior, especially since 34.3% of suicides sought help to a psychiatrist within a year on the eve of the JV.

In the pre-suicidal period, all suicides had anti-vital experiences, a conscious desire to commit SP and a loss of the role of anti-suicidal factors.

In contrast to the SHG group, in the STS group the following prevailed: unwillingness to live (40.6% versus 10.5%>), failure to take measures to preserve life (47.8%) and 15.8%), a pronounced desire to commit SP (92 , 1% and 59.6%), persistent desire for death (36.3%) and 19.3% "), engulfment in suicidal ideas (53.6% and 19.3%), the desire to put an end to their suffering (53, 6% and 15.8%).

In the SHG group, the outcome of suicidal actions was not predicted more often (11.2% versus 47.8%) in the HNS group), control over suicidal thoughts remained (40.4%) and 72.5%), avoidance and manipulation prevailed (78 , 9% and 46.4%), there was a perception of the constraining circumstances from SP (15.9%, and 84.1%).

The study of the characteristics of suicidal attempts makes it possible to assess the severity of the suicidal act, the degree of suicidal risk, and to predict the dynamics of the course of suicidal behavior.

Self-injury (39.1%), typical for men and self-poisoning (33.4%), typical for women, prevailed among the SP methods. Self-hanging (19.9%), falling from a height (5.1%), and self-drowning (1.9%) were less common.

Self-poisoning was more common at 26-30 years old (23.6%), self-hanging - at 31-35 years old (23.8%), self-injuries at 16-20 years old (17.7%) and 21-25 years 25.7%), falls from a height - at 56-60 (38.9%) and 16-20 years (27.8%), self-drowning in equal proportions are presented at 16-20 and 56-60 years.

In patients with organic brain damage and personality disorders, self-injuries prevailed (81.8 and 47.3%), with affective and neurotic disorders, self-poisoning (44.4 and 43.1%, respectively). In schizophrenia, the entire spectrum of the studied methods of SP was found, with a predominance of self-injuries (25.0%) and self-poisoning (21.7%).

Self-injuries prevailed in the SHG group (47.3%). Self-poisoning (24.6%) and self-hanging (21.1%) were half as common. Self-poisoning (43.3%) and self-injuries (30.0%), often of a penetrating and fire-like nature (9.7%), prevailed in the STS group. When self-hanging (18.7%), most of the patients required resuscitation.

38.8% of suicides reported their intentions long before the implementation of the suicidal act. In 40.1% of cases, suicidal actions were performed in the presence of other persons, of which 96.9% were from the SHG group. 36.2% of the STS group and 12.3% of SHGs concealed their intentions as much as possible. Most of the suicides of each of the groups, upon detection of suicidal intentions by their closest associates, retreated in the implementation of their intentions - 61.4% from SHG and 56.5% from STS.

With a high suicidal risk, tricyclic antidepressants turned out to be preferable, and from the SSRI group - drugs with a pronounced anti-anxiety effect (fluvoxamine, paroxetine). Atypical antipsychotics (clozapine, olanzapine, paliperidone, quetiapine), which have a serotoninergic effect, have shown a good therapeutic effect.

With a low suicidal risk, it is preferable to prescribe atypical antipsychotics, selective antidepressants with a moderate thymoanaleptic effect, a minimum number of adverse drug events that do not require dose titration, without pronounced sedative and anxiolytic effects.

In prophylactic psychopharmacotherapy (prescription of antidepressants and normotimics) 70% of suicides need. With a high degree of suicidal risk, the duration of therapy should be from 6-8 months to a year or more, with a low suicidal risk - from 3-4 weeks to 6-8 months.

Typical mistakes in the supervision of suicides were revealed: underestimation of changes in the patient's mental status, rare examinations of suicides, incorrect assessment of suicidal risk,

inadequate psychopharmacotherapy, underestimation of undesirable drug phenomena (hypersedation, akathisia), premature cancellation of strict supervision of the patient while maintaining suicidal tendencies

**Conclusions**

The data obtained proved the importance of taking into account a complex of anamnestic information, social conditions, and personal characteristics, which allows, along with clinical features, to determine the risk of developing suicidal behavior in persons suffering from mental disorders.

The revealed patterns of formation, dynamics and structure of the post-suicidal period formed the basis for determining the therapeutic and social prognosis.

The proposed approaches to the organization of suicidological care contribute to the optimization of therapy, prevention and rehabilitation measures.

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# ROLE OF NEUROLEPTICS IN EFFECTIVE TREATMENT OF PARANOID SCHIZOPHRENIA

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✓ ***Resume***

***According to statistics, the incidence of paranoid schizophrenia is about 1% of the total population. The debut, or the first bright episode of the manifestation of the disease occurs at the age of 30 years. It is important to understand that accompanying symptoms and signs can be observed for a long time before the first attack, but they must be recognized and classified in a timely manner. Schizophrenia itself appears without any external reason - it is believed that a hereditary factor plays an important role in this case.***

***Paranoid schizophrenia has a significant impact on the daily functioning, communication with others, personal life and working condition of the patient.***

***Key words: paranoid schizophrenia, antipsychotic therapy.***

# РОЛЬ НЕЙРОЛЕПТИКОВ В ЭФФЕКТИВНОМ ЛЕЧЕНИИ ПАРАНОИДНОЙ ШИЗОФРЕНИИ

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***По статистике, уровень заболеваемости параноидной шизофренией составляет порядка 1% от общего количества населения. Дебют, или первый яркий эпизод проявления заболевания наступает в возрасте до 30-ти лет. Важно понимать, что сопутствующие симптомы и признаки могут наблюдаться в течение длительного времени до первого приступа, но их необходимо своевременно распознать и классифицировать. Сама шизофрения появляется без каких-либо внешних на то причин – считается, что большую роль в данном случае играет наследственный фактор.***

***Параноидная шизофрения достаточно сильно влияет на повседневное функционирование, общение с окружающими, личную жизнь и рабочее состояние пациента.***

***Ключевые слова: параноидная шизофрения, антипсихотическая терапия.***

# PARANOID SHIZOFRENIYANI SAMARALI DAVOLASHDA NEYROLEPTIKLARNING O'RNI

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***Statistik ma'lumotlarga ko'ra, paranoid shizofreniya bilan kasallanish umumiy aholining taxminan 1% ni tashkil qiladi. Debyut yoki kasallikning birinchi yorqin epizodi 30 yoshida kuzatiladi. Birinchi xurujdan oldin hamroh alomatlar va belgilar uzoq vaqt davomida kuzatilishi mumkinligini anglash kerak, ammo ular o'z vaqtida aniqlaninishi va tasniflanishi kerak. Shizofreniya o'zi hech qanday tashqi sababsiz paydo bo'ladi - bu holda irsiy omil muhim rol o'ynaydi deb ishoniladi.***

***Paranoid shizofreniya bemorning kundalik faoliyati, boshqalar bilan muloqotqilish, shaxsiy hayoti va ish holatiga sezilarli ta'sir ko'rsatadi.***

***Kalit so'zlar: paranoidal shizofreniya, antipsikotik terapiya.***

## Introduction

Most modern standards for the treatment of schizophrenia are based on the idea that all antipsychotics are equally effective (with the exception of clozapine) and that they differ only in

the spectrum of side effects [2,5]. Therefore, as drugs of choice it is proposed to use atypical antipsychotics of the new generation, which rarely cause neurological disorders [1,3]. Traditional antipsychotics are considered as second-line agents due to the frequent occurrence of movement disorders and a pronounced inhibitory effect. It is indicated that clozapine should only be used as a last resort (reserve drug) due to the potential for serious complications. Changing the neuroleptic is usually recommended when the previous therapy has failed.

It is assumed that during the transition to treatment with traditional drugs, the effectiveness of which is comparable to atypical antipsychotics, the improvement in the condition may be associated with a higher individual sensitivity of some patients to drugs in this group. The powerful antipsychotic effect of clozapine makes its use useful when other antipsychotics are ineffective in 30-60% of patients.

Despite the attractiveness of the idea underlying the proposed approach (high efficiency and good tolerance), the presented differentiated scheme of schizophrenia therapy has a number of disadvantages. They are associated with the "controversy" of some theoretical data that became the basis for its development, and with certain difficulties in its application in clinical practice. For example, in recent years, an opinion has been increasingly expressed about the "preliminary" research results, indicating the high efficiency of atypical antipsychotics [3,5].

When they are taken, side effects often develop that can pose a serious threat to the health of patients, significantly worsen the quality of life, lead to stigmatization and non-compliance with medical recommendations (metabolic and endocrine disorders, tachycardia tachycardia) [4]. In the proposed scheme, there are no recommendations for a differentiated choice of atypical antipsychotics of the new generation.

It is indicated that the individual effectiveness of these funds can only be determined by the "trial and error" method [2]. Thus, in practice, the choice of therapy has to be made on the basis of the personal preferences of a specialist, which often leads to a long “busting” of various drugs without achieving the desired therapeutic effect.

**Purpose of the study.** Identification, analysis and determination of the importance of social and psychological factors in the formation of a complex of side effects of antipsychotic drug therapy in patients with paranoid schizophrenia.

**Material and methods**

The main research method was clinical and psychopathological using clinical observation, interviews, questionnaires, analysis of anamnestic information. In connection with the psychotic state, the patients received treatment with antipsychotic drugs, mainly in the form of their combinations, which correlates with the literature data.

Biopsychosocial determinants of attitudes towards mental and somatic illness, nx therapy in patients with paranoid schizophrenia.

There were 111 patients with paranoid schizophrenia with combined somatic pathology (acute pneumonia - 23.42% (n = 26); chronic non-structural bronchitis - 27.03% (n = 30); acute respiratory diseases - 24.32% (n = 27); gastric ulcer and duodenal ulcer - 25.22% (n = 28).

The choice of combined somatic pathology was determined by the fact that these disorders had an insignificant effect on the mental status of patients. Patients received therapy with various somatotropic drugs adequate to the diagnosed condition.

Research results. The study is based on the statement that in patients with schizophrenia, the attitude to treatment with antipsychotics often does not depend on the type of drug prescribed (Mosolov S.N., 1998). According to the RLIBB scale, two groups were distinguished: with a predominance of negative (n = 71) and positive (n = 40) syndromes. We used a one-time assessment of the studied parameters by patients and the researcher. It was found that 77.48% (n = 86) of patients denied that they had a mental illness and considered themselves mentally healthy (scores of "5-7 points" on the Dembo-Rubinpgein scale as modified by TM Gabriyal, 1972).

Clinical and psychopathological research using RAIBB showed different degrees of severity of non-criticality to the disease, traced in 84.68% (n = 94) of patients. At the same time, 95.5% of patients (n = 106) admitted that they had certain painful symptoms.

Comparison of indicators of criticality to the disease in general and its individual manifestations reveals significant differences ($p < 0.05$). The difference in assessing the criticality of a psychopathological state from the standpoint of the patient and the doctor can be associated with both painful manifestations and dissimulation.

It was revealed that the symptoms characterizing predominantly "biological" manifestations of the disease that do not cause social stigmatization: headache, discomfort in the body, low mood, apathy, sleep disturbance were

highly rated by patients (5-7 points). Parallel assessment according to RA # 8 (scale of somatic concern, depression and passive-apathetic social withdrawal) did not reveal significant differences, which indicates a rather high criticality of patients.

Symptoms indicating impaired functioning of the individual in society, leading to stigmatization: impaired attention and memory;

hostility, irritability, irascibility, manifestations of aggressiveness, behavioral disturbances that do not fit into the framework of social normativity, deceptions of perception, automatism, received low scores in patients (1-3 points), according to RA ^ B (4-6 points), which indicates low criticality of patients to these violations.

Use of psychoactive substances by patients with paranoid schizophrenia for the correction of side effects of psychopharmacotherapy A questionnaire survey of 92 men with paranoid schizophrenia who underwent inpatient treatment for the second or more times was carried out. In addition to the above cohort, there were 17 patients who abused "chifir" during the period of neuroleptic therapy, as well as 22 patients who abused chifir and tranquilizers benzodiazepines.

4.35% of patients could cope with the side effects of psychopharmacotherapy without the use of drugs. According to the respondents, the use of anticholinergic correctors - 92.39%, benzodiazepine tranquilizers - 42% helped to get rid of the discomfort that arose in connection with the intake of psychopharmacological drugs. These funds were taken as prescribed by a doctor in 47.63% of cases, independently - in 41.3% of cases. Clinical manifestations of side effects, according to patients, decreased with intensive smoking - 46.74%, drinking strong tea -25%, drinking alcohol - 9.78%, staying in the fresh air - 7.61%, drinking plenty of mineral water, fruit juice - 5.43%, physical exercises - 3.26%.

The opinion about the need for constant intake of psychotropic drugs prescribed by the doctor was supported by 37% of patients, and the lack of prescription of anticholinergic correctors and benzodiazepine tranquilizers was emphasized by 42.39% and 27.17% of patients. 41.3% of respondents reported cases of simultaneous intake of psychotropic drugs and alcohol. A negative attitude towards limiting the use of tea and coffee in a psychiatric hospital was found in 57.61% of patients.

In 70.65% of cases, anxiety, emotional stress, anxiety contributed to an increase in the intensity of side effects of psychopharmacotherapy. In 42.39%, patients exchanged information on ways to correct side effects. 69.57% of patients, observing manifestations of side effects in other patients, made their own judgments about the adequacy of the use of antipsychotic drugs.

The ideas of the mentally ill about their illness and society about the mentally ill are formed on the basis of individual psychological communicative interaction. Archetypal mythological ideas about psychopathology are projected onto the socio-psychological characteristics of the interaction of the mentally ill and society.

The analysis of the results obtained allows us to consider the complex of side effects of antipsychotic therapy, as a consequence of the interaction of psychopathological, individual psychological and social factors within the framework of the biopsychosocial concept of the development of pathological processes.

**Conclusions**

The essence of the work is due to the results of the study, which made it possible to concretize and systematize the ideas about the emergence of a complex of side effects of therapy with neuroleptics in patients with paranoid schizophrenia, to single out nonpharmacogenic factors of a psychosocial and morbid nature in their pathogenesis.

Biopsychosocial analysis of the etiopathogenesis of the side effects of antipsychotic therapy made it possible to substantiate and propose a method for the complex correction of the above disorders.

Data on the use of alcohol and other psychoactive substances by patients with paranoid schizophrenia in the form of self-prescription for the correction of side effects of psychopharmacotherapy necessitate the inclusion of questions about the sanogenic activity of patients in the algorithm for examining patients and take it into account in the therapeutic and diagnostic process.

Information about socially-mediated factors involved in the formation of the attitude of the population towards patients with paranoid schizophrenia and methods of their treatment can be used in the development of destigmatization programs.

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# ROLE OF PSYCHOTHERAPY IN TREATMENT OF ANXIETY-PHOBIC DISORDERS

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✓ ***Resume***

***The article discusses modern approaches to psychotherapy of anxiety disorders of the neurotic level (anxiety-phobic, panic and generalized anxiety disorders) based on the study of evidence-based studies.***

***The degree of evidence of the effectiveness of the application of specific psychotherapeutic methods and the strength of recommendations are indicated.***

***Key words: psychotherapy, anxiety disorders, clinical typology.***

# РОЛЬ ПСИХОТЕРАПИИ В ЛЕЧЕНИИ ТРЕВОЖНО-ФОБИЧЕСКИХ РАССТРОЙСТВ

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✓ ***Резюме***

***В статье рассмотрены современные подходы к психотерапии тревожных расстройств невротического уровня (тревожно-фобических, панического и генерализованного тревожного расстройств) на основе изучения доказательных исследований.***

***Указаны степень доказательности эффективности применений конкретных психотерапевтических методов и сила рекомендаций.***

***Ключевые слова: психотерапия, тревожные расстройства, клиническая типология.***

# HAVOTIRLI-VAIMALI BUZILISHLARNI DAVOLASHDA PSIXOTERAPIYANING O'RNI

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✓ ***Rezyume***

***Maqolada isbotli tadqiqotlarni o'rganish asosida nevrotik darajadagi tashvishli buzilishlari (tashvishli-fobik, vahima va xavotirli buzilishlar) psixoterapiyasining zamonaviy yondashuvlari muhokama qilinadi.***

***Muayyan psixoterapevtik usullarni qo'llash samaradorligining aniq tavsiyalari ko'rsatilgan.***

***Kalit so'zlar: psixoterapiya, tashvishli buzilishlar, klinik tipologiya.***

## Relevance

Anxiety disorders are among t he most common mental health problems in the world. In addition, among all medical problems, anxiety also holds the leading position in terms of prevalence. In the framework of epidemiological studies, it is customary to talk about two variants of the prevalence of any condition - one year, that is, an assessment of this indicator in a short time span (12-month prevalence), and lifelong - the proportion of people who have experienced this condition at least once. For the entire group of anxiety disorders, studies show a 12-month prevalence of> 15% and a lifetime of> 20%.

Analysis of data from the World Health Organization suggests that this group of mental health problems is the 6th most common cause of disability in high-income, middle and low-income countries, including Ukraine. For every 100,000 people on earth, anxiety disorders account for 390 years of disability. Among women, anxiety disorders are responsible for 65% of all lost (disabled) years of life among all causes [1,5].

Among anxiety disorders, generalized anxiety disorder occupies a special place, which is characterized by excessive anxiety and worries in relation to a large number of events or types of

activity (for example, work), accompanied by severe anxiety, fatigue, irritability, difficulty concentrating, muscle tension and sleep disturbance [ 3.6].

This state of affairs leads to significant distress and difficulties in social, work, or even normal day-to-day functioning. For example, anxiety makes it difficult to perform work duties, which can lead to job loss or provoke conflict in the family.

Sleep disturbance that accompanies anxiety can be a serious problem in itself, since anxiety-provoked insomnia is usually long-term and thus poorly controlled by benzodiazepines or benzodiazepines, since they are not recommended for long-term use. Another serious problem that deserves attention is a significant decrease in the quality of life of patients with anxiety [2,4].

Studies have shown that anxiety is associated with a significant decrease in the quality of life, especially if we take into account the widely used scale for assessing the quality of life SF-36. To a greater extent, the deterioration concerns the psychological and some characteristics of the somatic component of the quality of life. Thus, anxiety is associated with a worsening of indicators on such a somatic scale as pain intensity [5]. This may be due to the fact that patients with anxiety are often diagnosed with conditions associated with pain, such as chronic tension headache, nonspecific back pain, and a number of others.

According to the data obtained in our country, 19.7% of patients with anxiety or depression noted chronic pain over the past 12 months (Tsang A. et al., 2008). Thus, one in five patients with anxiety disorder also needs pain relief therapy.

**Purpose of the study.** The aim of the work was to develop principles and algorithms for the psychotherapeutic treatment of neurotic level anxiety disorders (anxiety-phobic, panic and generalized anxiety disorders) based on evidence-based studies.

## Material and methods

The study was conducted in 115 patients who were divided into 3 groups. Group I - 27 patients with panic disorder (PR) (episodic paroxysmal anxiety (f41.0). Group II - 21 patients with generalized anxiety disorder (GAD) (f41.1). Group III - 67 patients with mixed anxiety-depressive disorder (STDR) (f41.2).

Research results. The survey data became the basis for the development of a conceptual approach and the construction of a pathogenetically mgrounded system of psychotherapy for patients with anxiety disorders of the neurotic register, taking into account emotional and personality-typological characteristics. The principles of conducting psychotherapy were:

1. Partnership between psychotherapist and patient.
2. Stages of impacts and complication of the applied methods.
3. Appeal to positive personality traits.
4. The use of cognitive-behavioral therapy (CBT) as a basic one.
5. Teaching the skills of autoregulation of emotions of the negative spectrum: anxiety, depression.
6. Correction of social attitudes.
7. Teaching rational coping strategies. The main method of psychotherapeutic correction of emotional disorders in the form of phobic-depressive and anxiety-depressive disorders was cognitive-behavioral therapy according to A. Beck.

Group psychotherapy was used to form social attitudes and rational coping strategies. It was combined with elements of rational, suggestive and family psychotherapy. The psychotherapy system was implemented in 4 stages.

Stage I "Assessment of the psychoemotional state" - began from the moment the patient was admitted to the hospital and was aimed at determining the state of the emotional sphere and the targets of psychocorrection (1 session).

Stage II "Formation of Compliance" - included activities for the formation of compliance, the initial establishment of psychological contact and the formation of positive motivation for treatment (2 sessions).

Stage III "Psychotherapy and psychocorrection" - included individual and group psychotherapy aimed at forming an active life strategy, changing self-perception by realizing the meaning of life and its quality, having an important strategic goal (10 sessions).

Stage IV "Supporting psychological support" - included 4 sessions of individual psychotherapy with elements of family psychocorrection.

Evaluation of the effectiveness of the conducted system showed the following. Patients of all 3 groups showed positive clinical dynamics. Decreased subjective experiences of the anxiety spectrum and somatovegetative symptomatology.

According to the pathopsychological study, the most positive dynamics was achieved in terms of reactive anxiety in all 3 groups of patients. In general, significant improvement was achieved in 72% of patients in group I, in 68% of patients in group II and in 78% of patients in group III.

**Conclusions**

Thus, the choice in favor of one or another drug in the treatment of anxiety disorders should be based on evidence-based medicine, taking into account the effectiveness and tolerability of the drug, the presence of comorbidities and the individual characteristics of the patient.

Psychological therapies should also be added to medications, which will not only help reduce the intensity of the disorder's symptoms, but will also improve the quality of life, social and work functioning and patient compliance.

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# DIAGNOSTICS AND TREATMENT OF COMPRESSION FUNCTIONS OF THE CHEST AND LUMBAR SPINE IN ADULTS AND ELDERLY PATIENTS BY THE METHOD OF DIFFERENTIAL SURGERY

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✓ ***Resume***

***The study analyzed the results of the examination of 60 patients over 50 years old who were treated in the departments of neurosurgery and vertebrology of the AGMI clinic, the departments of spinal surgery of the Republican Specialized Scientific and Practical Center for Neurosurgery from 2012 to 2020. Based on the examination results, a differentiated surgical approach is recommended for each patient.***

***Key words: compression fractures, surgical methods, advanced age, thoracic and lumbar spine.***

# ДИАГНОСТИКА И ЛЕЧЕНИЕ КОМПРЕССИОННЫХ ПЕРЕЛОМОВ ГРУДНОГО И ПОЯСНИЧНОГО ОТДЕЛОВ ПОЗВОНОЧНИКА У ВЗРОСЛЫХ И ПОЖИЛЫХ ПАЦИЕНТОВ МЕТОДОМ ДИФФЕРЕНЦИАЛЬНОЙ ХИРУРГИИ

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✓ ***Резюме,***

***В исследовании проанализированы результаты обследования 60 пациентов старше 50 лет, лечившихся в отделениях нейрохирургии и вертебрологии клиники АГМИ, отделениях спинальной хирургии Республиканского специализированного научно-практического центра нейрохирургии с 2012 по 2020 гг. По результатам обследования каждому пациенту рекомендован дифференцированный хирургический подход.***

***Ключевые слова: компрессионные переломы, хирургические методы, пожилой возраст, грудного и поясничного отдела позвоночника.***

# KATTA VA KEKSA YOSHLI BEMORLARDA KO‘KRAK VA BEL UMURTQALARI KOMPRESSION SINISHLARINI TASHXISLASH VA DIFFERENSIALLASHGAN JARROXLIK USULI BILAN DAVOLASH

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Respublika ixtisoslashgan neyroxirurgiya ilmiy – amaliy markazi

✓ ***Rezyume,***

***Tekshiruv davomida 2012 – 2020 yillar davomida ADTI klinikasi neyroxirurgiya va vertebrologiya bo‘limlari, Respublika ixtisoslashgan Neyroxirurgiya ilmiy – amaliy markazi spinal xirurgiya bo‘limlarida davolangan 50 yoshdan oshgan 60 nafar bemorlarda tekshiruvlardan olingan natijalar taxlil etildi. Tekshiruv natijalariga asoslangan holda har bir bemor uchun differensiallashgan jarrohlik usuli tavsiya etildi.***

***Kalit so'zlar: compression sinish, jarrohlik usullari, keksalik yoshi, ko'krak va bel umurtqasi.***

## Relevance

Diagnosing the stage and nature of spinal and spinal cord injuries is one of the current problems of modern vertebrology and neurosurgery. Injuries to the spine are second only to injuries of the lower extremities, and account for 10-26% of injuries of the musculoskeletal system [5].Spinal fractures are not seen on traditional radiography in 23-57% of cases. The emergence of more informative methods of radiation diagnosis (multispiral computed tomography - MSKT, magnetic - resonance tomography - MRI) naturally increases the visualization of the stage and nature of the injury of the spine and spinal cord [1,2,3]. In the treatment of patients with compression fractures in the area of the thoracic and lumbar spine, it is necessary to eliminate orthopedic and neurosurgical problems in front of doctors.

Over the last 20 years, significant progress has been made in the surgical treatment of this type of injury. This is explained by the development and application of methods such as vertebroplasty, TPF and kyphoplasty in the treatment of compression fractures of the spine in clinical practice [4].

Compression fractures in the spine of older and elderly people are one of the most common diseases. In the U.S., 25% of women experience compression fractures in the spine at least 1 time in their lifetime after the postmenopausal period. Spinal fractures occur in 40% of people over the age of 80. According to Russian authors, one in three women and one in eight men have at least one spinal fracture after the age of 65. Chronic low back pain is associated with decreased ability to work, functional activity, and quality of life associated with this pain [1]. Surgical treatment of compression fractures, which rapidly, significantly, and continuously reduces spinal pain syndrome, is common, resulting in restoration of activity in physical and daily life and improved quality of life [7].

Organ fixation - transpedicular, loop laminar and combined systems [6, 10], anterior fixation - retinal spondylosis at the expense of implants, vertebral body endoprosthesis, anterior plates [2,4,8], augmentation of the vertebral body with cement [7,9] developed and used. The choice of method of fixation of the spine in compression fractures of the spine in the thoracic and lumbar region in older and elderly patients, the choice of access path, the assessment of the volume of surgery in the presence of concomitant diseases, low mineral density of the spine and spinal instability syndrome are still debated. is the cause.

In the Russian literature, in studies devoted to the problems presented, D.S. Bobrova (2009), L.Yu. Darchiya L.Yu. (2011), D.I. Shtadlera (2011), A.I. Norkins (2013) identified specific features in spinal fixation by conventional and minimally invasive methods in the surgical treatment of compression fractures of the spine in young and adult patients. The possibility of combining different minimally invasive methods and guidelines for the use of differentiated minimally invasive methods in individual clinical cases have not been studied in studies.

In summary, the clinical diagnosis of compression fractures of the thoracic and lumbar spine in older and elderly patients, the choice of surgical method differentiated according to the cause of compression fractures and their degree, are causing various controversies among neurosurgeons and vertebrologists.

**The purpose of the study:** to improve the methods of examination of compression fractures in the thoracic and lumbar spine in older and elderly patients and the development of differentiated surgical methods

## Material and methods

Department of Vertebrology and Neurosurgery of the Clinic of Andijan State Medical Institute, Department of Spinal Surgery of the Republican Specialized Scientific-Practical Center of Neurosurgery 2012-2020 40%) were men. The age range of patients was 35 (58.3%) aged 50-59 years, 16 (26.7%) aged 60-69 years, and 9 (15%) over 70 years. Of the patients examined, 24 (40%) were men and 36 (60%) were women. Compression fractures occurred in 18 (30%) areas in the VTh12 area and in 13 (21.7%) areas in the VL1 area. Complex instrumental examination methods were used after different degrees of injury or pain in the thoracic and lumbar spine.

Of the patients examined, 19 (31.6%) underwent 2 different radiographic examinations, 7 (9.7%) underwent densitometry, 24 (40%) underwent MSCT and 44 (73.3%) underwent MRI, and 5 (8) underwent MRI. , 3%) underwent densitometry. The study focused on the area in which the compression fractures occurred, the mineral density of the vertebral body where the compression fracture occurred, and the nature of the fracture (stable or unstable).

In choosing the surgical method of patients with compression fractures, special attention was paid to the cause of compression fractures and the type of injury to the supporting columns of the spine. The mainstay of surgical treatment of compression fractures of the spine is to decompress the spine, restore the normal shape of the spine and stabilize the injured segments.

## Result and discussion

The most common classification that determines the degree of injury to the thoracic and lumbar spine is the modified classification of F. Denis [6] and AO F. Megerli [5]. According to this classification, spinal cord injuries are divided into 4 groups: 1) compression fractures 2) explosive fractures 3) seat belt type fractures 4) fractures.

Compression fractures account for approximately half (49.8%) of fractures in the thoracic and lumbar spine. In these types of fractures, the anterior musculoskeletal system of the spine is damaged, the medial musculoskeletal system is not damaged, and the organ may be damaged or undamaged due to the elongation of the musculoskeletal system. In fractures of this type, the load on the spinal axis is dropped, causing the spine to bend. Typically, fractures in this group are located in the upper covering plate, ponasal deformations of the vertebral body occur, and its anterior surface leads to disruption of the cortical substance.

The study found compression fractures in the thoracic and lumbar spine in 60 patients over the age of 50 years. Of these patients, 44 were due to falls from heights, 6 were due to a traffic accident, 4 were due to trauma, and 6 patients did not link the cause of the illness to any cause.

Analysis of the results of compression fractures was most common in 18 (30%) VTh12 and 1 in VL1. a change in the shadow of the paravertebral soft tissue is detected.

In the absence of objective methods of assessing the quality of bone tissue, these criteria can be used in planning the operation. Two-energy X-ray obsorptionmetry (densitometry, DEXA) has become the “gold standard” in determining bone density, as it has the ability to check the density of the central part of the bone using this method.

The bone density value is expressed as the T criterion, which is a statistical indicator of the ratio of bone density and bone density of the subject in the control group of selected healthy volunteers. It is expressed in the number of standard deviations (SD) from the “normal” peak bone mass in the control group of patients. According to WHO, osteoporosis is considered normal if the T criterion is less than -2.5 SD, osteopenia if the T criterion is less than -1 to -2.5 SD, and normal if the T criterion is greater than -1.

MSKT allows you to get more information from the X-ray examination. Compared to X-ray examination, MSKT examination allows to describe compression fractures more accurately: to determine the degree of its deformation, the number of injured vertebrae, fracture of the arch, the mineral density of the compressed vertebral body and the presence of signs of instability in compression fractures. Normal radiographic examinations do not show displacement of bone fragments into the spinal canal, and the reason for this is obstruction of the spinal cord, which is seen on MSKT examination.

MRI examination of the soft tissues of the spine can reveal the following components: longitudinal, intervertebral disc, spinal cord and changes in it (ischemia, edema, hemorrhage and cyst), extra and intradural hemorrhage and changes in the spinal body.

Complex examination methods in compression fractures of the thoracic and lumbar spine (radiological examinations, densitometry or MSCT, MRI) allow patients to accurately diagnose the disease (clearly see the area of the disease, know the stage of the disease, know the cause of the disease) and differentiate treatment allows the choice of surgical method.3 (21.7%) in patients.

The results of surgical treatment were evaluated by radiological (compression stage of the anterior part of the spine, the angle of kyphosis at the site of injury) and the regression of clinical and neurological symptoms. Compression fractures of the thoracic and lumbar region in patients with surgical treatment are differentiated according to the mineral density of the compressed body, the condition of the base segments of the spine (vertebroplasty of the compressed vertebral body, fixation of the injured segments with TPF or XNIOT) selected.

Densitometry or quantitative CT scan methods were used to determine the mineral density of the compressed vertebral body. MSKT examination was used to determine the presence of instability syndrome in the injured segments. Of the 60 patients in the study, 27 (45%) had a TPF device and 5 (8.3%) patients had an XNIOT device due to the presence of instability syndrome in the injured area. Vertebroplasty was performed in 25 (41.7%) patients who were found to have decreased mineral density of the fractured vertebral body. In 3 (5%) patients, a combined method (vertebroplasty and TPF) was used to detect a decrease in the mineral density of the fractured vertebral body and the presence of instability syndrome in the injured area.

Surgical treatment of compression fractures in the thoracic and lumbar spine in older and elderly patients was selected based on the degree of deformity of the compressed vertebral body, the presence or absence of instability syndrome in the injured segment, and the nature of vertebro-dural conflict in the compressed vertebral canal. In

patients with compression fractures, the height of the compressed body is normal vertebroplasty was performed in 25 of the patients who did not have vertebro-dural conflict in the canal in the area of the compressed body while not less than 75% of the height of the vertebral body.

If the height of the compressed vertebral body is less than 75% of the normal height, if there is instability syndrome in the injured sgment (classified by F. Denis classification of instability syndrome) and if there is vertebro-dural conflict, decompressive laminectomy and TPF device is installed, if not vertebrae The TPF device was installed. If there is a sign of instability in the injured area but there is a vertebro-dural conflict, these patients were placed with an XNIIOT device. After the visit to the department and the examination, the neurological condition of the patients was assessed according to the classification proposed by H. Franrel and the patient-induced pain syndrome on the VASh scale.

**Conclusion**

1. In compression fractures of the thoracic and lumbar spine, it is advisable to conduct complex examination methods using two types of radiography, densitometry, MCT and MRI. If screening methods are not fully utilized, insufficient information on the condition of the spine and spinal cord will be obtained.
2. Comprehensive X-ray examination of compression fractures of the thoracic and lumbar spine in elderly and elderly patients allows to quickly eliminate problems in diagnosing the disease, timely select a differentiated treatment method for each patient and predict possible complications after injury.
3. In the surgical treatment of compression fractures in the thoracic and lumbar region in elderly and elderly patients, it is advisable to choose depending on the degree of deformation of the compressed vertebral body, the presence of signs of instability in the injured segment and vertebro-dural conflict in the spinal canal.

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**UDC 616-051.616-057**

# MEDICAL AND SOCIAL CHARACTERISTICS AND ANALYSIS OF PROFESSIONAL SKILLS ON PREVENTION THE HOSPITAL-ACQUIRED INFECTIONS OF MEDICAL PERSONNEL OF A MULTIPLE CLINIC IN THE REPUBLIC OF UZBEKISTAN

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✓ ***Resume***

***In order to obtain an adequate qualitative assessment of the activity of medical staff on the prevention of hospital-acquired infections, conducted questioning of multidisciplinary clinics, analyzed information about working conditions, attitudes towards the specialty, professional competence on prevention hospital-acquired infections and others.***

***A characteristic of the medical activity of physicians with self-esteem health status is given; the opinion of medical staff on improving the efficiency and improving the quality of anti-epidemic work was investigates (reasons for identifying hospital-acquired infections in the wards, sanitary and hygienic working conditions, characterization of measures for effective anti-infective protection of medical staff, washing hands, improving training at seminars using innovative technologies).***

***Key words: HAI - Hospital-acquired infections, questioning, respondents, category, epidemiology department, HIV/AIDS, PPE, routine hand-washing method, professional competence, innovations, master class, punitive sanctions.***

# МЕДИКО-СОЦИАЛЬНАЯ ХАРАКТЕРИСТИКА И АНАЛИЗ ПРОФЕССИОНАЛЬНЫХ НАВЫКОВ ПО ПРОФИЛАКТИКЕ ВНУТРИБОЛЬНИЧНОЙ ИНФЕКЦИИ ВРАЧЕБНОГО ПЕРСОНАЛА МНОГОПРОФИЛЬНОЙ КЛИНИКИ В РЕСПУБЛИКЕ УЗБЕКИСТАН

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✓ ***Резюме***

***Для получения адекватной качественной оценки деятельности врачебного персонала по профилактике ВБИ, проведено анкетирование врачей многопрофильной клиники, проанализированы данные опроса касающиеся условий труда, отношения к специальности, профессиональной компетентности по профилактике ВБИ и другие.***

***Дана характеристика медицинской активности врачей с самооценкой состояния здоровья; изучено мнение врачебного персонала по повышению эффективности и улучшению качества противоэпидемической работы (причины выявления ВБИ в отделениях, санитарно-гигиенические условия труда, характеристика мер эффективной антиинфекционной защиты медперсонала, мытьё рук, улучшения обучения на семинарах с применением инновационных технологий).***

***Ключевые слова: ВБИ – внутрибольничная инфекция, анкетирование, СанПиНы, респонденты, категория, эпидотдел, ВИЧ/СПИД, СИЗ, рутинный метод мытья рук, профессиональная компетенция, инновации, мастер-класс, штрафные санкции***

# O‘ZBEKISTON RESPUBLIKASIDAGI KO‘P TARMOQLI KLINIKALARNING TIBBIYOT XODIMLARIDA SHIFOXONA ICHKI INFEKSIYASI YUQISHINI OLDINI OLISH BO‘YICHA TIBBIY-IJTIMOIY XARAKTERISTIKASI VA TAXLILINING KASBIY KO‘NIKMALARI

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Andijon davlat tibbiyot instituti

✓ ***Rezyume***

***Shifoxona ichi infeksiyalarning (ShII) oldini olish bo‘yicha tibbiyot xodimlarining faoliyatini etarli darajada sifatli baholash uchun ko‘p tarmoqli klinikalar shifokorlari o‘rtasida so‘rov o‘tkazildi, ish sharoitlari, mutaxassislikka bo‘lgan munosabat, ShII larning oldini olish bo‘yicha kasbiy vakolatlar va boshqalar tahlil qilindi.***

***Shifokorlarning o‘z - o‘zini sog‘lig‘ini baholashining tibbiy faoliyatini xususiyatlari berildi; epidemiyaga qarshi ishlarning samaradorligini oshirish va sifatini oshirish bo‘yicha tibbiyot xodimlarining fikri o‘rganildi (bo‘limlarda kasalxonada yuqumli kasalliklarni aniqlash sabablari, sanitariya-gigiena sharoitlari, tibbiyot xodimlarini yuqumli kasalliklardan samarali himoya qilish, qo‘l yuvish, innovatsion texnologiyalardan foydalangan holda seminarlarda o‘qitishni takomillashtirish).***

***Kalit so‘zlar: ShII - Shifoxona ichi infeksiyasi, anketa, SanPiNs, respondentlar, toifasi, epidemiologik bo‘lim, OIV/OITS, PPE, qo‘lni yuvishning odatiy usuli, kasbiy vakolat, innovatsiyalar, master-klass, jarimalar***

**Relevance**

The sanitary and epidemiological well-being of the population is an integral element of the national security system. One of the most important strategic goals of healthcare worldwide is to ensure the quality of care and create a safe hospital environment. Nosocomial infections (nosocomial infections) are the most important component of this problem due to the global nature of the spread, negative consequences for the health of patients and the economy of the state. The international scale of the problem is evidenced by the creation of a worldwide alliance for patient safety under the auspices of the World Health Organization in 2004 to coordinate the efforts of specialists from all countries.

The problem of nosocomial infections (nosocomial infections) in recent years has become extremely important for all countries of the world. The rapid growth rates of medical institutions, the creation of new types of medical equipment, the use of the latest drugs with immunosuppressive properties, artificial suppression of immunity during organ and tissue transplantation - these, as well as many other factors, increase the threat of the spread of infections among patients and personnel of medical institutions.

Official statistics show that in developed countries, nosocomial infection develops in 5-10% of hospitalized patients and leads to an increase in hospitalization time by an average of 6-8 days (in surgical hospitals - by 12-18 days), mortality and treatment costs ... Nosocomial infections cause significant harm to the health of medical personnel.

The incidence of nosocomial infections, depending on the type of hospital, is as follows: in obstetric institutions - 36.2%, in surgical facilities - 27.1% and in others - 36.8%.

Until recently, due attention was not paid to the issues of sanitary and epidemiological surveillance of nosocomial infections among medical personnel. As a participant in the epidemic process, medical personnel were considered only as a source or factor in the transmission of infection. During the epidemiological investigation, medical workers were indicated as the main violators of the anti-epidemic regime in the institution, and this provision is not without grounds. Meanwhile, according to the WHO definition, nosocomial infections include diseases of medical personnel associated with their professional activities. The medical personnel who carry out the treatment and diagnostic process are the first to encounter pathogens of a wide variety of infectious diseases. Therefore, a comprehensive study of the peculiarities of involving medical workers in the epidemic process, the identification of mechanisms and factors of transmission of infections, the development of adequate preventive and anti-epidemic measures is an extremely important task.

In the context of socio-economic transformations, during the period of intensive development of health care, the activities of medical the personnel of multidisciplinary hospitals must meet the changing requirements for the quality of medical care, the organization of the work of personnel. To a large extent, the quality of inpatient care in this regard depends on medical personnel, an increase in the level of professional competence, motivation of activity, satisfaction with one's work, and work spirit in the team. In certain types of hospitals, nurses are at high risk of contracting various infectious diseases, including hepatitis B and C, and HIV. These are departments of intensive care and purulent surgery, departments of HIV infection, hemodialysis, blood transfusion stations, etc. Correct work organization plays an important role in fulfilling professional obligations.

**Purpose of the study:** to study the characteristics of the medical activity of doctors with a self-assessment of the state of health. From the opinion of medical personnel on increasing the efficiency and improving the quality of anti-epidemic work to identify nosocomial infections in departments, sanitary and hygienic working conditions, effective anti-infectious protection measures for medical personnel.

**Material and methods**

We have used social and hygienic research methods that allow us to obtain an adequate qualitative assessment of the activities of medical personnel for the prevention of nosocomial infections. For this purpose, a survey was conducted of 88 doctors in 11 departments of a multidisciplinary clinic, which is 38.3% of doctors, thus, the sample is representative (Table 1). Doctors were asked to answer questions regarding their working conditions, attitude to their specialty, professional competence in the prevention of nosocomial infections, and others. The questionnaire contained 60 questions.

***Table 1.***

***Distribution of examined doctors by age***

| № | Age | abs. | % |
|---|---|---|---|
| 1 | 25-29 years old | 10 | 11,4 |
| 2 | 30-39 years old | 31 | 35,2 |
| 3 | 40-49 years old | 23 | 26,1 |
| 4 | 50-59 years old | 20 | 22,6 |
| 5 | 60 years and older | 4 | 4,7 |
| | Total | 88 | 100 |

Table 1 shows that most of the personnel (72.7%) were young and mature, i.e. from 25 to 49 years old, and only 27.3% from 50 to 60 years old and older, there were no significant differences depending on the profile of the department.

The survey was carried out using specially designed questionnaires, including questions related to socio-demographic, production characteristics, professional competence. The questionnaire contained 60 questions and formalized answers.

Statistical analysis of the results was carried out using traditional statistical methods: calculation of relative values, arithmetic mean, mean error, Student's test. Calculations were made using the software package ("Statistica - 6-0" and MS Excel).

Results and its discussion. Studying the effectiveness of organizing the work of doctors, it was also important for us to determine the main motivational factor of work, to find out how they perceive the nature of their work, what are the incentives for their work, whether they get satisfaction from what they have done, whether this leads to the development and self-improvement of work functions.

*Gender characteristics of medical personnel: men - 73.9%, women - 26.1% (Fig. 1).*

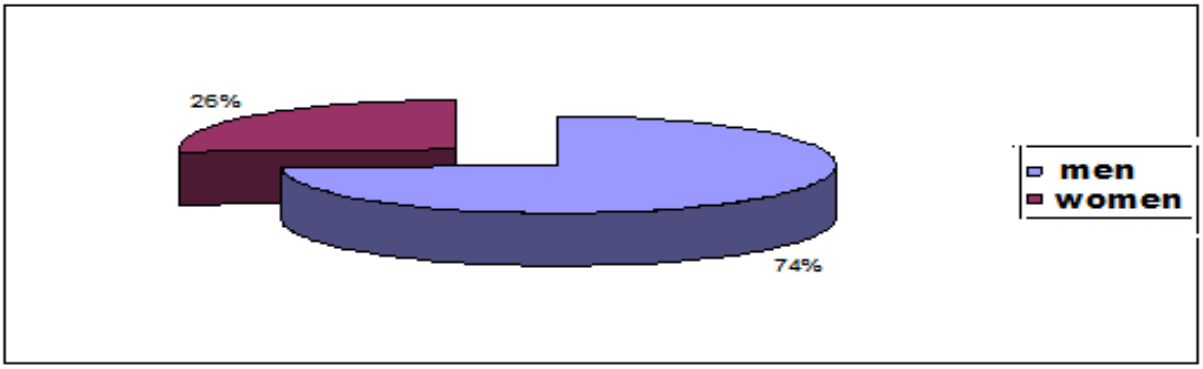


***Fig. 1. Gender composition of doctors***

At the place of work in the department, doctors are currently grouped by us into 2 groups (Fig. 2): surgeons and therapists.

The first group consisted of surgeons, urologists, proctologists, neurosurgeons, vertebrologists, doctors of the artificial kidney

department, resuscitation specialists, ENT, ophthalmologists. Figure 2 shows that the main mass is made up of surgeons (78%).

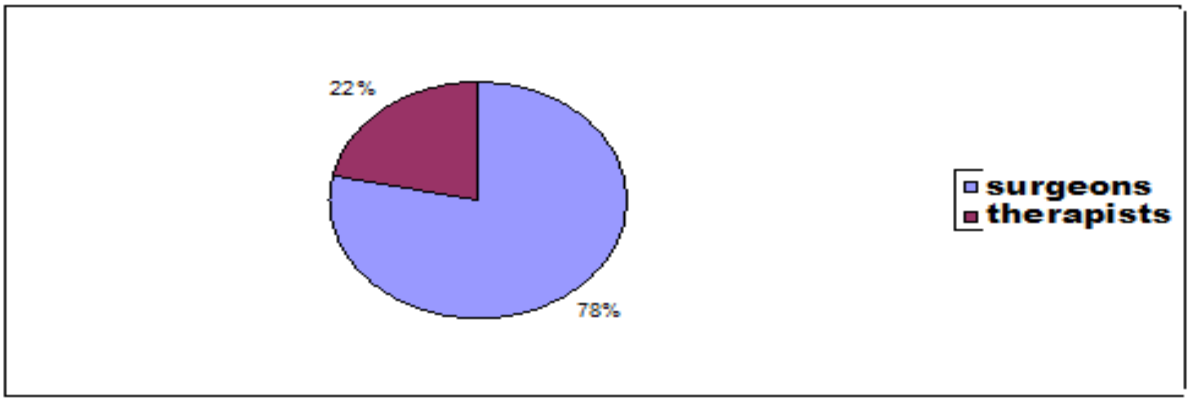


***Fig. 2. Professional composition of doctors***

*By years of graduation from the institute, the surveyed are presented in Figure 3*

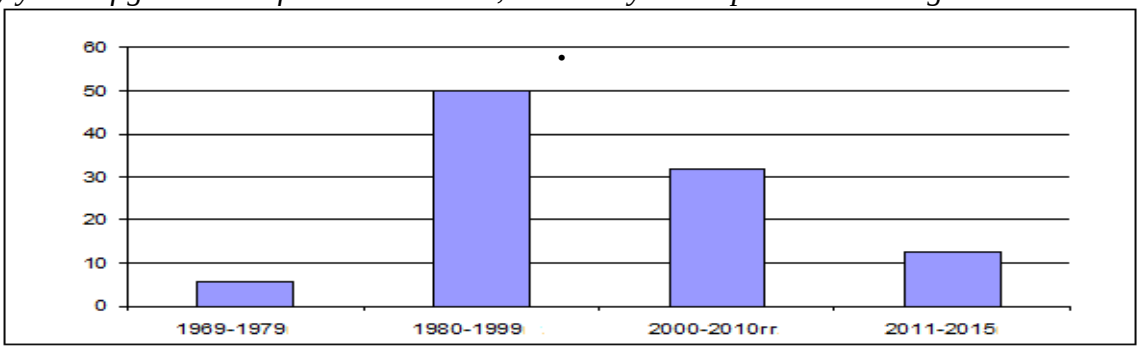


***Fig. 3. Distribution of doctors by years of graduation***

From the above data, it can be seen that half (50.0%) of the surveyed graduated from the institute in 1980-1999, 31.8% - in 2000-2010, in 2011-2015. -12.5% and 5.7% - in 1969-1979, i.e. 81.8% graduated from the institute in 1980-2010.

*The distribution of doctors by specialty is shown in Figure 4.*

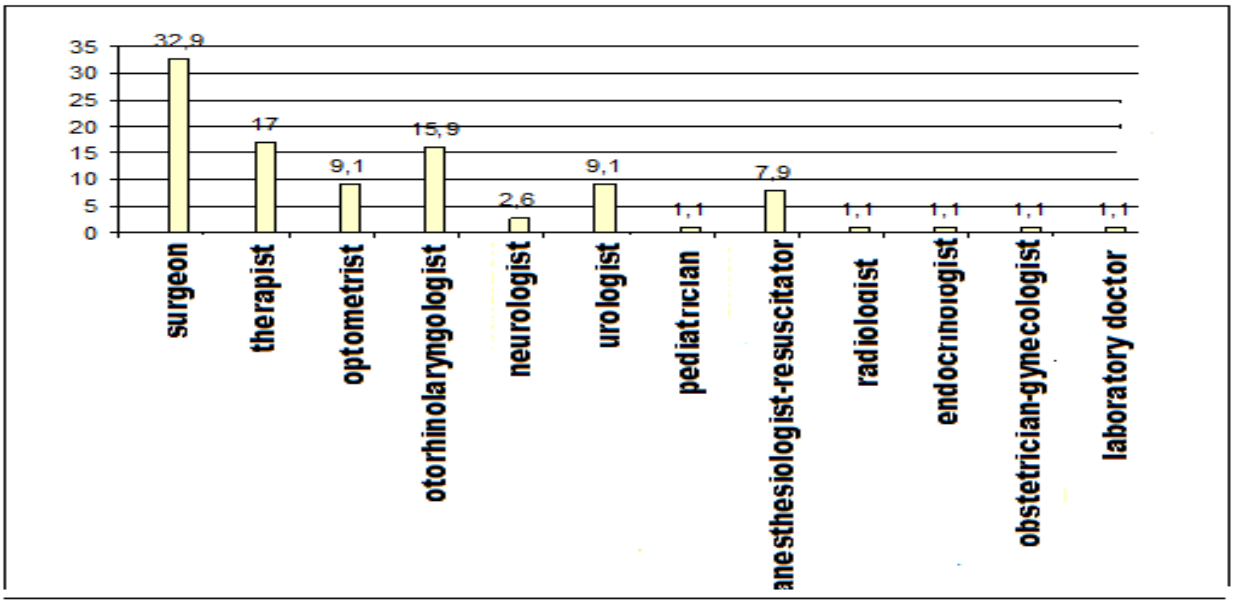


***Fig. 4. Distribution of medical personnel by profession***

According to general medical work experience, the distribution of respondents is presented in Table 2, from which it can be seen that 12.5% of doctors have work experience of up to 3 years, from 3 to 5 years - 5.7%, from 5 to 10 years - 26.1%, from 10 to 15 years - 6.8% and over 15 years - 48.9%. It can be concluded that in the studied hospital, the length of service of medical personnel is more common over 15 years (48.9%), the difference is significant (P <0.05).

***Table 2.***

***Distribution of respondents by general medical work experience***

| № | General medical work experience | abs. | % |
|---|---|---|---|
| | Up to 3 years | 11 | 12,5 |
| | from 3 to 5 years | 5 | 5,7 |
| | from 5 to 10 years old | 23 | 26,1 |
| | from 10 to 15 years old | 6 | 6,8 |
| | over 15 years | 43 | 48,9 |
| | Total | 88 | 100,0 |

The length of service of doctors in this health facility revealed that half of the doctors worked for 15 years or more, 5-9 years - 17.1%, 1-4 years - 15.9%, 10-14 years - 10.2%, up to 1 year -6.8%. This means that the bulk of doctors (60.2%) worked for 10 years or more, the difference is significant (P <0.05).

The qualification category contributes to the professional development and growth of the competence of doctors, which, to a certain extent, affects the quality of medical care.

*The distribution of doctors by category is shown in Fig. 5.*

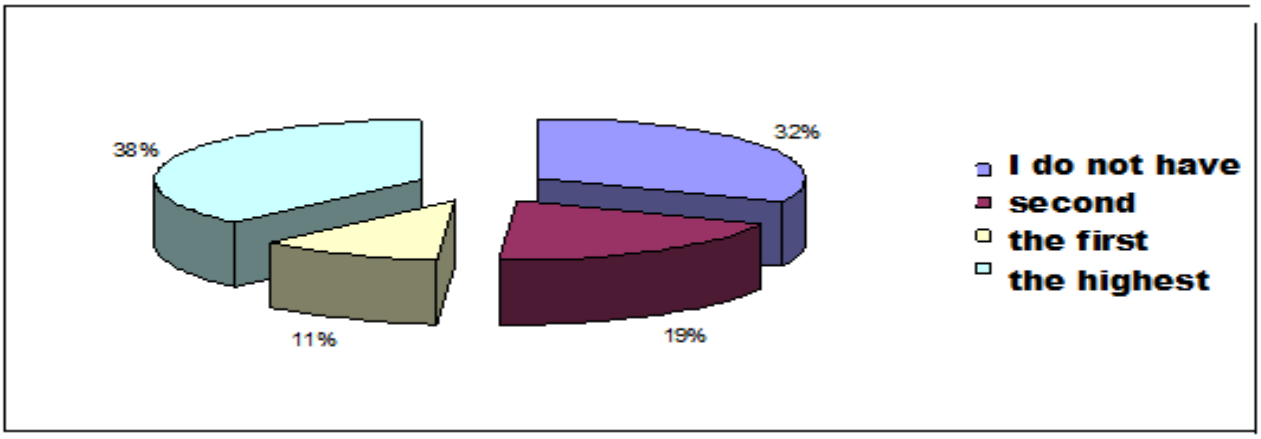


***Fig. 5. Distribution of doctors by category***

Figure 5 shows that 11.1% have the first, 19.3% - the second, 37.8% - the highest and 31.8% - do not have a category. It can be noted that 68.2% of the personnel have a category, the difference is significant (P <0.05).

To the question: "When was the last time you passed the FPK?" the answers were as follows: this year - 32.9%, 1 year ago - 21.6%, 2 years ago - 22.7%, 3 years ago and more - 13.7%, did not pass - 9.1%. Based on the data, it can be concluded that the bulk of the respondents passed the FPC (90.9%), the difference is significant (P <0.01).

The distribution of medical personnel by work rates revealed that 68.2% of respondents had less than 1 rate, 1 rate for 22.7% and 1.5 rates for 9.1%. 23.9% of doctors have part-time jobs, while the majority (76.1%) do not. More than half (57.1%) work part-time in another institution, and about half (42.9%) - in this institution.

To the question: "Does the current profession correspond to the professional education you

have received?"), the difference is statistically significant (P <0.01).

According to the survey, about half of doctors (46.6%) suffered a cold, 33.0% - flu, 5.7% - sore throat, 3.1% - hepatitis, 3.7% - other infectious diseases and 7.9% - did not hurt anything. This means that the bulk (92.1%) suffered ARVI, the difference is statistically significant (P <0.01).

80.3% of the examined doctors per year suffer from influenza, acute respiratory viral infections, tonsillitis and other diseases from 1 to 3 times, and only 19.7% do not get sick, the difference is significant (P <0.05).

(Fig. 6).

Doctors have low medical activity: more than half (52.9%) do not see a doctor, i.e. self-medicate and carry diseases "on their feet", 36.3% - take sick leave, and only 11.4% note that they did not have such a condition to take the ballot.

To the question: "How do you assess your state of health on a 5-point scale?" the medical staff responded as follows: grade "5" was given - 45.5%, "4" - 37.5%, "3" - 4.5%, "2" - 9.1%, "1" - 3.4 %

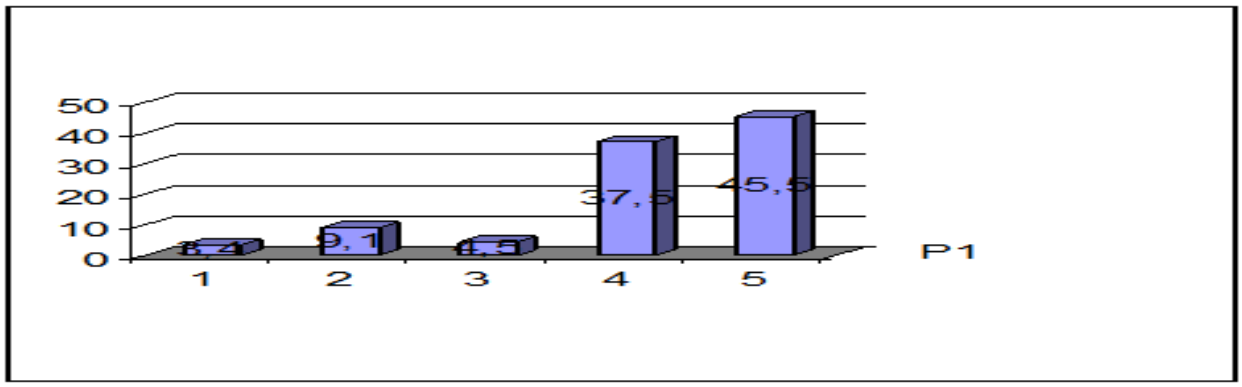


***Fig. 6. Assessment of health in points of medical personnel***

According to these data, it can be concluded that the assessment of their health "5" and "4" points was given by the bulk of the surveyed (83%), "3" - 4.5% and unsatisfactory ("2" and "1") - 12, 5%, the difference is statistically significant (P <0.05).

The majority of doctors (98.9%) read special medical literature (magazines, newspapers). It should be noted that 96.6% of doctors answered correctly to the question: "What documents cover the issues of nosocomial infection?" those. know government documents on this issue, and only 3.4% did not give the correct answer, the difference is significant (P <0.01).

According to our data, more than half of doctors (62.6%) work in a team, 31.8% - individually and 5.6% - in other forms of work organization (Fig. 7).

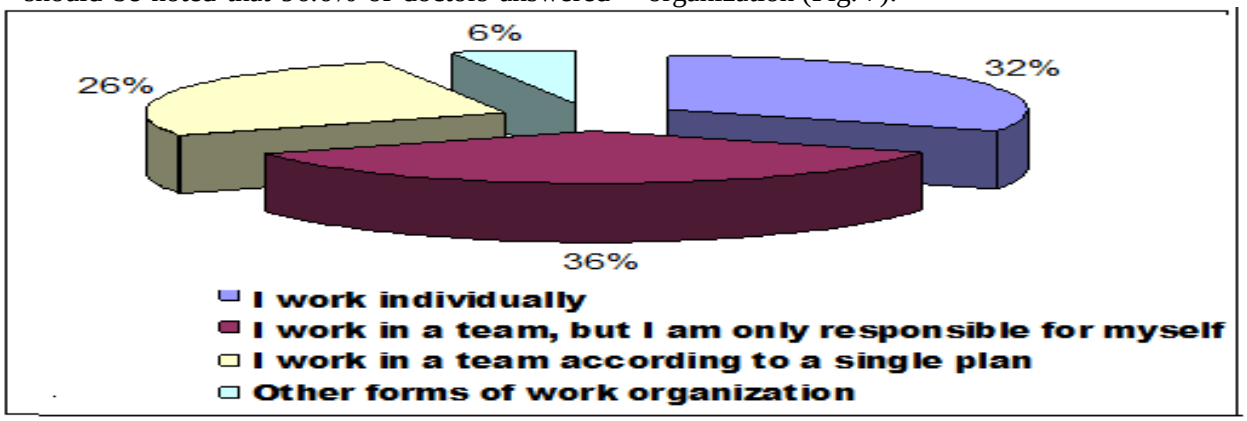


***Fig. 7. Characteristics of the organization of work of doctors***

To the question: "What do you think is the reason for the detection of infectious diseases in departments?" respondents answered as follows - 31.8% - incomplete collection of the epidemiological anamnesis by the medical staff, 27.3% - several of the listed reasons in aggregate, 20.4% - lack of express methods of laboratory diagnostics, 16.0% - irresponsibility of the

medical staff of the admission department and 4.5 % - does not know.

We have analyzed the performance of functions by medical personnel that are not included in the range of their direct responsibilities (Fig. 8).

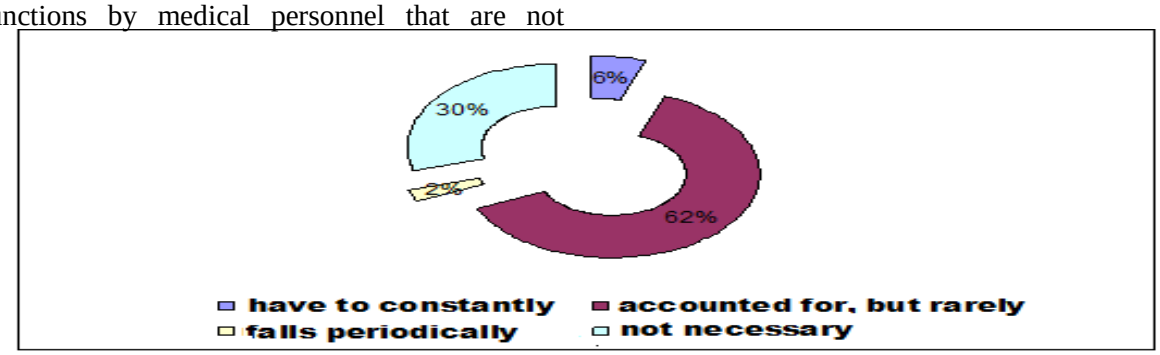


***Fig. 8. Analysis of the performance of work not included in the range of direct responsibilities***

Figure 8 shows that 62.5% of respondents rarely have to, 5.7% - constantly, 2.3% - periodically perform functions that are not part of their direct responsibilities, and 29.5% - do not have to perform. Based on these data, it can be concluded that the bulk of doctors (70.5%) have to perform additional work, the difference is significant (P <0.05).

To the question: "To what extent are you satisfied with the sanitary and hygienic working conditions (noise, ventilation, lighting, sanitary condition)?" respondents gave the following answers - they are quite satisfied - 47.7%, partially satisfied - 44.4%, found it difficult to answer - 4.5%, not satisfied - 3.4%. It can be concluded that the bulk of the medical staff is satisfied (92.1%), the difference is significant (P <0.01).

All respondents know the tactics if there is a patient with B 20 in the department.

The organization of the labor process in hospitals has a number of features associated with the use of high-tech medical equipment, round-the-clock operation and direct contact with drugs, chemicals, infectious agents.

According to a survey of respondents, the structure of occupational hazards faced by medical personnel in the department is as follows: psycho-emotional overload - 50.0%, several factors together - 19.3%, bacteriological hazards - 12.5%. exposure to chemical (mainly disinfecting) drugs -10.3%, physical overloads - 3.4% and no - 4.5%. Those. doctors in 95.5% of cases face occupational hazards, the difference is significant (P <0.01).

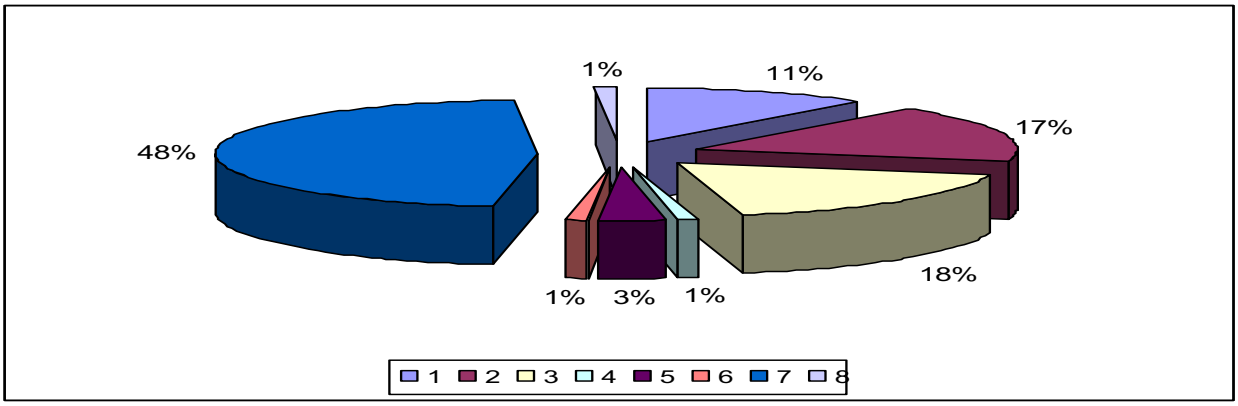


***Fig. 9. Opinion of respondents about increasing the efficiency and improving the quality of anti-epidemic work***

To the question: "What do you think is the most important for increasing the efficiency and improving the quality of the anti-epidemic work of the medical staff?" (Fig. 9) the respondents answered as follows: an increase in the provision of tools, medicines (18.2%), an improvement in the technical equipment of workplaces, an improvement in working conditions (17.2%), an increase in wages and an improvement in the material situation (11.3%) , strengthening

discipline (3.4%), improving the relationship between medical staff, administration (1.1%), improving the quality of vocational education (1.1%), somewhat together (46.6%), does not know (1.1%) .).

Table 3 shows, according to the opinion of doctors, the factors of increasing the effectiveness of the anti-epidemic work of nursing personnel.

***Table 3. Factors of increasing the effectiveness of anti-epidemic work of nursing personnel***

| № | Factors | abs. | % |
|---|---|---|---|
| | Professional competence | 31 | 35,2 |
| | Organization | 24 | 27,3 |
| | Quality of work | 5 | 5,7 |
| | Several together | 28 | 31,8 |
| | Total | 88 | 100 |

According to Table 3, doctors indicated that professional competence (35.2%), organization (27.3%), the quality of anti-epidemic work (5.7%) and in 31.8% - several together.

In Table 4, respondents assessed the methods of reducing nosocomial infections, where 54.6% take several methods together, 21.6% - compliance with sanitary standards for cleaning wards, sterility and disposable instruments - 14.8%, hand washing - 6.8%, etc. ...

***Table 4: Evaluation by respondents of methods for reducing nosocomial infections***

| № | Methods for reducing nosocomial infections | abs. | % |
|---|---|---|---|
| 1. | Hand washing | 3 | 3,4 |
| 2. | Washing the hands of caregivers | 3 | 3,4 |
| 3. | Compliance with sanitary standards for cleaning wards | 19 | 21,6 |
| 4. | Sterility | 8 | 9,1 |
| 5. | Disposable Instruments | 5 | 5,7 |
| 6. | Purity | 1 | 1,1 |
| 7. | Free visiting of patients | 1 | 1,1 |
| 8. | Several together | 48 | 54,6 |
| | Total | 88 | 100 |

Despite the fact that SanPiNs and orders for the prevention of nosocomial infections are being worked out in departments, only 46.6% of the surveyed doctors have heard of routine hand washing (Fig. 10).

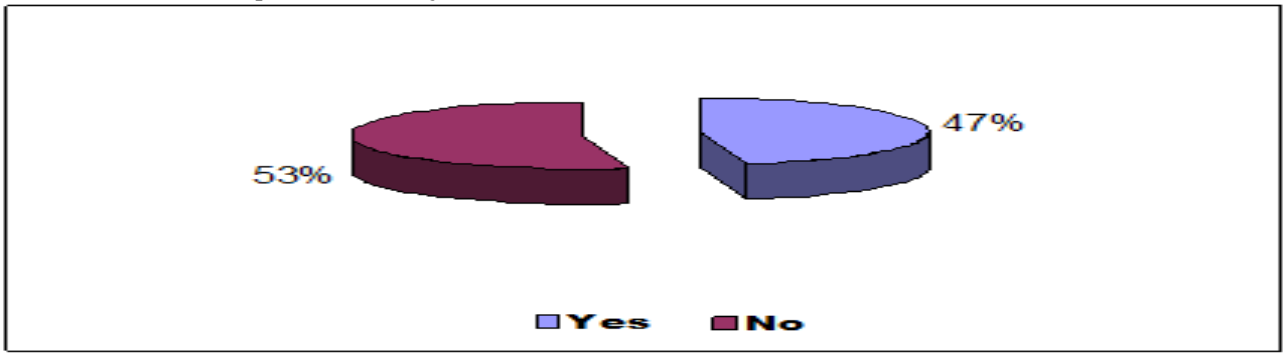


***Fig. 10. Characteristics of the respondents' knowledge of routine hand washing***

Analysis of the characteristics of measures for the prevention of nosocomial infections, according to the opinion of doctors, revealed that in 36.3% - this is the competence of medical personnel in hospital infection, in 17.8% - PPE, in 9.1% - modern equipment and reagents, in 5.7% - control over patients and their relatives, in 4.5% - improvement of the working conditions of the medical staff, in 29.5% - several together and in 1.1% - do not know.

The characteristics of the number of manipulations performed per day by doctors (injections, installation of systems, catheters, probing, blood sampling, etc.) is shown in Fig. 11.

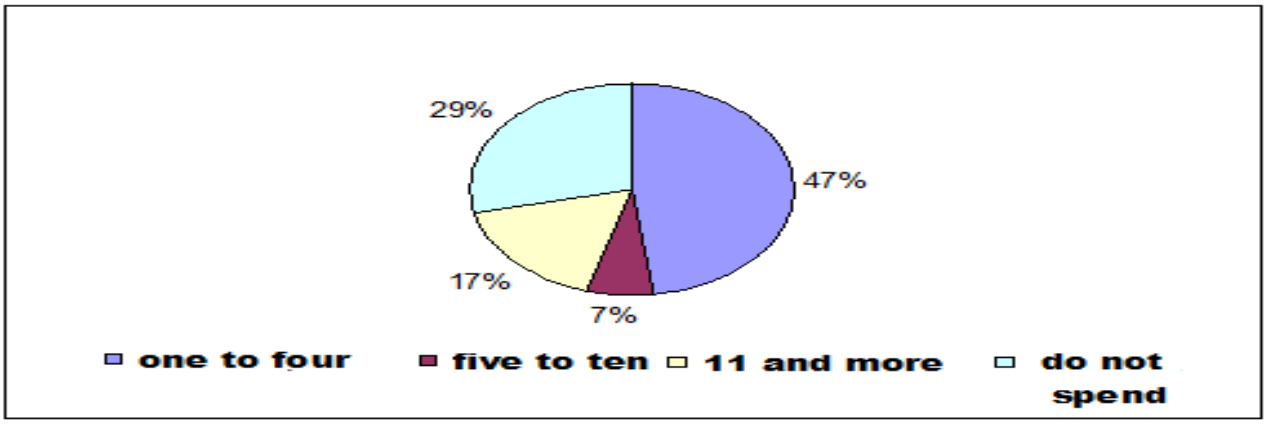


***Fig. 11. Characteristics of the number of manipulations per day***

According to our data, the majority of doctors (71.5%) perform 1 or more manipulations and only 28.5% do not, the difference is significant (P <0.05).

When analyzing the shortage of material and technical means necessary for high-quality prevention of nosocomial infections, the medical staff gave the following answers: 59.2% - constantly or partially encounter a shortage, 36.3% - do not encounter and 4.5% - found it difficult to answer (Fig. 12).

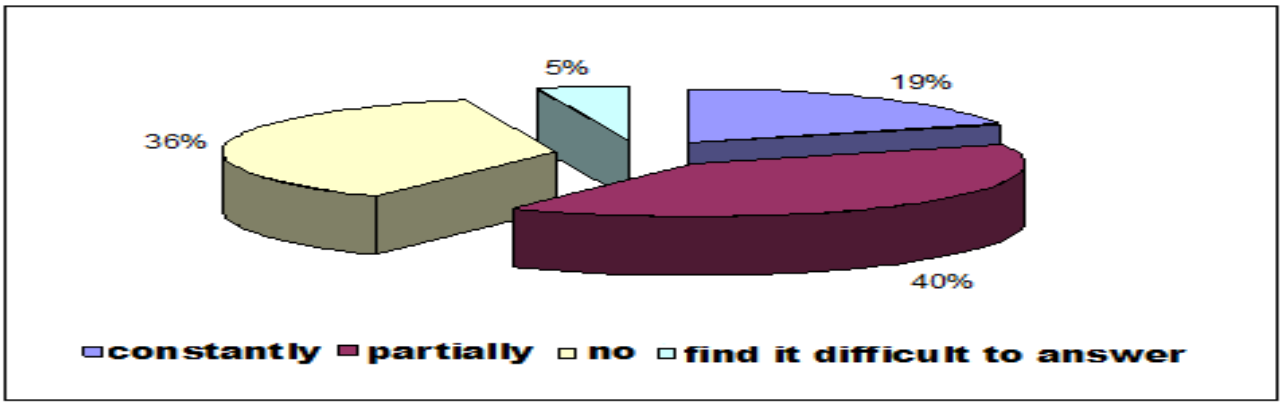


***Fig. 12. Analysis of the shortage of material and technical means***

Currently, much attention is paid to the quality of medical care, the majority of doctors know this definition (95.5%) and only 4.5% do not know, the difference is significant (P <0.01).

The majority of respondents (72.7%) are satisfied with the existing quality control system for the prevention of nosocomial infections, 14.8% are not satisfied and found it difficult to answer - 12.5%.

10.2% of doctors believe that in order to ensure the quality of prophylaxis of nosocomial infection, the chief physician, deputy and head of the department should take part, 20.5% believe that an epidemiologist is a doctor, 43.2% are an epidemiologist and a senior nurse, 25% - all staff

and 1.1% don't know. Those. most of the doctors interviewed do not know who is responsible for surveillance.

Analysis of measures in a medical accident for the prevention of blood-borne infections (HIV, AIDS, HBV, HCV) showed that

37.2% of doctors believe that it is necessary to use peripheral catheters and a catheter in the central vein, 66.7% - having many years of experience, perform procedures in such a way as to prevent medical accidents, 11% - use many methods and 1.1% - do not know ... This shows that 98.9% of the respondents know these events, the difference is statistically significant (P <0.01).

94.4% of the respondents answered that the head of the department controls the preventive vaccination of the department employees and the use of immunobiological drugs. Characteristics of measures for effective anti-infectious protection of medical personnel are presented in Table 5.

***Table 5. Characteristics of measures of effective anti-infectious protection of medical personnel***

| № | Measures for the effectiveness of anti-infectious protection of medical personnel | Абс. | % |
|---|---|---|---|
| | Improving hospital infection control methods | 24 | 27,3 |
| | Hospital infection monitoring and analysis | 6 | 6,8 |
| | Continuous efforts to improve quality | 14 | 16,0 |
| | Elimination of the shortcomings of the treatment and diagnostic process of the hospital | 6 | 6,8 |
| | Introduction of standards | 1 | 1,1 |
| | Improving the dissemination of information and influence on the attitude of health care workers towards the infection control program | 6 | 6,8 |
| | Many | 31 | 35,2 |
| | Total | 88 | 100 |

Doctors associate cases of suppuration after treatment in 36.4% with insufficient sterilization of surgical material and instrumentation, in 17.8% - incomplete treatment of the surgical field by the surgeon, in 14.8% - with antibacterial treatment, in 31% - several factors together ...

60.2% of respondents believe that nosocomial infection is influenced by a complex of factors, in 17% of cases - inadequate technique of invasive manipulations: medical and diagnostic procedures, in 7.9% - inadequate asepsis, sterilization, insufficient disinfection, in 7.9% - patients, in 5.9% - insufficient hand treatment and does not know - 1.1%.

82.9% of respondents had a complete understanding of the resistance to antimicrobial and antiseptic drugs of the main pathogens of nosocomial infections, 17.1% did not have a complete understanding (Fig. 13), the difference is significant (P <0.05).

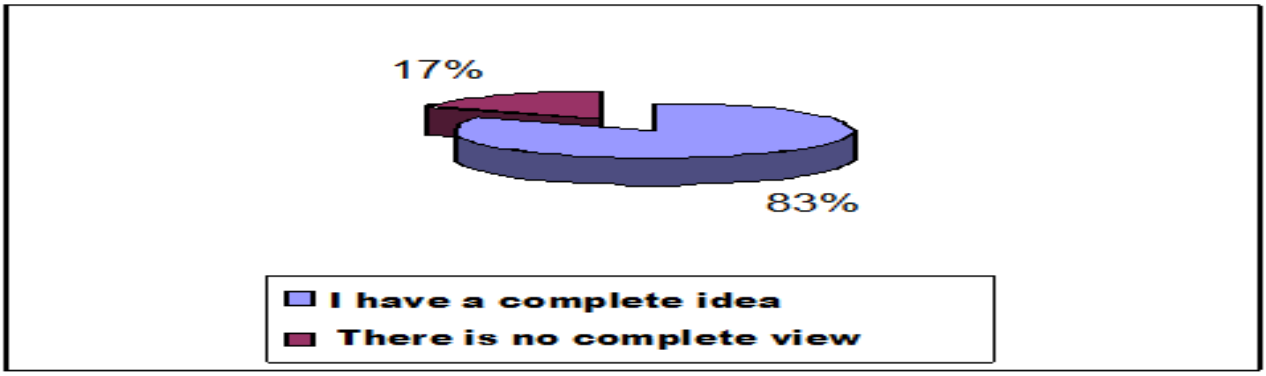


***Fig. 13. Knowledge of respondents about drug resistance***

According to the research data, for the prevention of nosocomial infections in 85.2% of cases, occupational vaccinations, immunization are carried out, and in 14.8% - they are not always carried out, the difference is significant (P <0.05).

To the question: "What factors negatively affect the quality of prevention of nosocomial infections?" the respondents' answers were as follows: insufficient provision of medical equipment, introduction of new methods of diagnosis and treatment (50.3%), high workload (12.3%), several together (29.5%), lack of material incentives (4.5%), insufficient control over the work of a doctor by the head (3.4%), insufficient qualifications of doctors (1.1%), does not know the reasons (14.8%).

*The doctors' knowledge of the duration of hand washing is shown in Fig. 14.*

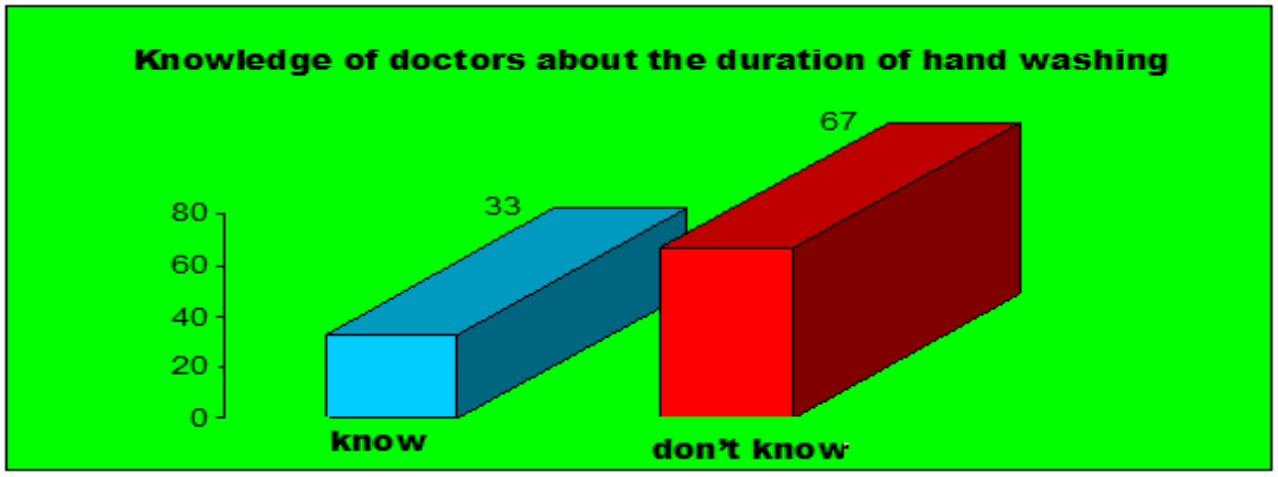


***Fig. 14. Knowledge of doctors about the duration of hand washing***

Figure 14 shows that only 33% of doctors know the duration of hand washing.

When analyzing the reasons for non-compliance with the recommendations for washing hands by doctors themselves, it was found that 23.8% had a belief that gloves provide complete protection, 12.3% had doubts about the effectiveness of hand washing in preventing infections, 4.5% % - frequent washing irritates the skin of the hands, damages the nails and nail polish, in 2.3% - the feeling that colleagues and managers themselves do not follow the recommendations for washing their hands, lack of time (11.7%), limited access to sinks and plumbing water (1.1%), 29.5% have many reasons, 14.8% have no answer (Fig. 15).

***Fig. 15. Reasons for non-compliance with recommendations for washing hands by doctors***

92.2% of respondents had no violations of production discipline, 3.4% had a failure to comply with the order of the head, 2.2% - violation of discipline, such a number (1.1% each) - equipment breakdown due to their own fault and unsatisfactory maintenance your workplace. 75% of respondents were not imposed penalties for non-compliance with sanitary norms and rules and 25% were imposed, the difference is significant (P <0.05).

The characteristics of penalties for work are presented in Table 6, from which it can be seen that the bulk of them are reprimands (21.6%).

***Table 6.***

***Characteristics of penalties for doctors***

| № | Types of penalties | abs. | % |
|---|---|---|---|
| | Rebuke | 19 | 21,6 |
| | Fine | 7 | 8,1 |
| | Transition to a lower position | 1 | 1,1 |
| | Dismissal | 2 | 2,2 |
| | Did not overlap | 59 | 67,0 |
| | Total | 88 | 100 |

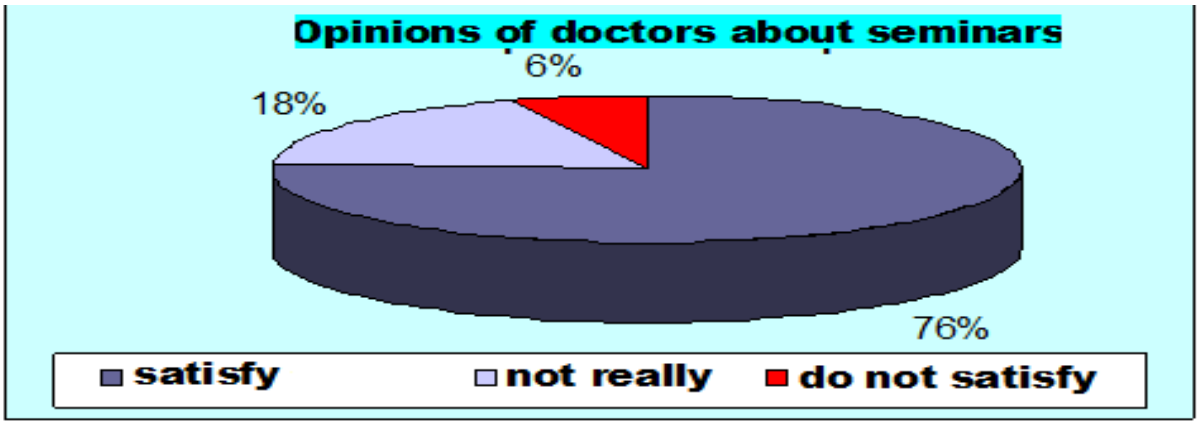


***Fig. 16. Characteristics of the respondents learning at the seminars***

**Рис. 16. Мнения врачей о семинарах**

According to fig. 16: 76.1% of respondents are satisfied with the training at seminars on the prevention of nosocomial infections, 18.2% - not quite satisfied and 5.7% - not satisfied, the difference is significant (P <0.05).

Doctors believe that in order to improve training at seminars, it is necessary to use more often presentations (15.9%), educational films (11.4%), the involvement of other specialists (11.4%), master classes (7.9%), various species in the complex (19.3%); 34.1% of respondents are satisfied with the seminars (Fig. 17).

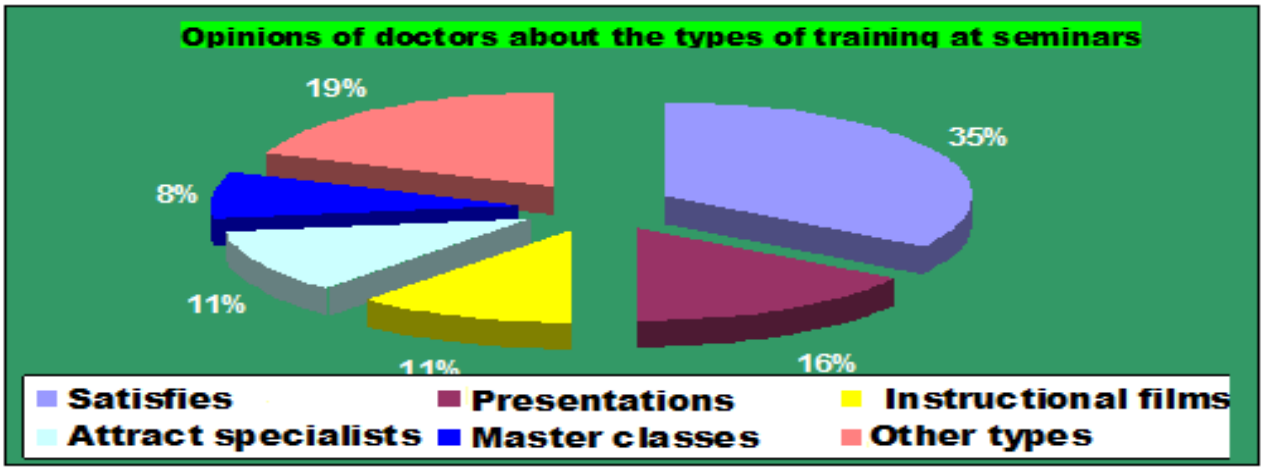


***Fig. 17. Opinions of doctors about the types of training at seminars***

To improve the activities of the medical and nursing staff, we have introduced a logbook of procedures, a logbook for the cost of disinfecting solutions, quartzing, registration of catheters, sterilization into practice. According to the survey, about 70% of respondents believe that with the introduction of these documents, time has been saved, there is more time left for patients and it is necessary to further reduce the number of medical documents, 9% believe that nothing has changed, more work has been added.

In conclusion, it should be noted that not only significant medical and diagnostic activities are carried out in the healthcare facility, but also a very extensive complex of sanitary-hygienic and anti-epidemic measures aimed at the prevention of nosocomial infections, which are a special specificity of the categories of human diseases associated with the patient receiving one or another type of medical care and resulting from the patient's stay in the hospital.

At the head of all this multifaceted work on the prevention of nosocomial infections in health care facilities is the medical staff - the main organizer, performer and responsible controller, the correctness of whose activity depends on the knowledge and practical skills obtained in the course of training to solve this problem. The conscientious attitude and careful implementation of the requirements of the anti-epidemic regime by medical personnel will prevent occupational morbidity of employees, which will significantly reduce the risk of nosocomial infections and preserve the health of patients.

Thus, the studies carried out and the results obtained helped us to study, analyze and identify weaknesses in the organization of the activities of a multidisciplinary hospital, its epidemiological department in the prevention of nosocomial infections and consider possible ways of its optimization.

**Conclusion**

1. For the efficiency of the operational and retrospective epidemiological analysis of the incidence of nosocomial infections, the increase in the medical activity of the hospital staff, it is necessary to create a single electronic database in the institution.

2. To optimize the principles of training medical personnel on the safety of nosocomial and traditional infections in different departments of the hospital, use interactive forms of training (training videos, seminar presentations, master classes, Internet conferences, distance and modular training).

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# PECULIARITIES OF DIAGNOSTICS OF COMPRESSION FRACTURES OF THE CHEST AND LUMBAR SPINE IN ADULT AND ELDERLY PATIENTS

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✓ ***Resume***

***The study analyzed the results of the examination of 60 patients over 50 years old who were treated in the departments of neurosurgery and vertebrology of the AGMI clinic, the departments of spinal surgery of the Republican Specialized Scientific and Practical Center for Neurosurgery from 2012 to 2020. Based on the examination results, a differentiated surgical approach is recommended for each patient.***

***Key words: fractures, spine, diagnostics, adult and advanced age, compression fractures.***

# ОСОБЕННОСТИ ДИАГНОСТИКИ КОМПРЕССИОННЫХ ПЕРЕЛОМОВ ГРУДНОГО И ПОЯСНИЧНОГО ОТДЕЛОВ ПОЗВОНОЧНИКА У ПАЦИЕНТОВ ВЗРОСЛОГО И ПОЖИЛОГО ВОЗРАСТА

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✓ ***Резюме***

***В исследовании проанализированы результаты обследования 60 пациентов старше 50 лет, лечившихся в отделениях нейрохирургии и вертебрологии клиники АГМИ, отделениях спинальной хирургии Республиканского специализированного научно-практического центра нейрохирургии с 2012 по 2020 гг. По результатам обследования каждому пациенту рекомендован дифференцированный хирургический подход.***

***Ключевые слова: переломы, позвоночник, диагностика, взрослый и пожилой возраст, компрессионные переломы.***

# KATTA VA KEKSA YOSHLI BEMORLARDA KO‘KRAK VA BEL UMURTQALARI KOMPRESSION SINISHLARINI TASHXISLASHNING O’ZIGA XOS XUSUSIYATLARI

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Andijon davlat tibbiyot instituti,
Respublika ixtisoslashgan neyroxirurgiya ilmiy – amaliy markazi

✓ ***Rezyume***

***Tekshiruv davomida 2012 – 2020 yillar davomida ADTI klinikasi neyroxirurgiya va vertebrologiya bo‘limlari, Respublika ixtisoslashgan Neyroxirurgiya ilmiy – amaliy markazi spinal xirurgiya bo‘limlarida davolangan 50 yoshdan oshgan 60 nafar bemorlarda tekshiruvlardan olingan natijalar taxlil etildi. Tekshiruv natijalariga asoslangan holda har bir bemor uchun differensiallashgan jarrohlik usuli tavsiya etildi.***

***Kalit so'zlar: sinish, tashxislash, kattalik va keksalik yoshi, ko'krak va bel umurtqasi. compression sinish,***

## Relevance

Diagnosis of the stage and nature of spinal cord injury is one of the current problems of modern vertebrology and neurosurgery. Injuries to the spine are second only to injuries of the lower extremities, and account for 10-26% of injuries of the musculoskeletal system [4].

Spinal fractures are not seen on traditional radiography in 23-57% of cases. The emergence of more informative methods of radiation

diagnosis (multispiral computed tomography - MSKT, magnetic - resonance tomography - MRI) naturally increases the visualization of the stage and nature of the injury of the spine and spinal cord [1,2,3].

Compression fractures of the spine are one of the most common traumas in adults and the elderly. Every year, 1.5 million osteoporosis fractures occur in the United States, of which about 700,000 are compression fractures (Ensrud KE, 2011). According to Durova M.F. (1983), 7.6% of patients in the neurosurgery and traumatology departments have spinal fractures. injuries of the spine. According to O.M. Lesnyak (2011), people over the age of 50 have 7 vertebral fractures per minute, and every 5 minutes a fracture of the proximal part of the metaepiphysis of the thigh.

The above data set the following goals and objectives in the complex application of examination methods and analysis of the results obtained when compression fractures of the spine occur in the thoracic and lumbar region.

**The purpose of the study:** to improve the methods of examination of compression fractures in the thoracic and lumbar spine in elderly and elderly patients

## Material and methods

Andijan State Medical Institute Clinic, Department of Vertebrology and Neurosurgery, Republican Specialized Scientific-Practical Center of Neurosurgery, Department of Spinal Surgery formed.

Complex instrumental examination methods were used after different degrees of injury or pain in the thoracic and lumbar spine. Of the patients examined, 19 (31.6%) underwent 2 different radiographic examinations, 7 (9.7%) underwent densitometry, 24 (40%) underwent MSCT and 44 (73.3%) underwent MRI, and 5 (8) underwent MRI. , 3%) underwent densitometry. The study focused on the area in which the compression fractures occurred, the mineral density of the vertebral body where the compression fracture occurred, and the nature of the fracture (stable or unstable).

## Result and discussion

The most common classification of injuries to the thoracic and lumbar spine is the modified classification of F. Denis [6] and AO F. Megerli [5]. According to this classification, spinal injuries are divided into 4 groups: 1) compression fractures 2) explosive fractures 3) seat belt fractures 4) fractures.

Compression fractures account for approximately half (49.8%) of fractures in the thoracic and lumbar spine. In these types of fractures, the anterior musculoskeletal system of the spine is damaged, the medial musculoskeletal system is not damaged, and the organ may be damaged or undamaged due to the elongation of the musculoskeletal system. In fractures of this type, the load on the spinal axis is dropped, causing the spine to bend. Typically, fractures in this group are located in the upper covering plate, ponasal deformations of the vertebral body occur, and its anterior surface leads to disruption of the cortical substance.

The study found compression fractures in the thoracic and lumbar spine in 60 patients over the age of 50 years. Of these patients, 44 were due to falls from heights, 6 were due to a traffic accident, 4 were due to trauma, and 6 patients did not link the cause of the illness to any cause.

Compression fractures were most common in 18 (30%) patients in the VTh12 area and 13 (21.7%) in the VL1 area.

Analysis of the results of complex light examination methods showed that typical 2-type X-ray examinations reveal changes in the axis of the spine, displacement and dislocation of the vertebral body, signs of compression in the vertebral body, in some cases changes in paravertebral soft tissue.

In the absence of objective methods of assessing the quality of bone tissue, these criteria can be used in planning the operation. Two-energy X-ray obsorptionmetry (densitometry, DEXA) has become the “gold standard” in determining bone density, as it has the ability to check the density of the central part of the bone using this method.

The bone density value is expressed as the T criterion, which is a statistical indicator of the ratio of bone density and bone density of the subject in the control group of selected healthy volunteers. It is expressed in the number of standard deviations (SD) from the “normal” peak bone mass in the control group of patients. According to WHO, osteoporosis is considered normal if the T criterion is less than -2.5 SD, osteopenia if the T criterion is less than -1 to -2.5 SD, and normal if the T criterion is greater than -1.

MSKT allows you to get more information from the X-ray examination. Compared to X-ray examination, MSKT examination allows to describe compression fractures more accurately: to determine the degree of its deformation, the number of injured vertebrae, fracture of the arch, the mineral density of the compressed vertebral

body and the presence of signs of instability in compression fractures. Normal radiographic examinations do not show displacement of bone fragments into the spinal canal, and the reason for this is obstruction of the spinal cord, which is seen on MSKT examination.

MRI examination of the soft tissues of the spine can reveal the following components: longitudinal, intervertebral disc, spinal cord and changes in it (ischemia, edema, hemorrhage and cyst), extra and intradural hemorrhage and changes in the spinal body.

Complex examination methods in compression fractures of the thoracic and lumbar spine (radiological examinations, densitometry or MSCT, MRI) allow patients to accurately diagnose the disease (clearly see the area of the disease, know the stage of the disease, know the cause of the disease) and differentiate treatment allows you to choose the surgical method.

**Conclusion**

1. In compression fractures of the thoracic and lumbar spine, it is advisable to conduct complex examination methods using two types of radiography, densitometry, MCT and MRI. If screening methods are not fully utilized, insufficient information on the condition of the spine and spinal cord will be obtained.

2. Comprehensive X-ray examination of compression fractures of the thoracic and lumbar spine in elderly and elderly patients allows to quickly eliminate problems in diagnosing the disease, timely select a differentiated treatment method for each patient and predict possible complications after injury.

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# PECULIARITIES OF THE CLINICAL PICTURE OF VEGETATIVE DYSTONIA IN ADOLESCENTS OF ADDITIONAL AGE 15-17 YEARS DEPENDING ON HARMONY PHYSICAL DEVELOPMENT

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✓ ***Resume***

***Objective of the study: to identify the main patterns of clinical and functional manifestations of vegetative dystonia in adolescents 15-17 years old with disharmonious physical development.***

***Material and methods. The work was carried out based on the results of a comprehensive examination of young men-pre-conscripts and conscripts of the city of Andijan aged 15 to 17 years, called up for registration in the Armed Forces in 2019 - 2021 (n = 571 teenagers). The following clinical and instrumental research methods were used: questioning, clinical examination, assessment of neuropsychic development, assessment of sexual development, somatometry, assessment of the level of physical development and the degree of its harmony, somatoscopy.***

***Results and Discussions. The data we obtained clearly showed not only the putative clinical polymorphism inherent in autonomic dysfunction, but - and this is the main thing - already formed systemic syndromes, somatoform and psychovegetative, which speak of the permanence of autonomic imbalance and its significant severity.***

***Conclusion Thus, the somatoform manifestations of autonomic dystonia (VD) had significant differences between boys and girls with VD, both with the harmony of physical development (GFR) and the pre-conscription harmony of the physical development of DHFR.***

***Key words: vegetative dystonia, physical development, pre-conscription age, adolescence.***

# ОСОБЕННОСТИ КЛИНИЧЕСКОЙ КАРТИНЫ ВЕГЕТАТИВНОЙ ДИСТОНИИ У ПОДРОСТКОВ ДОПРИЗЫВНОГО ВОЗРАСТА 15-17 ЛЕТ В ЗАВИСИМОСТИ ОТ ГАРМОНИЧНОСТИ ФИЗИЧЕСКОГО РАЗВИТИЯ

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✓ ***Резюме***

***Цель исследования: выявить основные закономерности клинико- функциональных проявлений вегетативной дистонии у подростков 15-17 лет с дисгармоничным физическим развитием.***

***Материал и методы. Работа выполнена по результатам комплексного обследования юношей-допризывников и призывников г. Андижана в возрасте от 15 до 17 лет, призванных для приписки в Вооруженные Силы в 2019 - 2021 году (n=571 подростка). Были использованы следующие клинические и инструментальные методы исследований: анкетирование, клинический осмотр, оценка нервно-психического развития, оценка полового развития, соматометрия, оценка уровня физического развития и степени его гармоничности, соматоскопия.***

***Результаты и обсуждения. Полученные нами данные отчетливо показали не только предполагаемый клинический полиморфизм, свойственный вегетативной дисфункции, но - и это главное - уже сформировавшиеся системные синдромы, соматоформный и психовегетативный, говорящие о перманентности вегетативного дисбаланса и значительной его выраженности.***

***Вывод. Таким образом, соматоформные проявления вегетативной дистонии (ВД) имели достоверные различия между мальчиками и девочками с ВД как с гармоничности физического развития (ГФР), так и допризывного гармоничности физического развития ДГФР.***

***Ключевые слова: вегетативная дистония, физическая развития, допризывный возраст, подростковый возраст.***

## CHAQIRUV YOSHIGACHA BO‘LGAN 15-17 YOSHLI O‘SMIRLARNING JISMONIY RIVOJLANISHINI MUTANOSOBLIGIGA KO‘RA VEGETATIV DISTONIYANI KLINIK KO‘RINISHI XUSUSIYATLARI

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***Tekshiruv maqsadi: chaqiruv yoshigacha bo‘lgan 15-17 yoshli o‘smirlarning jismoniy rivojlanishini barkamolligiga ko‘ra vegetativ distoniyani asosiy klinik-funksional xususiyatlarini aniqlash.***

***Material i usullar. 2019 – 2021 yillar davomida Andijon shahridagi 15-17 (n=571 o‘smir) yoshli chaqiruv yoshgacha bo‘lgan o‘smirlar va chaqiriluvchilarni Qurolli kuchlar safiga ro‘yxatga olishda kompleks tekshiruvi natijaliriga asoslanib ish bajarilgan. Quyidagi klinik va instrumental tekshiru usullaridan foydalanildi: anketa so‘rovnomasi, klinik ko‘ruv, asab ruhiy rivojlanishini baholash, jinsiy rivojlanishigi baholash, somatometriya, jismoniy rivojlanishi va uni mutanosibligiga baxo berish, somatoskopiya.***

***Olingan natijalar va muxokama. Olingan natijalar shuni ko‘rsatadiki, vegetativ distoniyaga nafakat klinik polimorfizm xos, balki, eng asosiysi, allakachon shakllangan tizimli sindromlar, ruhiy, somatoform va vegetativ o‘zgarishlar vegetativ disbalansning turli tumanligi va yaqqol namoyonligi bilan xarakterlanadi.***

***Xulosa. Shunday qilib, vegetativ distoniya (VD) ning somatoform namoyon bo'lishi jismoniy rivojlanish (JRU) va чақирувгача жисмоний ривожланиш уйғунлиги (ChJRU) uyg'unligida VD bo'lgan o'g'il va qiz bolalar o'rtasida sezilarli farqlarga ega bo’ldi.***

### Relevance

Protecting the health of adolescent children is one of the priority areas for maintaining and strengthening the health of the population. It is adolescents who will determine the demographic and labor potential of the country. It is especially important that it is during adolescence that the foundations of reproductive health, vocational guidance, family creation, and fitness for military service are laid (1, 2, 3).

Particular attention in scientific research devoted to the health of adolescents is paid to physical development, in particular, disharmony as a risk factor that negatively affects the formation of functional systems of the child's body (4).

**Objective of the study:** to identify the main patterns of clinical and functional manifestations of vegetative dystonia in adolescents 15-17 years old with disharmonious physical development.

### Material and methods

The work was carried out based on the results of a comprehensive examination of young men-pre-conscripts and conscripts of Andijan aged 15 to 17 years, called up to enroll in the Armed Forces in 2019 - 2021 (n = 571). The main group consisted of 384 adolescents with IC (192 boys and 192 girls). Control group - children without VD (healthy children I and II and in health group) - 187 children of the same age (94 boys and 93 girls).

### Result and discussion

The data we obtained clearly showed not only the putative clinical polymorphism inherent in autonomic dysfunction, but - and this is the main thing - already formed systemic syndromes, somatoform and psychovegetative, which speak of the permanence of autonomic imbalance and its significant severity. The fact of periodic manifestation of the process was established, dictating the need for treatment of a teenager in a hospital and at the outpatient stage of providing him with medical care and, finally, rehabilitation in a sanatorium. Vegetative imbalance in most of them does not have a pathological coloration and is only a manifestation of an adaptive - compensatory reaction - vegetative dysfunction, which is usually based on biological, genetic and social - environmental factors, such as negative

stereotypes of behavior, violation of the foundations of a healthy lifestyle and others [3,4].

The clinical signs of various somatomorphic manifestations of VD, identified in children with VD, depending on the harmony of physical development, were very diverse. The study of the clinical features of the course of autonomic dystonia in adolescents with ID and DHFR revealed a number of features in a number of somatoform manifestations in comparison with children with ID and DHF, both boys and girls. In children with VD and DHFR, significant gender differences ($p < 0.05$) were revealed in the frequency of clinical symptoms; in girls compared with boys, the following were more frequent: nausea - (by 41.6%), orthostatic syndrome - (by 27.5%). %), cephalalgia - (by 24.7%), vegetalgia - (by 23.3%), abdominal pain - (by 23.1%), neurogenic bladder - (by 22.5%), constipation - (by 21.9%). In the group of children with VD and HFR, there were no significant gender differences in the frequency of clinical symptoms. Significantly more often ($p < 0.05$) somatoform signs of VD were detected in boys with DHFR compared with boys with HFD: ossalgia - (by 41.4%), dizziness - (by 27.3%); girls with DHFR in comparison with girls with HFR significantly more often ($p < 0.05$) had somatoform signs: ossalgia - (by 63.9%), flatulence - (by 53.7%), constipation - (by 41.9% ), nausea - (by 40.0%), orthostatic syndrome - (by 32.9%), dizziness - (by 25.5%), abdominal pain - (by 24.5%), cephalalgia - (by 23 ,five %). As it turned out, the most frequent (more than 2/3 of all groups surveyed and almost all girls with a disharmonious type of physical development) and manifestations of various clinical coloration, at least of a subjective nature, were vegetalgias in children. They formed the basis of the symptom, not only masking organ pathology - cardiac, abdominal and cerebral pain sensations - but also determining a rather pronounced background of autonomic maladjustment, objective confirmation of which could be identified both due to irradiation along neurogenic zones, and due to painful palpation of exit sites individual nerve bundles - trigeminal and facial nerves, paravertebral, neurovascular.

It should be noted that vegetalgias, like other manifestations of autonomic imbalance, were more often and most intensively presented in girls than in boys. At the same time, they were more pronounced in girls with DHFR. The frequency of clinical symptoms, calculated for the 1st examined adolescent, had a significant difference in children of 13-15 years old with varying degrees of harmony. Thus, clinical signs in children with DHFR were 1.5 times more common than in adolescents with HFR.

## Conclusion

Thus, the somatoform manifestations of VD had significant differences between boys and girls with VD with both HFR and DHFR. Significant differences were determined between boys with HFR and DGFR and between girls with HFR and DGFR. It was found that in girls with DHFR, clinical manifestations of VD were observed more often and had a more pronounced and intense coloration compared to girls with HFR.

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# SURGICAL PREVENTION OF COMPLICATIONS AFTER OPERATION OF DISCECTOMY OF THE LUMBAR SPINE

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✓ ***Resume***

***The study carried out a comparative analysis of complications in endoscopic discectomy according to J. Destandau, microsurgical discectomy with endoscopic support and traditional microsurgical discectomy. It has been shown that the techniques are highly effective.***

***The incidence of complications is similar in the three groups studied, but the number of recurrent disc herniation is higher with endoscopic discectomy.***

***Key words: discectomy, spine, lumbar spine, complications, prevention.***

# ХИРУРГИЧЕСКАЯ ПРОФИЛАКТИКА ОСЛОЖНЕНИЙ ПОСЛЕ ОПЕРАЦИИ ДИСКЭКТОМИИ ПОЯСНИЧНОГО ОТДЕЛА ПОЗВОНОЧНИКА

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✓ ***Резюме,***

***В исследовании проведен сравнительный анализ осложнений при эндоскопической дискэктомии по J. Destandau, микрохирургической дискэктомии с эндоскопической поддержкой и традиционной микрохирургической дискэктомией. Показано, что методики являются высоко эффективными.***

***Частота развития осложнений сходна в трех изучаемых группах, но количество рецидивов грыжи диска выше при эндоскопической дискэктомии.***

***Ключевые слова: дискэктомия, позвоночник, поясничный отдел, осложнения, профилактика***.

# UMURTQA POG‘ONASI BEL QISMINING DISKEKTOMIYA OPERATSIYASIDAN SO‘NGGI ASORATLARNI JARROHLIK PROFILAKTIKASI

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***Tadqiqot davomida J. Destandau bo'yicha endoskopik disektomiya asoratlari, endoskopik qo'llab-quvvatlanadigan mikrosurgik disektomiya va an'anaviy mikrosurgik diskektomiya bo'yicha qiyosiy tahlillar o'tkazildi. Texnikalarning yuqori samaradorligi ko'rsatildi.***

***Asoratlarning kelib chiqishi o'rganilgan uchta guruhda o'xshashdir, ammo endoskopik disektomiya bilan takrorlanadigan disk churrasi soni ko'proq.***

***Kalit so'zlar: disektomiya, umurtqa pog'onasi, bel umurtqasi, asoratlari, oldini olish.***

## Relevance

Despite the improvement in the surgical technique of surgical treatment of herniated intervertebral discs, the percentage of unsatisfactory results in the treatment of lumbar pain syndromes remains high. According to domestic and foreign authors (E.G. Pedachenko, M.V. Khizhnyak 2006, K.T. Khudaiberdiev, B.S. Mamazhonov, 2018, 2019), it is noted that a good result after discectomy is observed in 75% of patients, complete regression of neurological symptoms occurs in only 21% of operated patients.

The development of complications in the postoperative period ranges from 2 to 16% of cases (Nekrasov A.K. et al., 2001). After discectomy, 40% of patients continue to suffer from movement limitations and pain syndromes, although most patients note a significant decrease

in the degree of paresis and pain intensity after surgery (Radchenko V.A. et al., 2003). At the same time, 15% of patients are operated on again due to unsatisfactory results of the first operation (Sun E.C., 2004). The reasons for the recurrence of postoperative pain syndrome, according to D.S. Baths (2006), are: cicatricial adhesion process, epiduritis, arachnoiditis, discitis. According to A. Malter et al (1998), 40% of patients in the postoperative period develop discomfort associated with the presence of postoperative cicatricial adhesive epiduritis, which necessitates the development of methods for its prevention.

**Purpose of the study:** to improve the results of surgical treatment of herniated intervertebral discs based on the development of methods for early diagnosis of complications and the use of pathophysiologically grounded methods for the prevention of cicatricial epiduritis.

## Material and methods

An analysis of the data of clinical observations of surgical treatment of 215 patients with herniated intervertebral discs who were hospitalized in the neurosurgical department of the Andijan branch of the Russian Scientific Center for Emergency Medicine in the period from 2015 to 2020 was carried out.

Men - 97 (48.4%), women - 118 (51.5%) people. With the distribution of patients by age: from 20 to 30 years, the number of patients was 29 (11.8%), from 30 to 40 years - 85 (25.3%), from 40 to 50 years - 76 (41.4%) patients , at the age of 50 and older - 25 (21.5%) people. Thus, the majority of patients were people of working age. In the period from 2 to 12 months after the onset of the disease, 156 (82.7%) patients were operated on, in the period of 1–5 years - 46 (11%) people, 5 years or more after the onset of the disease - 13 (6.3%) patients ...

To clarify the localization of the pathology, all patients underwent the following studies: magnetic resonance imaging (MRI), computed tomography (CT), functional spondylograms. On the basis of the studies carried out, the state of the affected spinal segment was assessed. MRI was performed in 188 (93.5%) patients, computed tomography - in 27 (6.5%) patients. On the basis of CT and MRI studies, disc herniation was assessed by their location: they were divided into posterolateral - in 130 (43.3%) patients; paramedial - in 61 (38.8%) patients; medial - in 9 (7.2%); foraminal - in 15 (10.6%) cases.

Hernial protrusions at the L4 – L5 level were detected in 112 (45.8%) cases, at the L5 – S1 level - in 83 (41.7%) patients; disc protrusions at two levels were significantly less common: L5 – L6 - 12 (2 , 9%) and L3 – L4 - 8 (1.5%) observations. In 34 (8.2%) patients, hernial protrusions were found simultaneously at two levels - L4 – L5, L5 – S1.

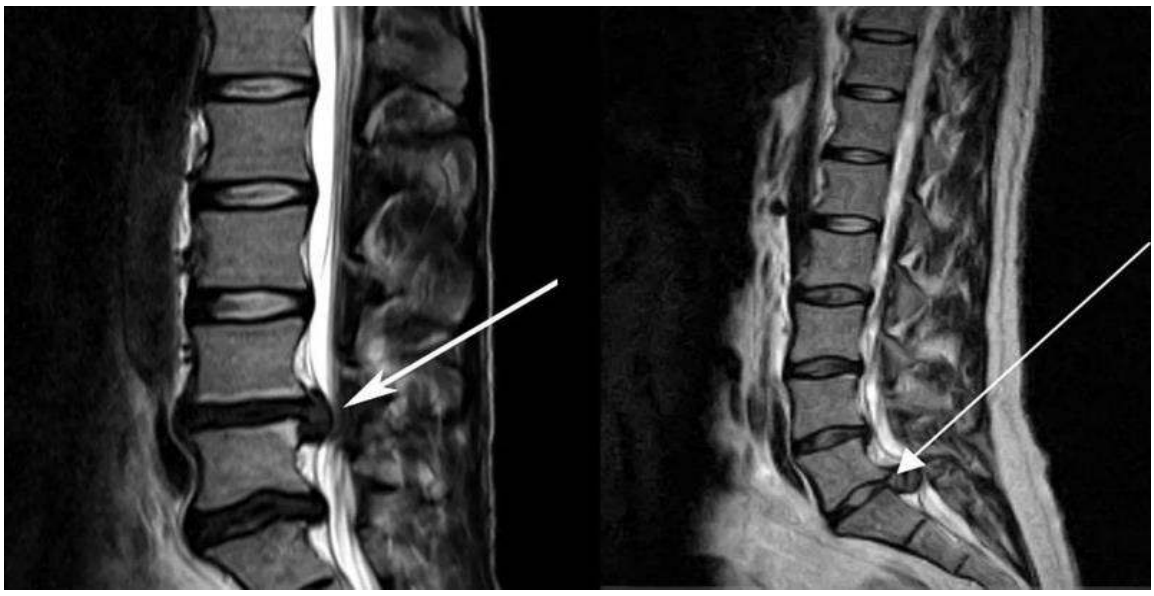

***Fig. 1. MRI signs of a hernia of the lumbar spine.***

An objective assessment of the neurological state and pain syndrome before and after surgery in patients with herniated intervertebral discs at the level of the lumbosacral spine was carried out on the basis of standardized scales and was measured in points.

The severity of pain syndrome was assessed using the International PainScoreScale. According to this scale, the maximum severity of pain before surgery was found in 189 (60%) patients.

Clinical and neurological disorders were assessed on a five-point scale of vertebral

neurological symptoms (Belova A.N., 2004). Before the operation, the overwhelming majority of patients (90.8%) had a pronounced degree of radicular symptoms ranging from 1 to 4 points.

To study movement disorders, the Medical Research Committee scale was used, while muscle strength was assessed from 0 to 5 points. Before surgery, 235 (56.6%) patients had movement disorders with a severity of 2–3 points.

Functional results were studied using the J. MacNab scale (1971) at 1 and 12 months after discectomy. Highlighted good, satisfactory and unsatisfactory treatment results.

The patients were divided into two observation groups: the 1st (control) included 137 patients, the surgical treatment and postoperative period of which corresponded to the standard method, the 2nd (main) - 78 patients with a similar pathology, the treatment of which was carried out by the new proposed method.

Results and Discussions. The immediate and long-term results of surgical treatment have been studied. Immediate results were assessed based on the characteristics of the functional and neurological status of patients immediately after surgery (1 month); distant - on the basis of CT and MRI data, the state of neurological functions, complaints and the degree of social adaptation of patients, assessed within a year after surgery.

Evaluating the results of surgical treatment of 137 patients from the control group, there was a significant decrease (0–1 points) after surgery in pain syndrome according to the International Pain Scale in 115 (82.4%) patients. However, 22 (17.6%) patients with pains of varying intensity continued to bother them. Stable and pronounced pain syndrome (3 points) in 3 (12.4%) patients in the early postoperative period was caused by the development of spondylodiscitis or unrepaired radicular compression syndrome.

In the study of clinical neurological disorders on a five-point scale of vertebro-neurological symptoms in the control group before surgery, the mean score was 5.39 ± 0.06, after surgery after 1 month - 2.36 ± 0.08 and after 12 months - 2.39 ± 0 , 07. In a detailed study of the radicular syndrome in 253 (82.4%) patients, the degree of impairment ranged from 0 to 1 point, with complete restoration of walking at a considerable distance. Movement disorders in these patients and limitation of movements in the lumbar spine were not observed. 12 months after microdiscectomy, patients with this degree of radicular dysfunction accounted for 76.9%.

Radicular symptoms with a severity of 2–3 points were detected in 16 (5.2%) patients after 1 month, but after 12 months, these disorders were noted in 53 (17.3%) patients.

The complex group consisted of patients who developed spondylodiscitis in the early postoperative period (5 - 4.2%), and patients with insufficiently adequately corrected compression of the nerve root (25 - 8.14%).

*Fig. 2. MRI picture of spondylodiscitis of the lumbar spine at the level of L3-L4 L5 vertebrae.*

At the same time, the limitation of the range of motion in the lumbar spine was up to 75-100% with pronounced radicular symptoms of 3-4 points. In the long-term period (after 12 months), 18 (5.9%) patients showed a pronounced degree of manifestation of vertebrogenic and radicular syndrome, which in most cases, according to MRI data, is due to the development of a

cicatricial adhesion process in the operated segment of the spine.

The results of surgical treatment by the method of discectomy according to the criteria of the J. MacNab scale in the control group in the early and late postoperative periods are presented in table. one.

***The results of the surgical treatment of patients in the immediate and long-term periods.***

| Treatment results | After 1 month | | After 12 months | |
|---|---|---|---|---|
| | abs | % | abs | % |
| Good | 117 | 85,4 | 107 | 78,1 |
| Satisfactory | 12 | 12,1 | 19 | 13,8 |
| Unsatisfactory | 8 | 9,6 | 11 | 8,0 |

*From table. 1 shows that in the near future, the noted good results in 82.4% of patients decreased over the year to 76.9%. At the same time, the percentage of unsatisfactory results after 12 months also decreased by 2.1 times in comparison with the immediate results.*

Repeated surgical interventions were performed in 16 (15%) of 137 patients in the control group. Analysis of the reasons for repeated interventions showed the following. In the early period, reoperations were performed in 8 (9.1%) patients. The most common reason for their implementation in the early period was the preservation of compression of the nerve root or cauda equina, caused by the residual substance of the disc in 3 patients or disc herniation at a different level in a two-level process in 10 patients. The development of postoperative spondylodiscitis required an operation in 3 patients. In 2 patients, the reoperation was due to the development of segmental instability.

12 months after discectomy, 8 (5.9%) people needed a second surgery due to the development of cicatricial adhesive epiduritis. In addition, in 3 patients, epiduritis was combined with recurrent disc herniation and scar tissue did not allow the root to move under the pressure of a disc fragment.

Thus, when analyzing the results of treatment of patients in the control group, the most significant cause of unfavorable treatment outcomes is the development of spondylodiscitis and cicatricial adhesive epiduritis.

The clinical picture of spondylodiscitis manifested itself on the 3rd - 5th day from the moment of surgery and is characterized by constant pain in the lower back, which are sharp, bursting in nature and exceed the pain syndrome before the operative period, are not stopped by analgesics and narcotics. The pain intensifies with the slightest physical exertion, change in body position, and turning in bed. The course of the disease is accompanied by an increase in body temperature to 38.0–39.5 ° C, chills, weakness, spasm of the paravertebral muscles. During MRI examination, three types of the nature of changes in the intervertebral disc, adjacent vertebral bodies and surrounding tissues were identified. The first type of changes on MRI was detected in 6 patients and was characterized by a lesion of the intervertebral disc, limited by narrowing of the intervertebral space with erosion of the endplates. The fuzziness of the endplate lines, according to MRI data, indicated initial inflammatory manifestations.

In the second type, the MRI showed a narrowing of the intervertebral space and erosion of the endplates, which were combined with the involvement of more than half of the spongy substance of the adjacent vertebrae adjacent to the affected disc into the inflammatory process (4 cases). The obtained changes on the part of the spongy substance of the vertebral bodies make it possible to think about a change in the alteration phase with the exudation phase and indicate the peak of the inflammatory reaction.

With type 3 changes in 3 patients, the inflammatory process in the vertebral bodies was combined with the spread of destruction under the posterior longitudinal ligament and the presence of an epidural abscess. With repeated surgery, these patients were found to have cicatricial changes at the level of the disk fragment, which captured the anterior and lateral sections of the epidural space at the level of the affected root. When a disco-radicular conflict occurs, the root is affected not only by compression by disk fragments, but also

by the inflammatory process at the root, epidural space and endplates.

The results of the immunological examination of the main group after treatment indicated a normal content of leukocytes in the peripheral blood and high ESR values, i.e. the patients retained the peculiarities of changes in the leukocyte reaction revealed in the acute postoperative period.

Analysis of the results of treatment of patients in the main group

The main group consisted of 108 patients with herniated discs, operated on by the method of discectomy, in which a piece of adipose tissue was placed at the site of the bone defect in order to prevent the development of cicatricial epiduritis after discectomy. At the risk of developing spondylodiscitis, we used our improved treatment regimen for this pathology.

Spondylodiscitis treatment included the proposed set of drugs and measures:

1) the use of broad-spectrum antibiotics, tropic to bone and cartilage tissue;

2) intraosseous administration of antibiotics into the spinous processes of the affected vertebrae during the erosion of the endplates with the involvement of more than half of the spongy substance of the vertebrae in the inflammatory process;

3) immunostimulation (cycloferon);

4) epidural administration of a mixture of anesthetic drugs;

5) improvement of bone tissue regeneration (bivalos);

6) immobilization of the lumbar spine with a corset.

All stages of surgery, including removal of the herniated disc, in the main and control groups were performed according to the generally accepted technique. In the main group, after discectomy and careful hemostasis, a piece of adipose tissue was placed in the place where the root left the dural sac. Tight suturing of the aponeurosis ensured the localization of adipose tissue at the site of the removed disc. The function of adipose tissue is a barrier, and the purpose of application is to isolate the inflammatory process at the site of the removed disc, to delimit the root from the process of reactive inflammation.

Comparative analysis in two groups showed that 1 month after the operation in the main group, the results of treatment are better than in the control group. A good result in the main group was found in 85.2% of patients. In these patients, pain and radicular syndromes did not limit motor and physical activity, and they did not need further drug treatment.

A satisfactory treatment result was obtained in 7.4% of patients in the main group, while the patients needed periodic medication, they remained moderate pain syndrome, discomfort with prolonged walking and physical exertion. Unsatisfactory results of treatment in the control group were obtained in 12.4% of patients in whom the development of spondylodiscitis was noted or the sequestration was not completely removed. In the main group, unsatisfactory results were obtained in 7.4% of patients and were caused by unrepaired compression of the nerve root. There was no development of spondylodiscitis in the study group.

Comparative analysis of the treatment results in the two study groups showed that in the main group, compared with the control group, the number of good treatment results increased by 1.2 times. The number of patients with unsatisfactory results in the main group decreased 6.6 times.

Evaluating the results of treatment in patients of the main group after 12 months, we found only one (0.9%) case of the development of cicatricial-adhesive epiduritis in the long-term period, where a second operation was required.

Thus, the use of the proposed method for preventing the development of cicatricial adhesions epiduritis and early diagnosis of spondylodiscitis make it possible to achieve 1.2 times more good treatment results and in the long-term period to steadily reduce the number of unsatisfactory results by 6.6 times.

## Conclusion

1. The reasons for repeated surgical interventions in the early period are as follows: preservation of root compression - 6.4%; disc herniation at a different level - 5.7%; spondylodiscitis - 10.7%, segmental instability - 7.2%. In the long-term period, repeated surgery in 100% of cases is due to the development of cicatricial epiduritis.

2. The most significant causes of poor treatment outcomes in the early period are the development of spondylodiscitis in 4.2% of patients, in which a sharp limitation of the range of motion in the lumbar spine to 75-100% is revealed, and a pronounced radicular symptomatology of 3-4 points.

3. In discectomy, prophylaxis of cicatricial epiduritis by means of adhesion of adhesion tissue increases the efficiency of surgical treatment of herniated discs of the lumbar spine, which makes it possible to achieve 99.1% of good and satisfactory long-term results of treatment, while the unsatisfactory ones are only 0.9%.

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## PATHOGENESIS, DIAGNOSTICS AND TREATMENT OF ANEMIA IN VIRAL HEPATITIS AND LIVER CIRROSIS

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✓ ***Resume***

***In chronic liver disease, mild to moderate anemia is usually detected, which can be normochromic, macrocytic, and hypochromic with gastrointestinal bleeding. The pathogenesis of anemia in hepatitis and cirrhosis of the liver is complex and diverse.***

***In the development of anemia, the violation of proliferation processes and the maturation of erythroblasts in the bone marrow with the release of defective erythrocytes into the peripheral blood, as well as the toxic effect of viruses, drugs, and toxins on erythron, is important. A certain role in the development of anemia in liver cirrhosis is played by a violation of the absorption and metabolism of iron, a deficiency of folic acid and vitamin B12.***

***Key words: viral hepatitis, liver cirrhosis, anemia, treatment, diagnosis.***

## ПАТОГЕНЕЗ ДИАГНОСТИКА И МЕТОДЫ ЛЕЧЕНИЯ АНЕМИИ ПРИ ВИРУСНЫХ ГЕПАТИТАХ И ЦИРРОЗАХ ПЕЧЕНИ

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✓ ***Резюме***

***При хронических заболеваниях печени обычно выявляется легкая или умеренная анемия, которая может быть нормохромной, макроцитарной и гипохромной при желудочно-кишечных кровотечениях. Патогенез анемии при гепатитах и циррозах печени сложный и многообразный.***

***В развитии анемии имеет значение нарушение процессов пролиферации и созревание эритробластов в костном мозге с выходом в периферическую кровь неполноценных эритроцитов, а также токсическое воздействие на эритрон вирусов, лекарственных средств, токсинов. Определенную роль в развитии анемии при циррозах печени имеет нарушение процессов всасывания и метаболизм железа, дефицит фолиевой кислоты и витамина В12.***

***Ключевые слова: вирусные гепатиты, цирроз печени, анемия, лечения, диагностика.***

## VIRUSLI GEPATIT VA JIGAR SIRROZRAIDA KUZATILADIGAN ANEMIYALARNI PATOGENEZI, TASHXISLASH VA DAVOLASH USULLARI

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Andijon davlat tibbiyot instituti

✓ ***Резюме***

***Jigarning surunkali kasalligida odatda me'da-ichak qon ketishi bilan normoxromik, makrositik va gipoxromik bo'lishi mumkin bo'lgan engil va o'rtacha anemiya aniqlanadi. Gepatit va jigar sirrozida anemiya patogenezi murakkab va xilma-xildir.***

***Anemiya rivojlanishida proliferatsiya jarayonlarining buzilishi va periferik qonga nuqsonli eritrotsitlar chiqishi bilan suyak iligidagi eritroblastlarning yetishishi, shuningdek, viruslar, dorilar va toksinlarning eritronga toksik ta'siri muhim ahamiyatga ega. Jigar sirozida anemiya rivojlanishida temirning so'rilishi va metabolizmining buzilishi, foliy kislotasi va B12 vitaminining etishmasligi ma'lum rol o'ynaydi.***

***Kalit so'zlar: virusli gepatit, jigar sirrozi, anemiya, davolash, diagnostika.***

**Relevance**

Recently, there has been a tendency in the world to increase the number of patients with chronic diffuse liver diseases (hereinafter referred to as CDLD) among people of working age [3,7]. CDZD is distinguished by a severe course, an unfavorable prognosis, which often becomes the main reason for the disability of patients.

In this regard, the study of the peculiarities of epidemiology, clinic, diagnosis, treatment of liver disease remains one of the urgent problems of modern hepatology. Anemia in CDZD is characterized by a complex pathogenesis and is caused by complex disorders of erythropoiesis in the form of a violation of iron metabolism with its deficiency, increased autohemolysis and an increase in the content of fetal hemoglobin (HbF) in erythrocytes, changes in the qualitative and quantitative composition of proteins of erythrocyte membranes [6]. Anemia in liver disease is traditionally referred to as anemia of chronic diseases.

In patients, the number of erythrocytes, the value of the color index, the content of reticulocytes, hemoglobin at the level of 80 - 100 g / l decrease, and an increase in anemia is observed with the progression of chronic hepatitis into cirrhosis of the liver. In addition, the level of serum iron and total iron-binding capacity decreases, and serum ferritin increases. At the same time, there is an increased consumption of iron by the cells of the RES, which leads to a violation of erythropoiesis due to insufficient supply of iron to the progenitor cells [1].

It has been found that with CDKD, the production of pro-inflammatory cytokines increases, which have the ability to change iron metabolism, the production of erythropoietin and shorten the life span of erythrocytes.

In addition, proinflammatory cytokines stimulate the production of free radicals, in particular nitric oxide or superoxide anion, thereby exerting a direct toxic effect on erythron [5]. Also, anemia may be one of the side effects of antiviral treatment of CDKD predominantly with ribavirin, while hemolysis of erythrocytes develops, which is completely reversible at the end of therapy [8].

In addition, the ability of ribavirin metabolites to accumulate in erythrocytes has been established, thereby reducing their lifespan. A separate cause of anemia is bleeding from varicose veins of the stomach and esophagus, leading to the development of post-hemorrhagic iron deficiency anemia of varying severity.

All of the above suggests a differentiated approach to the treatment of anemia in CDDD. Treatment of the underlying disease is the foundation of the therapeutic approach. In addition, transfusion therapy, iron preparations, folates, erythropoietins are used. With portal hypertension, surgical treatment is indicated. In chronic anemia, transfusion of donor blood or erythrocyte-containing components is prescribed only for the purpose of correcting the most important symptoms caused by anemia, which are not amenable to the main pathogenetic therapy [9].

Life-threatening anemia with hemoglobin content <65 g / l or anemia caused by bleeding and accompanied by a decrease in hemoglobin level below 70-80 g / l and hematocrit below 25% with the occurrence of circulatory disorders is an absolute indication for transfusion of erythrocyte mass or washed erythrocytes [2 ].

Iron preparations are indicated in case of an established deficiency of iron in the blood. Deterioration in the functioning of the duodenum, which is often found in anemia of chronic diseases, leads to poor absorption of iron preparations when taken orally. Let the main introduction be parenteral. However, it must be remembered that an excess of iron leads to the formation of highly toxic hydroxy radicals, which can cause tissue damage and increase the risk of acute cardiovascular diseases [4].

There is information that iron-containing free radicals can stimulate the development of malignant tumors. In addition, an excess of iron is associated with impaired neutrophil function, at the same time, precisely because of the immunosuppressive effect, treatment with iron preparations can be indicated in patients with an autoimmune component of the disease [3].

Folic acid deficiency is the most common cause of megaloblastic anemia in chronic diffuse liver disease and occurs in almost half of alcohol abuse patients. The lack of vitamin B9 is mainly due to the nature of the diet of this group of patients, in addition, alcohol reduces the levels of the enzyme methylenetetrahydrofolate reductase, thereby creating a functional deficiency of folates in the body [7].

Among other things, the consumption of large doses of ethanol leads to direct damage to the bone marrow with the development of megaloblastic changes in erythrocytes. Disruption of cyanocobalamin metabolism is also the cause of megaloblastic restructuring of erythrocytes in CDZD, although to a lesser extent. Erythropoietins are effective for correcting anemia and improving the quality of life of patients [5].

An indication for therapy with recombinant human erythropoietins is considered a hemoglobin level below 100 g / l. It has been established that

the regulation of erythropoiesis is not the only function of erythropoiesis-stimulating agents. For example, they are involved in the most important metabolic processes in myocardiocytes and brain cells.

Currently, the problem of anemia is extremely relevant in the management of patients with chronic diffuse liver diseases. Determination of the mechanisms of anemia in CDDD is very important for timely diagnosis, correction and prevention of the progression of both pathological changes in red blood and underlying liver disease.

**Purpose of the study.** To study in detail the pathogenesis and clinical manifestations of CBT-associated anemia in patients with CHC and LC.

## Material and methods

The paper analyzes the results of examination of 94 patients with viral hepatitis and liver cirrhosis, who were treated in the clinic of the State Medical Institute in Andijan. The average age of the patients was 38.5 (28; 39) years, the duration of the disease was 4.5 (1.2; 6.4) years.

## Result and discussion

Of 94 patients with CHC and LC, 67.9% completed the course of combined antiviral therapy (CBT). Sustained virological response (SVR) was achieved in 66.1% of patients, of which 28.6% were infected with the 1st; 14.3% - 2nd and 23.2% - 3rd HCV genotypes. Among those who received peg-IFN-α, the SVR rate was 55.2%; who received "short" - 77.8%. In CHC patients with HCV genotype 1, SVR was observed in 51.6% of cases; with HCV genotypes 2 and 3 - in 88.9% and 81.3% of cases, respectively.

As a result, it was found that at different stages of CBT, anemia in total developed in 37.5% of patients, while a mild degree was noted in 12.5%; moderate - in 19.6% and severe - in 5.4% of patients with CHC.

Among patients with mild anemia, 85.7% complained of general weakness and rapid fatigue. With the development of a moderate degree of anemia, 72.7% of patients with CHC additionally complained of shortness of breath with insignificant physical exertion. Patients with severe anemia also noted headache, dizziness, tinnitus - 66.7%, palpitations and chest pain - 33.3%. Objective changes in the form of acrocyanosis, tachycardia, extrasystole, edema of the lower extremities in the evenings were found exclusively in persons with severe anemia - 66.7% of patients with CHC. Splenomegaly developed in 21.4% of patients starting at week 20 of CBT. During CBT, 25.5% of patients repeatedly noted relapses of labial herpes, which is consistent with the scientific literature.

A mild degree of anemia after 4 weeks of CBT was recorded in 23.2%, after 8 weeks - in 30.4%, after 12 - in 24.1%, after 24 - in 28.9% and after 48 (patients with 1- m HCV genotype) - in 11.8% of patients with CHC. Moderate anemia after 12 weeks of CBT was observed in 5.6% of patients with CHC, after 24 weeks - in 13.2%, and after 48 weeks - in 29.4% of patients.

The development of severe anemia was first detected after 8 weeks of treatment in 1.8% of patients, which was the only reason for canceling CBT. In 3.7% of patients, severe anemia developed 12 weeks after the onset of CBT, coinciding with the absence of EVR, as a result of which the reason for discontinuation of therapy was “mixed”.

Correction of anemia was performed when the Hb level decreased <10.0 g / dl. In 2.2% of patients, the dose of ribavirin was gradually reduced to 600 mg / day, 1.3% of patients received recombinant EPO-α therapy as an alternative. In 16.1% of CHC patients during treatment, the Hb concentration also decreased <10.0 g / dl, however, the correction of CBT-associated anemia was not performed, since the corresponding Hb values were observed in patients or at the time of withdrawal of CBT due to the absence of EVR (n = 12 ), or by the end of the full course of antiviral therapy (n = 24).

All study participants, depending on the value of the minimum hemoglobin level recorded for the entire period of CBT (Hbmin), were divided into three groups. Group 1 (n = 140) included persons whose Hbmin remained within the permissible norm during CBT, i.e. > 11.9 g / dl. Group 2 (n = 28) included CHC patients with mild CBT-associated anemia: Hbmin in the range of 10.0-11.9 g / dl. Group 3 (n = 56) consisted of persons with moderate and severe anemia: Hbmin <9.9 g / dl. The average Hbmin in the 1st group was 12.44 ± 0.2; in the 2nd - 11.35 ± 0.26 and in the 3rd and - 9.15 ± 0.31 g / dl. Before starting CBT, women predominated among patients in group 3 compared to group 1 and 2; persons infected with HCV genotype 1; with a body mass index> 25; as well as peg-IFN-α-2a preparations in combination with ribavirin (p <0.05). At the start of CBT, the mean indices of Hb level and the number of erythrocytes in all groups did not statistically differ from each other (p> 0.05). However, in patients of the 3rd group, a significant decrease in these indicators was noted after 4 weeks of CBT, while in patients of the 1st and 2nd - only after 12. In general, the above indicators were significantly lower at almost all stages of CBT. in group 3 (p <0.05). As for the patients with CHC of the 1st and 2nd groups,

statistically significant differences were observed in them only at the 8th and 12th weeks of CBT. Among the changes in the average values of erythrocyte indices in the dynamics of CBT in all compared groups, only a significant increase in the MCV level can be distinguished. All patients showed an increase in the absolute and relative number of reticulocytes during treatment, which was most pronounced at 24-48 weeks of therapy. In addition, the so-called. "Shift of the formula to the left" with a predominance of immature forms of reticulocytes.

The average erythrocyte diameter before the start of CBT in CHC patients in all groups did not differ significantly, but after the completion or forced discontinuation of treatment, it significantly increased ($p < 0.05$). The proportion of normo-, micro- and macrocytes on average at the start of CBT in the compared groups practically did not differ from each other ($p > 0.05$). By the end of CBT, an increase in the relative number of macrocytes was observed, especially in the 3rd group of patients ($p < 0.05$).

Among the morphological forms of erythrocytes in patients with CHC in the PC, discocytes (biconcave discocytes, echinocytes, stomatocytes and spherocytes), elliptocytes, pathological (dacryocytes, codocytes and acanthocytes) and degeneratively altered cell forms were determined. After CBT, the mean incidence of biconcave discocytes in all groups significantly decreased. At the same time, the percentage of stomatocytes in the 1st group of CHC patients increased from the initial one by an average of 2.1; echinocytes - 2.5; spherocytes - 4.6; pathological forms - by 3.8 and degeneratively altered cells - by 4.7 times. In group 2 patients, the number of stomatocytes increased by an average of 2.9; echinocytes - 3.1; spherocytes - 7.3; pathological forms - 4.9 times and degeneratively altered cells - 10.6 times. Finally, in group 3, the relative number of stomatocytes during CBT increased by 3.6; echinocytes - 3.75; spherocytes - 13.3; pathological forms - by 6.3 and degeneratively altered cells - by 16.5 times.

During the study, in all compared groups, patients with various structural defects were identified as the cytoplasmic membrane of erythrocytes (local loosening, fragmentation, micro- and macrovesicles, formation of kidney-shaped protrusions), and their stroma (formation of cavities and endovesicles, the appearance of cells with uneven electron density and varying degrees of hemoglobinization). As shown by a comparative analysis, already at the start of therapy in the 3rd group of patients, people with the above defects were much more common. After the completion of CBT, the proportion of CHC patients with revealed structural changes in erythrocytes significantly increased in all three groups ($p < 0.05$).

As a result of the conducted antiviral therapy, the average concentration of MDA in the first two groups increased by 9.1% and 9.3%, respectively ($p > 0.05$), and VEG - by 9.1% and 9.3% ($p > 0, 05$). In patients with CHC of the 3rd group, much more pronounced changes in these indicators were noted: MDA increased by 92.1%, and VEG - by 47.4% ($p < 0.001$).

As for the level of anti-erythrocyte antibodies, in the 1st and 2nd groups of patients before the beginning of CBT, individuals were found with both the absence and the low and moderate level of fixed IgG, while there were no significant differences in their specific gravity between these groups. It was. In the third group of CHC patients, the relative number of patients with low and moderate levels of anti-erythrocyte IgG turned out to be statistically higher; in addition, individuals with a high level of autoantibodies were also identified.

After CBT in the 1st and 2nd groups of patients with CHC, the proportion of patients with moderate, and in the 3rd - a high level of anti-erythrocyte IgG significantly increased. In addition, in the 2nd group the appearance of persons with high, and in the 3rd - extremely high levels of the above antibodies was noted. The average EPO level in the 1st group of observed persons before the beginning of CBT was $7.3 \pm 1.2$ mU / ml, in the 2nd - $12.4 \pm 2.1$ mU / ml and in the 3rd - $30.8 \pm 5.3$ mU / ml.

After the end of CBT, the average EPO level increased statistically significantly in all compared groups. However, despite the general direction of the identified changes, the severity of the latter was clearly ambiguous. So, in the 1st group of CHC patients, the average EPO level increased from the initial in 7.7; in the 2nd - at 4.3; and in the third - only 1.9 times.

The frequency of occurrence of point mutations Ala16Val (rs4880) and -262C / T (rs1001179), respectively, in the genes responsible for the synthesis of SOD2 and CAT in all groups of observed individuals did not differ significantly ($p > 0.05$). A completely different situation developed with the 718C / T (rs713041) mutation of the GPX4 gene, so in the 1st group of CHC patients the "mutant" T / T genotype was recorded in $14.3 \pm 5.9\%$ of patients, in the 2nd group - in $17.8 \pm 6.3\%$ and finally in the third - in $78.6 \pm 5.3\%$ of patients with CHC, which turned out to be significantly higher than in patients of the first two groups ($p < 0.001$).

**Conclusion**

In the course of our study, IDA was detected in patients with HAV and HBV (60.0% and 40.0% of patients, respectively). At the same time, out of 40 patients with concomitant IDA, the severity of anemia, based on clinical and laboratory data, was assessed as moderate in 21 (52.5%) patients, which was, pronounced - in 9 (22.5%) and severe - in 10 (25.0%) patients. All observed patients had such characteristic symptoms of anemia as pallor of the skin, ears, mucous membranes, dryness or roughness of the skin, fatigue, weakness and irritability, impaired appetite, etc. Our observations showed that iron deficiency anemia negatively affects the clinical course of GV in patients. So, in patients with hepatitis A, with concomitant anemia, the preicter period was predominantly of a mixed type.

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## APPLICATION OF THE ABACTERIAL MEDIUM IN DIFFERENT FORMS OF PANARIZATION

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✓ ***Resume***

***Purulent-inflammatory diseases of the upper limb are a serious medical and social problem. The relevance of this topic is due to the high morbidity among the working-age population, the predominant lesion of the functionally active right upper limb, as well as the unsatisfactory organization of surgical care at the pre-hospital stage of treatment.***

***Purpose: to improve the results of treatment of patients with purulent destructive surgical diseases of the fingers of the hand by using an abacterial environment on an outpatient basis.***

***Materials and methods: the analysis of the results of treatment of 86 patients with acute purulent destructive surgical diseases of the fingers of the hand was carried out; they were conditionally divided into 2 groups. The first comparison group included 57 patients who used the traditional method of treatment, which included surgical treatment of a purulent focus followed by debridement of the wound with 25% dimethyl sulfoxide solution. In the second (main) group, 53 patients were additionally exposed to the abacterial environment on the purulent focus for 8 hours 2 times a day in accordance with the objectives of the study.***

***Conclusion: the developed method of additional influence on a purulent wound in case of purulent destructive surgical diseases of the hand of the abacterial environment with a solution of dimethyl sulfoxide accelerated the transition of the wound process and reduced the duration of outpatient treatment by 5-7 days.***

***Key words: panaritium, dimethyl sulfoxide, abacterial environment.***

## ПРИМЕНЕНИЕ АБАКТЕРИАЛЬНОЙ СРЕДЫ ПРИ РАЗЛИЧНЫХ ФОРМАХ ПАНАРИЦИЯ

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✓ ***Резюме***

***Гнойно-воспалительные заболевания верхней конечности представляют собой серьёзную медико-социальную проблему. Актуальность данной темы обусловлена высокой заболеваемостью среди трудоспособного населения, преимущественным поражением функционально активной правой верхней конечности, а также неудовлетворительной организацией хирургической помощи на достационарном этапе лечения.***

***Цель: улучшение результатов лечения больных с гнойными деструктивными хирургическими заболеваниями пальцев кисти путем применения абактериальной среды в амбулаторных условиях.***

***Материалы и методы: проведен анализ результатов лечения 86 больных с острыми гнойными деструктивными хирургическими заболеваниями пальцев кисти, они были условно разделены на 2 группы. В I-ую группу сравнения включены 57 больных, которым использовался традиционный метод лечения, включавший хирургическую обработку гнойного очага с последующей санацией раны 25% раствором диметилсульфоксида. Во II-ой (основной) группе 53 пациентам дополнительно в соответствии с задачами исследования проводилось воздействие абактериальной среды на гнойный очаг по 8 часов 2 раза в сутки.***

***Заключение: разработанный метод дополнительного воздействия на гнойную рану, при гнойных деструктивных хирургических заболеваний кисти абактериальной среды раствором диметилсульфоксида ускорил переход раневого процесса и сократил сроки амбулаторного лечения на 5-7 суток.***

***Ключевые слова: панариций, диметилсульфоксид, абактериальная среда.***

# ТУРЛИ ШАКЛДАГИ ПАНАРИЦИЯЛАРДА АБАКТЕРИАЛ МУҲИТНИ ҚЎЛЛАШ

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✓ ***Резюме***

***Қўлларнинг йирингли-яллиғланиш касалликлари жиддий тиббий ва ижтимоий муаммоси ҳисобланади. Ушбу мавзунинг долзарблиги меҳнатга лаёқатли аҳоли орасида касалланиш даражаси юқори бўлганлиги билан боғлиқ бўлиб, асосан функтсионал фаол ўнг қўл шикастланиши кузатилади шунингдек, касалхонага қадар даволаниш босқичида жарроҳлик ёрдамини қониқарсиз ташкил этиш билан боғлиқдир.***

***Тадқиқод мақсади: амбулатория шароитида абактериал муҳитни қўллаш орқали бармоқларнинг йирингли деструктив жарроҳлик касалликлари билан касалланган беморларни даволаш натижаларини яхшилаш.***

***Материаллар ва услублар: қўл бармоқ соҳаси ўткир йирингли деструктив жарроҳлик касалликлари билан касалланган 86 беморни даволаш натижаларини таҳлил қилишда шартли равишда 2 гуруҳга бўлинди. I таққослаш гуруҳига 57 беморга анъанавий даволаш, II асосий гуруҳдаги 53 беморга эса тадқиқот вазифаларига асосланиб қўшимча абактериал муҳит таъсири 8 соатдан кунига 2 маҳал қўланилди.***

***Хулоса: ишлаб чиқилган диметилсульфоксиднинг 25% ли эритмаси билан абактериал муҳитнинг қўл бармоқ йирингли деструктив жарроҳлик касалликларда , йирингли жароҳатга қўшимча таъсир ўтказиш усули жароҳатни битиш жараёнини 2-фазасига ўтишини ва амбулатория даволаниш вақтини 5-7 кунга тезлаштирди.***

***Калит сўзлар: панариций, диметилсульфоксид, абактериал муҳит.***

**Relevance**

Purulent-inflammatory diseases of the upper limb are a serious medical and social problem. The relevance of this topic is due to the high morbidity among the working-age population, the predominant lesion of the functionally active right upper limb, as well as the unsatisfactory organization of surgical care at the pre-hospital stage of treatment [1,3]. Among all suppurative processes of soft tissues and bones in patients who first applied for surgical help, the proportion of purulent diseases of the hand is, according to modern Russian and foreign authors, from 8 to 30% [2,4,5]. Every fourth panaritium is accompanied by damage to bone tissue [5,6,7]. Bone panaritium is 56% among hospitalized patients with other forms of panaritium and 17.9% among patients with other purulent diseases of the fingers and hands [8].

One of the ways to reduce the number of complications is to create a high concentration of antibiotic, which allows achieving a therapeutic effect even in cases where the purulent process is caused by antibiotic-resistant strains. For example, for lincomycin-resistant staphylococcus strains, the concentration of lincomycin, equal to 20 μg / ml, is the minimum bacteriostatic [3,4,6,7]. Such high concentrations of antibiotics are achieved by methods of local antibiotic therapy. With the most widely used methods of local antimicrobial chemotherapy (intraarterial, intravenous and intraosseous regional administration, intraosseous lavage with an antibiotic, lymphotropic administration), complications associated with vascular puncture, pain when using a tourniquet are possible [6,8,12]. Cases of skin necrosis with lymphotropic administration are described. It is not always possible to insert a needle for intraosseous lavage due to osteoporosis. The complexity of some techniques limits their application [9,10]. Thus, the intravascular route of antibiotic administration is not very promising in pediatric practice, while about 10% of patients with bone panaritium are children under 15 years of age [6,11].

Another direction in the fight against antibiotic-resistant bacteria is the use of new types of antibiotics and substances that reduce antibiotic resistance (enzymes, clavulanic acid, dimethyl sulfoxide). Dimexide (dimethyl sulfoxide DMSO), in addition to being bacteriostatic itself, and for a number of bacteria and bactericidal action, has the ability to increase the sensitivity of microorganisms to antibacterial drugs. It is able to carry out transcutaneous antibacterial drugs, create their depot in tissues and is used as part of local antibacterial therapy [3,4,10,11].

About dimethyl sulfoxide S.W. Jacob, R. Hersehler said that “there can be significant benefits if we learn to better use a large number of existing antibiotics, rather than continue to spend large resources on the development of new drugs to overcome antibiotic resistance” [3,4]. The

interest in purulent surgery of the fingers has not waned to the present day. Based on high-tech research methods (ultrasonography, thermography), the severity and prevalence of the purulent process is determined and the further course of the disease is predicted. This review provides an assessment of various authors in the process of shaping hand surgery. The choice of the correct treatment tactics for a patient with purulent-inflammatory diseases of the fingers of the hand, undoubtedly, affects the outcome of the disease and the development of complications, the choice of a therapeutic algorithm allows to improve the results of treatment, and, accordingly, to preserve the social image and the usefulness of the function of the fingers.

**Objective of the study:** to improve the results of treatment of patients with purulent destructive surgical diseases of the fingers of the hand by using an a bacterial environment on an outpatient basis.

## Material and methods

The analysis of the results of treatment of 110 patients with acute purulent destructive surgical diseases of the fingers of various etiologies, who entered the clinical base of the Bukhara State Medical Institute, was carried out. The patients were conditionally divided into 2 groups. The first comparison group included 57 patients who used the traditional method of treatment, which included surgical treatment of a purulent focus followed by debridement of the wound with 25% Dimexidum solution. Systemic antibiotic therapy was also carried out, taking into account the sensitivity of microflora secreted from wounds, detoxification therapy and symptomatic treatment. In the II (main) group, 53 patients additionally, in accordance with the objectives of the study, were additionally exposed to the abacterial environment of the purulent focus for 8 hours 2 times a day.

In group I, out of 57 (51.8%) patients, there were purulent destructive diseases of the fingers in the form of paronychia 9 (15.8%), subungual 13 (22.8%), articular 7 (12.3%), bone panaritium 12 (20.05%) and pandactylitis 16 (28.05%), after various etiological factors.

53 (48.2%) patients of group II had purulent destructive diseases of the fingers in the form of paronychia 10 (18.9%), subungual 13 (24.5%), articular 6 (11.3%), bone panaritium 11 (20.7%) and pandactylitis 13 (24.5%), after various etiological factors.

An important characteristic criterion for assessing the wound process was the identification of the amount of microbial contamination, the determination of the species composition of the microflora. Revealed species composition of microflora sown from the exudate of infected wounds in patients with purulent destructive surgical diseases of the fingers.

In patients of both groups, the indicators of the qualitative and quantitative analysis of the microflora of wounds in dynamics, the degree of intoxication, the timing of cleansing and healing of wounds were studied.

## Result and discussion

Comparison group I included 57 patients with acute purulent destructive surgical diseases of the fingers. All patients on admission had symptoms of general intoxication - mild and moderate severity. In parallel with the general symptoms, local manifestations of the inflammatory process were noted - hyperemia, edema and tissue infiltration in the wound area. More than 92% of patients were admitted within 2 to 6 days after the onset of the disease.

Analysis of the results of indicators of intoxication of the body of patients with purulent destructive surgical diseases of the fingers of the first group of comparison revealed the following changes (Table 1). As can be seen from the table, on the first day of treatment, the body temperature of the patients averaged 38.7 ± 0.32 C. The content of leukocytes in the blood was on average 9.8 ± 0.35 x 109 / l. The volume of medium molecules averaged 0.208 ± 0.011 units. Similarly, an increase in LII and ESR was noted.

**Table 1.**

**Dynamics of indicators of intoxication in patients with purulent surgical diseases of the fingers of the 1st comparison group (n=57)**

| Indicators | Observation time | | | | |
|---|---|---|---|---|---|
| | day of admission | 3 day | 5 day | 7 day | 9-10 day |
| $t^0$ body | 38,7±0,32 | 37,8±0,16* | 37,3±0,22* | 37,1±0,11 | 36,7±0,12* |
| L blood | 9,8±0,35 | 8,6±0,34* | 7,8±0,27 | 6,2±0,31 | 6,0±0,28 |

| | | | | | |
|---|---|---|---|---|---|
| × 109 / l | 0,208±0,011 | 0,175±0,007** | 0,161±0,008 | 0,128±0,007** | 0,103±0,005** |
| MSM units | 2,3±0,08 | 1,85±0,08* | 1,8±0,06 | 1,5±0,07 | 1,1±0,06*** |
| LII unit | 45,4±1,77 | 36,3±1,48* | 31,2±1,34* | 26,5±1,12*** | 14,3±0,68*** |

*Note: * - differences relative to the data of the previous day are significant (* - P <0.05, ** - P <0.01, *** - P <0.001)*

On the third day of treatment, there was a slight decrease in body temperature indicators from 38.7, 30.32 to 37.8±0.16, the number of blood leukocytes decreased on average to 8.6±0.34 × 109 / l. The volume of medium molecules averaged 0.175 - 0.007 units. There was a decrease in LII and ESR indices to 1.850.08 and 36.3±1.48, respectively. By the seventh day of treatment, these figures, although they tended to further decrease, however, remained above the norm.

With further treatment and observation by the tenth day, all analyzed parameters of intoxication, except for ESR of blood, were within normal limits.

The following criteria for assessing the dynamics of the wound process in patients were the pH of the wound environment, the percentage of reduction in the area of the wound surface, and PC indicators according to MF Mazurik (Table 2).

**Table 2.**

**Dynamics of biochemical parameters and rate of wound healing in patients of the 1st comparison group (n = 57)**

| Indicators | Observation time | | | | |
|---|---|---|---|---|---|
| | 1 day | 3 day | 5 day | 7 day | 9-10 day |
| pH of the wound environment | 4,5±0,17 | 4,8±0,14 | 5,6±0,12*** | 6,2±0,22 | 7,1±0,31*** |
| Percentage reduction in wound surface area | 0 | 1,3±0,02*** | 2,5±0,06*** | 3,3±0,11*** | 3,4±0,21 |
| Wound exudate protein (g / l) | 58,9±1,59 | 55,9±1,37 | 47,4±1,29*** | 43,7±1,17 | - |
| Total blood protein (g / l) | 64,4±2,39 | 67,7±1,88 | 69,7±1,78 | 72,6±1,84 | 76,2±3,41 |
| PC according to M.F. Mazurik | 0,9±0,04 | 1,2±0,03** | 1,4±0,05*** | 1,6±0,03* | - |

*Note: * - differences relative to the data of the previous day are significant (* - P <0.05, ** - P <0.01, *** - P <0.001)*

By the seventh day, the PC was 1.6 ± 0.03, and the wound area per day significantly decreased by 3.3 ± 0.11%. The pH of the wound environment averaged 6.2 ± 0.22. Only by the tenth day of treatment did the pH of the wound environment become neutral. The decrease in the area of the wound surface per day became equal to 3.4 ± 0.21%. The release of exudate from the wound has ceased, which, in our opinion, is due to the transition of the wound process from the 1st to the 2nd phase.

Dynamic control of the level of microbial contamination of purulent wounds in patients of this subgroup revealed the following: at the time of admission, the microbial contamination, on average, was 108 mt / g, on the next day, after surgical treatment of the wound with the imposition of an ointment bandage, its values were 105 mt / g. By the sixth day of complex treatment in these patients, the degree of microbial contamination was below the critical level and amounted to 102 mt / g of tissue.

Thus, in the patients of the comparison group, the wound was cleared of infection only by day 5.5, the beginning of the appearance of granulations - by the 7th day, the beginning of epithelialization - by the 10th day. Biochemical parameters of wound exudate are normalized only by the 10th day of treatment.

With the traditional method of treating patients of group I with purulent destructive surgical diseases of the fingers of the hand, the average duration of outpatient treatment was 11 ± 0.5 days. Group II (main) consisted of 53 patients with acute purulent destructive surgical diseases of the fingers, who underwent surgical

treatment of the purulent focus on the day of admission. Then, additional wound treatment was applied in an abacterial environment using a 25% dimethyl sulfoxide solution.

The abacterial environment was created using a latex medical sterile fingertip, with a size larger than the patient's fingers. The lumen of a sterile medical fingertip was filled with a 25% solution of dimethyl sulfoxide to the upper border of the finger, and then the patient's affected finger was immersed there. The upper part of the finger cot was hermetically fixed using a fixing material.

Dynamic control of the level of intoxication of the organism of patients of group II revealed a significantly accelerated rate of normalization of indicators than in patients of the comparison group. As evidenced by the data in Table 3, on 3 days of treatment, the remaining indicators of intoxication: MSM, L-blood, LII decreased almost to normal values, on the 5th day of treatment, with the exception of ESR of blood, reliably normalized. With further treatment with the use of an abacterial medium with a 25% solution of dimethyl sulfoxide, by 9-10 days the ESR of the blood also had normal values.

Thus, comparing the indicators of intoxication of the body of patients with purulent destructive surgical diseases of the fingers of the comparison group, the previous group I revealed that the body temperature of patients, L - blood, LII and MSM in patients of group II for 3 days of treatment corresponded to 7 days of the comparison group, t .e. when using a local abacterial medium with a 25% solution of dimethyl sulfoxide, intoxication indices regressed 4 days earlier than in the comparison group (Table 3).

**Table 3.**

**Dynamics of indicators of intoxication in patients with purulent surgical diseases group II truth (n = 53)**

| Indicators | Observation time | | | | |
|---|---|---|---|---|---|
| | Day of admission | 3- Day | 5- Day | 7- Day | 10- Day |
| $t^0$ body | 38,9±0,08 | 37,3±0,07*** | 36,7±0,08*** | 36,6±0,08 | 36,5±0,09 |
| L- blood • 109 / l | 9,8±0,38 | 7,0±0,32*** | 6,2±0,34* | 5,6±0,18 | 5,7±0,26 |
| MSM units | 0,218±0,012 | 0,121±0,007*** | 0,093±0,004* | 0,082±0,004*** | 0,072±0,005 |
| LII unit | 2,7±0,14 | 1,3±0,07*** | 0,9±0,05*** | 0,7±0,03 | 0,5±0,04*** |
| ESR mm / h | 49,8±2,24 | 28,5±1,4*** | 18,4±0,85*** | 11,6±0,44*** | 6±0,34*** |

*Note: * - differences relative to the data of the previous day are significant (* - P <0.05, ** - P <0.01, *** - P <0.001)*

**Table 4.**

**Dynamics of biochemical parameters and rate of wound healing in patients of group II (n = 53)**

| Indicators | Observation time | | | | |
|---|---|---|---|---|---|
| | Day of admission | 3 день | 5 день | 7 день | 10 день |
| pH of the wound environment | 4,1±0,24 | 5,6±0,28*** | 6,7±0,34* | 7,1±0,38 | 7,1±0,38 |
| % reduction of the wound surface | 0 | 2,4±0,14*** | 3,2±0,16*** | 3,3±0,12 | 3,9±0,21 |
| Wound exudate protein (g / l) | 54,7±2,62 | 43,6±2,28** | 38,8±1,39** | - | - |
| Total blood protein | 64,7±1,32 | 69,7±3,64 | 71,8±3,25 | 72,1±2,28 | 76,2±3,35 |
| PC according to M.F. Mazuriku | 0,9±0,04 | 1,4±0,07*** | 1,6±0,06*** | - | - |

*Note: * - differences relative to the data of the previous day are significant (* - P <0.05, ** - P <0.01, *** - P <0.001)*

Dynamic control of the pH of the wound environment, the percentage of reduction of the wound surface and the indicators of PK protein according to MF Mazurik revealed the following (Table 4).

By the 6th day, the pH of the wound environment was reliably neutral. The daily decrease in the area of the wound surface was 3.9 ± 0.15%. It should be noted that the normalization of these indicators of the wound process in patients of the comparison group was observed only on the 10th day of treatment. As our study shows, when using a local abacterial medium with a 25% solution of dimethyl sulfoxide, by the 6th day of treatment, all the pH values of the wound environment and the rate of wound healing were normalized. In our opinion, this is mainly due to the positive effect of complex treatment using a local abacterial environment with a 25% dimethyl sulfoxide solution.

The study of the dynamics of contamination of wounds against the background of complex treatment and the use of a local abacterial medium with a 25% solution of dimethyl sulfoxide showed that at the time of admission the degree of contamination was the same as in the patients of the comparison group, i.e. quite high, averaging 108 mt / y. But in dynamics against the background of complex treatment after surgical treatment, the use of a local abacterial environment with a 25% solution of dimethyl sulfoxide, on the next day the microbial contamination of wounds decreased to 103 mt/g and already on the 3rd day of treatment these figures were below the critical level and corresponded to 102 mt / g of fabric. It should be noted that similar phenomena in patients of the comparison group were achieved only on the 5th day of treatment.

Against the background of complex treatment of purulent destructive surgical diseases of the fingers using a local abacterial environment with a 25% solution of dimethyl sulfoxide, the time for cleansing wounds from infection was reduced to 2.5 ± 0.5 days, which in patients of the comparison group was noted only by 5.0 ± 0.5 days.

Resorption of the infiltrate was noted after 2.0 ± 0.3 days. The appearance of granulations was observed, on average, by 3.0 ± 0.5 days, epithelialization by 5.3 ± 0.3 days. Comparison of these indicators revealed that with the combined use of a local abacterial medium with a 25% solution of dimethyl sulfoxide, the time of infiltrate resorption in patients of group II was significantly ahead of the data of the comparison group by 2 days, the appearance of granulation by 3 days, and the onset of epithelialization by 4 days.

The use of a local abacterial environment with a 25% solution of dimethyl sulfoxide of wounds in the complex treatment of patients with purulent destructive surgical diseases of the fingers of the hand contributed to the complete cleansing of wounds from infection by 3 days of treatment. By the 2nd day, active resorption of the infiltrate around the wounds was observed.

The average duration of outpatient treatment for patients in group II was 5.5 ± 0.7 days.

The proposed method improves the biochemical and cytological parameters of wound exudate, makes it possible to accelerate the time of wound cleansing by 2 ± 0.3 days and to reduce the length of stay in outpatient treatment of patients in the main group by 6.0 ± 0.4 days compared to the comparison group.

## Conclusion

1. The use of an abacterial medium with a 25% solution of dimethyl sulfoxide in patients with acute purulent destructive surgical diseases of the fingers of the hand is the most optimal, because it promotes faster and better cleaning of the wound surface from purulent-necrotic tissues and microbial bodies, a decrease in intoxication indicators and an acceleration of regenerative processes, which together can reduce the time of their treatment and rehabilitation.

2. Taking into account the results of a comparative analysis, an optimal method of treatment of patients with purulent destructive surgical diseases of the fingers of the hand on an outpatient basis was developed by local application of an abacterial medium with a 25% solution of dimethyl sulfoxide.

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# COMPARATIVE CHARACTERISTICS OF ANTHROPOMETRIC DATA IN CHILDREN WITH DOWN'S SYNDROME

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✓ ***Resume***

***As a rule, people with Down syndrome have a specific appearance - they are characterized by the preservation of facial features characteristic of the early stage of fetal development. Here are observed: small birth weight, small stature, small limbs (disproportionate to the body), short neck, wide hands and feet, short wide fingers, a shortened little toe, the distance between the first and second toes is increased on the feet (sometimes syndactyly is observed - splicing of fingers) , the skull of a microbrachiocephalic configuration with a sloping occiput. Additional skin fold at the inner corner of the eyes ("third eyelid", epicant), oblique eye section, there are depigmentation areas on the periphery of the iris. There is underdevelopment of the upper jaw, abnormal growth of teeth. The article analyzes the literature on the physical parameters of children with Down syndrome, but the anthropometric indicators have not been fully studied.***

***Key words: Down syndrome, anthropometry, epicant, microbrachiocephaly, craniofacial parameters.***

# СРАВНИТЕЛЬНАЯ ХАРАКТЕРИСТИКА АНТРОПОМЕТРИЧЕСКИХ ДАННЫХ У ДЕТЕЙ С СИНДРОМОМ ДАУНА

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✓ ***Резюме***

***Как правило, люди с синдромом Дауна имеют специфический внешний облик – для них характерно сохранение черт лица, свойственных ранней стадии развития плода. Здесь наблюдаются: маленький вес при рождении, небольшой рост, маленькие конечности (непропорциональные туловищу), короткая шея, широкие кисти и стопы, короткие широкие пальцы, укороченный мизинец, на стопах увеличено расстояние между первым и вторым пальцем (иногда наблюдается синдактилия – сращивание пальцев), череп микробрахиоцефальной конфигурации со скошенным затылком. Дополнительная кожная складка у внутреннего угла глаз («третье веко», эпикант), косой разрез глаз, присутствуют участки депигментации на периферии радужки глаза. Имеется недоразвитие верхней челюсти, неправильный рост зубов. В статье анализируется литература по физическим параметрам детей с синдромом Дауна, но антропометрические показатели полностью не изучены.***

***Ключевые слова: синдром Дауна, антропометрия, эпикант, микробрахиоцефалия, краниофациальные параметры.***

# DAUN SINDROMI BILAN OG'RIGAN BOLALARDA ANTROPOMETRIK KO'RSATKICHLARINING QIYOSIY TAVSIFI

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Buxoro davlat tibbiyot instituti

✓ ***Rezume***

***Daun sindromi bo'lgan bolalar o'ziga xos ko'rinishga ega - ular homila rivojlanishining dastlabki bosqichiga xos bo'lgan yuz xususiyatlarini saqlab qolish bilan ajralib turadi. Ukarda quyidagi belgilar kuzatiladi: tug'ilganda kichik vazni, bo'yi kichkina, oyoq-qo'llari (tanaga nomutanosib), kalta bo'yin, qo'llari va oyoqlari kalta, kichkina barmog'i kalta, oyoqlarda birinchi va ikkinchi barmoqlar orasidagi masofa keng (ba'zida sindaktiliya kuzatiladi - barmoqlarning qo'shilishi), bosh suyagi konfiguratsiyaning mikrobraxiosefalik. Ko'zlarning ichki burchagida qo'shimcha teri burmasi ("uchinchi ko'z qovog'i", epikant), qiyshaygan ko'z bo'limi mavjud. Yuqori jag'ning rivojlanmaganligi, tishlarning g'ayritabiiy o'sishi kuzatiladi. Maqolada Daun sindromi bo'lgan bolalarning jismoniy parametrlari bo'yicha adabiyotlar tahlil qilingan, ammo antropometrik ko'rsatkichlar to'liq o'rganilmagan.***

***Kalit so'zlar: Daun sindromi, antropometriya, epikant, mikrobraxiosefali, kraniofasiyal parametrlar.***

**Relevance**

One of the urgent problems of modern medicine is the study of anthropometric parameters of various parts of the body and their relationship. To study the growth, development and state of the skeleton of the head and maxillofacial region of children with Down syndrome and their relationship with the indicators of the physical development of a modern child can be a theoretical and methodological basis for the development and improvement of anthropometric methods of diagnosis and reconstruction in medicine. The ratio of these parts of the human body in different age periods and the factors influencing the development of this anatomical region have not been fully studied.

One of the criteria for indicators of the health of the child population is its physical health. Assessment of the state of physical development is impossible without studying the anthropometric indicators of different age groups. Many norms and standards have been proposed to describe the ideal proportions of the human body, but it is the physical proportion that determines its beauty.

To analyze the anthropometric and physical parameters of a child, standards of this area are needed, which should be developed taking into account the nationality of the child and the geography of the area.

Among chromosomal pathology, Down's syndrome stands out (according to ICD-10 090) - the most common chromosomal pathology is a disease of the genetic apparatus of cells, consisting in trisomy on the 21st pair of chromosomes. The prevalence of Down syndrome in newborns is currently 1: 800, reaching 1: 250 in children born to mothers over 30 years old (Kozlova S.I., Demikova N.S., 2007; Zasukhina G.D. et al., 2012).

Anthropometric indicators of population groups in different regions of the world have their own characteristic features inherent in each area. Such works were carried out in Chukotka (Godovykh T.V., 2009), in St. Petersburg (Aleksina L.A., 2004; Burtseva T.E., 2010), Moscow (Kozlov A.I., 2008; Kon 'I. Ya. Et al., 2009), Nalchik (Tlakadugova M.Kh. et al., 2009). Anthropometric indicators of the development of children and adolescents in these regions cannot be compared with the data obtained in our republic (Kasim-Khodzhaev I.K. et al., 2004; Sattibaev I.I., 2008; Bakhadirov F.N. et al., 2008; Tukhtanazarova Sh.I., 2008; Mirzakarimova D.B., 2010). Since there are differences in climatic and geographical conditions, ecology, national customs, social conditions.

A large number of monographs and articles by both foreign and domestic researchers are devoted to Down's syndrome. Many works are devoted to the study of the frequency of occurrence of Down syndrome (Chebotarev A.N., Lunga I.N., etc.), the peculiarities of mosaic variants (Belyakova T.K., Gavrilova V.I., etc.), immune status (Schwartz E I., Ostrovsky A.D. and others), reproductive function (Kristesashvili D.I. and others), blood systems (Agarval B.R., Chizhova Z.P., Yurgutis R.P., Popnikolov BC and others), metabolism (Davidenkova E.F., Shtil-bane I.I., Berlinskaya D.K., etc.).

Down's syndrome is a disabling condition, however, most researchers and specialists providing psychological and pedagogical assistance to such children show a high degree of possibility of socialization of persons with trisomy 21 of chromosome, subject to timely adequate treatment of concomitant pathology, for example, hypothyroidism. Specialized medical preventive guidelines and recommendations made a significant contribution to improving the quality of life and increasing the social adaptation of people with

trisomy 21 of chromosome in foreign countries. The high social adaptation of patients with diabetes in other countries has improved the quality of life of these people and allows them to be independent, independent members of society.

Great importance in optimizing the system of assistance to children with developmental disabilities and their parents is attached to the early start of psychological and pedagogical assistance (Kozhevnikova, Mukhamedrakhimov, Chistovich, 1995; Mukhamedrakhimov, 1999; Razenkova, 2001; Shipitsina, 2001; Mamaichuk, 2001, 2003; Kozhevnikova et al. ., 2002, 2003; Aksenova, 2002; Zhiyanova, 2002; Malofeev, 1997, 2003; Isaev, 2003, 2004; Shmatko, 2003; Strebeleva, 1998, 2004; etc.). In the last decade, there has been a tendency in which the number of infants and young children with special needs who are left in families and are not transferred to foster care in children's homes is increasing. Support services for young children from risk groups and their parents, as well as areas of knowledge associated with the organization of psychological and pedagogical assistance to a family raising an infant with special needs, are becoming more and more in demand. The psychology of the last quarter of the 20th century is characterized by an appeal to the earliest stages of human development (Boshlyby, 1958; Amishores et al., 1978; Vygotsky, 1982-1984; Lisina, 1986; Meshcheryakova, 1988; Sergienko 1992; Smirnova 1996; Avdeeva 1996; Mukhamedrakhimov, 1999). The development of children, including infants and young children with special needs, is considered in the process of interaction with the closest person, the mother (Friberg, 1971; Brazelton, 1984; Stern, 1985; Emde, 1987; Ainsworth & Bowlby, 1991; Sinason, 1992; Cichetti, 1993; Guralnik, 1997; Sergienko 1992; Brushlinsky, Sergienko, 1998; Mukhamedrakhimov, 1999). New theoretical concepts of the development of children in the first months and years of life are formulated; methods of interdisciplinary assessment and counseling are created; new directions of family-centered services for children from groups at risk of developmental delays and their parents are being developed and implemented - early intervention programs.

Foreign studies show that the widespread early intervention programs in the United States and habilitation programs for children with special needs from birth to 3 years old and their parents widespread in Western Europe and Scandinavia have shown their effectiveness and positive impact on the development of a special child, his interaction with loved ones adults and the quality of social adaptation (Guralnik, 1997). In recent years, early intervention programs have been actively organized in St. Petersburg (Kozhevnikova, Mukhamedrakhimov, Chistovich, 1995; Mukhamedrakhimov, 1997, 1999; Kozhevnikova et al., 2002), Moscow (Kazmin, 2001; Razenkova, 2003) and regions of Russia (TASIS, 2002; Kozhevnikova et al., 2003). Young children with Down syndrome and their parents constitute a constant group of clients requiring interdisciplinary support. Along with the growing number of visits to early intervention programs by parents raising children with Down syndrome in the family, the majority of children with this diagnosis are still transferred to orphanages. In conditions of deprivation, in the absence of a close social environment, children with Down syndrome cannot fully realize their potential. To develop new approaches to accompanying children with Down syndrome in a child's home, it is necessary to analyze the characteristics of their development and compare them with children raised in a family.

However, most of the works date back to the 70-80s of the last century. It took more than 100 years to prove the hereditary nature of the syndrome and its relationship with chromosomal pathology. Now much attention is paid to social adaptation and integration into society of this category of patients (Kolotygina E.A., Sapozhnikova T.V.). The life expectancy of people with Down syndrome has recently increased markedly. So, in the USA in 1983 it was 25 years, and already in 1997 - 49 years. The life expectancy of children largely depends on the infant mortality rate. The most common causes of death in children with Down syndrome are congenital heart defects and respiratory infections (Yang Q., Rasmussen S.A., Friedma J.M. 2002).

Recently, in connection with the development of medical science and technology, various newest methods have been widely used to identify the causes of the development of phenotypic changes in Down syndrome: molecular genetic (Nízetic D., 2001., Latt S.A. et al., 1984), immunochemical ( Ikeda S. et al., 1994., Hassin-Baer S. et al., 1992), MPT data (Emerson J.F. et al., 1995., Koo B.K. et al., 1992), but the identified changes are not yet considered with the point of view of their possible application in clinical practice. Today, a complex of developmental microanomalies is well known, which determines the patient's

phenotype, as well as a rather wide range of concomitant pathology, where the leading role is given to the phenomena of intellectual disability and mental disorders. (N.V. Grebennikova et al., 1995., M.I. Yablonskaya et al., 1998., Carddock N., Owen M. 1999., L. Kent et all 1999). The literature presents data on cardiovascular, gastrointestinal, endocrine, immunological, hematological symptom complexes characteristic of Down's syndrome, as well as the results of studying orthopedic pathology, visual and auditory disorders (E. Mazder, J. Dennis, 1997; S. Leona, C. Bower, P. Petterson, H. Leonard, 1999). The authors in their works pay attention to the pathogenetic mechanisms of damage to a particular system with a description of the features of their clinical design, and also determine the appropriate ways of treatment and corrective action.

The number of works devoted to the study of the morphogenesis of the craniofacial complex in childhood in this or that pathology, especially in Down syndrome, is extremely limited. As we know, the maxillofacial area undergoes significant changes in the development process. In modern society, more and more importance is attached to the shape of the face, the beauty and harmony of its structure (V.T.Yagupova, 2009). The physical development of children and the functional state of organs are influenced by mental (Mazen Mohammed Yusef Hasan Hussein., 2004), informational loads (Lukin S.F., Chub I.S., Repina A.P., 2012). In recent years, it has been established that the growth and development of a child is greatly influenced by the hormonal background of the body, especially growth hormone (GH), a deficiency of which is observed in many pathological conditions (Lawrence J.M., Imperatore G., Dabelea D. et al., 2014; Nanda R.S., 2000). The maxillofacial region is a part of the body that dynamically changes in the process of development and growth (Gvozdeva Yu.V., 2010).

The mechanisms regulating the growth of the head and the face of the human body is a complex process where there is an interaction between genes, hormones, epigenetic factors. These factors determine the formation of bone morphology in the craniofacial area, the violation of which can lead to irreversible changes in this area (Juloski J., Dumancic J., et al., 2016). When the interaction of the regulating factors of growth of the bones of the facial skeleton is disturbed, an unequal slowdown in bone growth is observed, which leads to abnormal morphological formation of the face (Pacini A.J., 2003; 6, Urakami T, Suzuki J., 2008).

**Conclusion**

According to the analysis of the available modern literature, the study of the physical parameters of children with Down syndrome has not been fully studied, it is necessary to conduct a study of anthropometric indicators taking into account age using modern innovative technologies. These scientific studies will provide more accessible methods for correcting physical disabilities in dynamics, and the use of innovative technologies in dynamics, taking into account the growth of the child, will be the basis for correcting complications in the dynamics of pathology.

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# CLINICAL AND FUNCTIONAL METHODS OF ASSESSMENT AND DIAGNOSIS OF THE PATHOLOGICAL CONDITION OF THE TEMPOROMANDIBULAR JOINT

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✓ ***Resume***

***The article is devoted to the study of improving methods of clinical and functional assessment and diagnosis of the pathological condition of the temporomandibular joint (TMJ). TMJ pathology occupies a special place among dental diseases due to its significant prevalence, extremely diverse and complex clinical picture. Diagnosis of TMJ diseases remains one of the most complex issues in dentistry. based on this, the authors analyze a number of scientific literature data and conclude that the diagnosis and differentiation of TMJ disorders is a very complex process and requires a combined examination of these patients.***

***Key words: Dentistry, anatomical and topographical features of the temporomandibular joint, diagnostics, functional research methods.***

# КЛИНИКО-ФУНКЦИОНАЛЬНЫЕ МЕТОДЫ ОЦЕНОК И ДИАГНОСТИКИ ПАТОЛОГИЧЕСКОГО СОСТОЯНИЕ ВИСОЧНО - НИЖНЕЧЕЛЮСТНОГО СУСТАВА

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✓ ***Резюме***

***Статья посвящена изучению совершенствование методов клинико-функциональных оценок и диагностики патологического состояние височно-нижнечелюстного сустава (ВНЧС). Патология ВНЧС занимает особое место среди стоматологических заболеваний ввиду значительной распространенности, чрезвычайно разнообразной и сложной клинической картины. Диагностика заболеваний ВНЧС остается одним из сложных вопросов стоматологии, исходя этого авторы анализируют ряд научный литературный сведение и сделает вывод что, диагностика и дифференциации нарушение в области ВНЧС очень сложной процесс и требуется комбинированный методов обследование этих больных.***

***Ключевые слова: Стоматология, анатомо-топографические особенности височно-нижнечелюстной сустав, диагностика, функциональный методов исследования.***

# CHAKKA-PASTKI JAG’ BO'G'IMNING PATOLOGIK HOLATINI KLINIK - FUNKTSIONAL BAHOLASH VA DIAGNOSTIKA USULLARI

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Buxoro davlat tibbiyot instituti

✓ ***Rezume***

***Maqolada chakka-pastki jag’ bo'g'imining (ChPJB) patologik holatini klinik-funktsional baholash va diagnostika usullarini takomillashtirishga bag'ishlangan. ChPJB patologiyasi tish kasalliklari orasida sezilarli darajada tarqalishi, juda xilma-xil va murakkab klinik ko'rinishi tufayli alohida o'rin egallaydi. ChPJB kasalliklarini tashxislash stomatologiyaning murakkab masalalaridan biri bo'lib qolmoqda, shundan kelib chiqqan holda mualliflar bir qator ilmiy adabiyot ma'lumotlarni tahlil qilib, ChPJB sohasidagi buzilishlarni tashxislash va farqlash juda murakkab jarayon ekanligi va ushbu bemorlarni tekshirishning aralash usullari talab qilinadi.***

***Kalit so'zlar: Stomatologiya, ChPJBning anatomik va topografik xususiyatlari, diagnostika, funktsional tadqiqot usullari.***

**Relevance**

Diseases of the temporomandibular joint (TMJ) are very common, the problem of their final diagnostics today is an even greater problem for many specialists; as dentists, neuropathologists, endocrinologists, otorhinolaryngologists and infectious disease specialists, because the clinical course of the pathogenetic symptoms and pain syndromes of TMJ dysfunction is complex and diverse. According to clinical studies, TMJ pathology occurs in 70-80% of the healthy population and ranks third after caries and periodontal disease [2]. Throughout life, each person has experienced certain symptoms of dysfunction, manifested by pain in the chewing muscles or clicking in the TMJ.

Many patients with temporomandibular joint dysfunction do not seek medical help at all, or turn to therapists, rheumatologist, neuropathologists and other specialists, or are discovered by chance when contacting a dental clinic for the treatment and prosthetics of teeth. The doctor's tactics should be aimed at early detection of TMJ pathology. Early diagnosis, in case of a dysfunctional state of the TMJ, is a very relevant direction today, because many dentists do not know how to approach the initial examination of patients who have addressed them for disorders in the TMJ, high, ear, head, neck, clavicle and dentition areas.

The complexity of the anatomical structure, the large number and originality of the course, the variety of clinical symptoms of pathological processes complicate the diagnosis of TMJ diseases. Diagnosis of TMJ diseases remains one of the most difficult issues in dentistry and requires the use of modern research methods.

Therefore, the approach of examination with preliminary diagnoses of TMJ DS is required to conduct a survey, external examination, examination of the PR organs, palpation and auscultation of the masticatory muscles and TMJ, study of diagnostic models, sighting and panoramic radiography (R) of teeth and jaws, electroodontodiagnostics (EDI), axiography, tomography, electromyography, electromyotonometry of the masticatory muscles. According to the patient's history - primary complaints and complaints about a cosmetic defect, hyperesthesia of enamel and dentin, a feeling of soreness and roughness of the surface, the presence of pathological abrasion in other family members, concomitant pathology such as congenital dysplasias, endocrinopathies, kidney diseases, pathology of the gastrointestinal tract and others ... When determining pathological symptoms; cause of abrasion or other symptoms, history of the disease, duration of occurrence, nature of progression and their connection with prosthetics of teeth and jaws, connection with the working and living conditions of the patient. On examination, the face configuration, temporomandibular joint (lower 1 / h), the state of the hard tissues of the teeth, OOP and periodontium, soreness, asymmetry of sensations, swelling, hypertonicity, violation of the symmetry of movements, snapping, soreness and others [12].

As we know, the examination of patients with TMJ diseases should be carried out according to a certain scheme; including the collection and study of complaints, collection and analysis of anamnesis, face examination, palpation and auscultation of the joint, determination of muscle tone, pain points in the muscles and on the face, study of the joint during movement of the lower jaw (n / h), measurement of the distance between the cutting edges of the central incisors with the maximum open mouth, palpation of the lymph nodes and salivary glands, the use of functional diagnostic tests, X-ray and laboratory studies. If necessary, patients should be referred to a therapist, neuropathologist, psychiatrist, rheumatologist, otorhinolaryngologist, specialist in infectious diseases.

When collecting anamnesis, it is necessary to find out when and how the first symptoms of TMJ disease began to manifest themselves. To identify these factors, it is preferable to ask the patient leading questions, mentioning the main and common causes that contribute to the occurrence of various types of pathologies in the TMJ: wide mouth opening, trauma to the maxillary area, dental prosthetics, eating solid food, difficult extraction of chewing teeth, past infectious diseases (epidemics. mumps, purulent otitis media, whooping cough, scarlet fever, flu, tonsillitis, rheumatic and rheumatoid arthritis, gout, tuberculosis, etc.).

When detailing the symptoms, first of all, you should find out what first arose: pain or clicking (S) in the joint; For example, with habitual dislocations (PR) and subluxations of n / h (PMNC), U most often first appears, and then pain joins, and in arthritis and arthrosis, pain first appears, and then U joins in the joint. Point, or strictly local pain, is typical for PT, PVNP, dysfunctional syndromes (DS) and osteoarthritis.

As we know, diffuse pain is more common in acute and subacute arthritis, specific and

nonspecific infectious arthritis, myositis in the joint and other inflammatory processes around the joint. Irradiating pain is observed when squeezing the auditory nerve, branches of the ear-temporal nerve, with trigeminal neuralgia, pulpitis, compression of the muscle-facial cortical zones. Clarifies the nature of the onset of pain - sudden, arising gradually from a feeling of awkwardness in the joint, spilled, with subsequent localization at a certain point and vice versa [1].

Clicking symptoms (U) character U - crunching, popping sound. With a slight opening of the mouth and lateral movements of the n / h Sh, it is observed in neuromuscular syndromes (NMS) and occlusive-articulatory syndromes (OSA), dislocation of the meniscus, arthritis and arthrosis; with wide opening of the mouth and at the moment of the beginning of closing of the mouth - with PV and PVNC. When the jaws are compressed, the crunch is observed in patients with a decreasing bite.

It is important to find out whether the patient has a blockage (BL) or, as patients say, "jamming" in the joint. BL can be partial (CHL) or complete (PBL). NPL occurs with excessive mobility of the intra-articular meniscus, PBL occurs with PV as a result of a sharp reflex contraction of the masticatory levator muscles. Joint pain also occurs when the meniscus is completely torn off. The above clinical and functional symptoms in the neck and head area complicates the differentiation of etiological and pathological processes. We know that the functional movement of the n / h by the masticatory muscles is denoted by the term "Articulation", the term "Occlusion" means that the position of the dentition at the stage of their closure. For diagnosis, it is very significant to take these factors into account; central, anterior and two lateral - right and left occlusions and bites; physiological (orthognathia, progeny, biprognia and direct) and pathological (prognathia, progeny, open, deep and cross).

We know that in case of central occlusion (CO), the central position of the TMJ heads in the glenoid fossa should be normal, that is:

1) each upper or lower tooth closes with two antagonists - the upper one with the lower teeth - with the same name and standing behind, the lower one with correct teeth - with the same name and in front.

2) the middle lines between the upper and lower central teeth are a continuation of one another and lie in the same sagittal plane.

3) the upper anterior teeth overlap the lower ones by about 1/3 of the length of the tooth crown.

4) the upper first molar, merging with the two lower molars, covers approximately two-thirds of the lower first molar and one third of the lower second. The mesio-buccal cusp of the upper first molar falls into the transverse groove between the buccal cusps of the lower first molar. At the same time, the position of the articular heads is cranioventral, there is no displacement to the side, the physiological position of the head - disk and the physiological load on all joint structures are the same, the anterior, superior and posterior joint spaces are approximately the same among themselves, as well as on the right and left (Fig. 1).

During clinical examination, the functional state of the temporomandibular joint in practice, it is imperative to analyze the occlusal relationship, determine the central premature contacts, the absence of contacts between individual teeth in the usual occlusion, check the canine guidance and the stability of the occlusion. In this case, it is imperative to take into account the distinctive features of the TMJ:

1. The articulating surfaces are covered not with hyaline, but with thin fragile connective tissue cartilage, which determines its frequent vulnerability, a tendency to rapid melting during inflammation and its replacement with scar or bone tissue.

2. The joint capsule has a heterogeneous structure; in front it is thin, free and easily stretched, and in the back it is considerably thickened.

3. Outside, the joint is reinforced with a strong ligament, the fibers of which, starting widely from the base of the zygomatic process of the temporal bone, go down and back, converge on the outer and back sides of the neck of the condylar process n / h.

4. In the joint cavity there is an articular disc, which has a biconcave shape: in the center it is thin (1-2 mm), and at the edges - thick (3-4 mm). It consists of fibrous cartilage, the edges are fused with the capsule and therefore divides it into two floors: upper and lower. The functional significance of the disc lies in the fact that it compensates for the lack of complete congruence of the articulating surfaces and simultaneously provides a wide range of motion n/h.

Today, the following functional tests are widely used in the process of studying the clinical manifestations of various forms of joint pathology [13], that is: - Test No. 1; in case of excessive excursion of the articular heads, the

patient is asked to make a limited opening of the mouth, fixing the jaw by the chin with one hand, and palpating the area of one of the temporomandibular joint with the other. The disappearance of symptoms (pain, U) indicates that when limiting the movement of the n / h in these patients, the condyles with the meniscus move synchronously, without injured articular surfaces: - Test No. 2; resting the index finger of the right hand on the upper arm on the left, and with the thumb of the same hand on the distal chin on the right, slightly shift the jaw to the left and ask the patient to make vertical movements of the lower arm. The disappearance of symptoms (pain, U, crunch) indicates that the condyles at the same time took an optimal comfortable position: - Test No. 3; with distal shifts of the n / h, the patient is asked to push the n / h forward - to the orthogenetic or straight bite and then make vertical movements of the n / h. At the same time, the doctor holds the patient's s / h in a given position with his hand. The disappearance of symptoms indicates that the condyles have taken on a more comfortable position in the glenoid fossa: - Test No. 4; displacing n/h distally, set it in the center position. Occlusion, fixing the chin. At the same time, the patient is asked to open and close his mouth several times, observing the disappearance of pathological symptoms during the movement of the jaw. The disappearance of the pathological reflex indicates the elimination of the nonphysiological movement of the condyle: - Sample No. 5; with the usual lateral displacements of n / h, the Ilyina-Markosyan test is used. During this test, in a state of relative physiological rest, the position of the n / h is observed. If the latter is established along the midline of the face, one should think about the disturbance of the kinetic activity of the neuromuscular complex: - Test No. 6; for declining and deep traumatic bites, placing 2 mm strips of cardboard between the teeth. in rows in the area of the premolars, the patient is asked to make vertical movements. The thickness of the pad gradually increases until the pathological symptoms in the joint are eliminated. Elimination of symptoms indicates the optimal comfortable position of the condyles in the glenoid fossa with closed dentition and the degree of increased occlusion during orthopedic interventions [1].

In addition to the aforementioned functional test, today the electromyography (EMG) method is used - automated systems for measuring and processing biomedical information using modern software tools, this significantly expands the diagnostic capabilities of modern medicine. With the help of electromyography of the masticatory muscles, functional tests are used: closure of the dentition in the CO, arbitrary and preset chewing, record electromyograms at physiological rest n / h, study the time of reflex inhibition of the activity of the masticatory muscles during compression of the jaws in the CO when tapping the chin with a neurological hammer [1, 18, 19, 20].

In recent years, a number of authors have proposed another functional method for studying the movement of the TMJ - graphic; that is - recording of dynamic jaw movements - functiography. To register the movements of the n / h, they use an intraoral device [14, 16]. Using this method, it is possible to study the function of the TMJ, diagnose the pathology of the joint and masticatory muscles. The shape of the Gothic angle makes it possible to assess the function of the joint, masticatory muscles and determine whether the movements of the n / h to the right and to the left are symmetrical, whether there is a restriction of movements in one or both sides.

Axiography methods - out-of-mouth registration of movements n / h, allows you to record the trajectory of movement of the transverse hinge axis of the temporomandibular joint during movements n / h. With the help of an axiograph device - mechanical or electronic research is carried out, it is possible to obtain axiograms in three mutually perpendicular planes [17, 18]. The method allows you to fix the initial state of the facial system; make a diagnosis before starting treatment; dynamically observe during and after treatment; determine the central ratio of the jaws.

Changes in the hemodynamics of the parotid-articular region play an important role in the pathogenesis of functional disorders of the TMJ. In dentistry, rheography, laser Doppler fluorometry, and biomicroscopy are used to study the microcirculation of various tissues (3, 4, 20). The dynamics of rheography indicators is studied before, on time and at various times after the load [3,4]. Rheovasograms on the usual and opposite side of chewing are assessed qualitatively and quantitatively. According to the author, in the quantitative analysis of rheograms, the main amplitude of the rheogram, the amplitude of the slow filling of the lowest point of incisure and the dicrotic wave are measured [20].

With the help of phonoarthrography, it is possible to determine the articular noise, which is observed in intra-articular disorders: joint hypermobility, dislocation of the articular heads and discs, arthrosis [5, 6].

With the help of gnathodynamometry, the registration of compression efforts of the antagonizing pairs of teeth of the anterior group is carried out until the appearance of pain in the TMJ area, allows in the overwhelming majority of cases to reveal the pain dysfunction of the TMJ and differentiate it from the manifestations of osteochondrosis of the cervical spine [2, 11].

In the R-com study, all patients without exception, regardless of unilateral or bilateral lesions of the TMJ, are performed with the R-th of both joints in the CO position and with the mouth as open as possible. This is dictated by the fact that patients often complain of one joint, and pathology is detected in another: Survey R-I gives only a rough idea of the TMJ due to projection distortions and layering of other bones of the facial and cerebral skull. The main role in the diagnosis of TMJ diseases belongs to the R-type research methods [1].

R methods of research provide the diagnosis of at least 95% of cases of TMJ diseases, especially taking into account the fact that the state of its bone fragments is simultaneously visualized. Unfortunately, the program available on most orthopantomographs, as well as orthopantomographs themselves, distort the joint space in the R-image, as they display the temporomandibular joint of an oblique projection [1, 9, 12, 13].

The survey R-th temporomandibular joint is a complex study due to the layering of other bones of the skull, but it makes it possible to recognize a number of TMJ diseases such as DS, arthrosis, fractures of the articular process, etc. in the lateral projection with the mouth closed and maximally open [13].

Tomography has significant advantages over the survey R-she, as it allows you to identify the finest changes in the joint without projection distortions, to analyze the measurements of the articular elements and their ratios during treatment. When evaluating R-mm, the anterior, central and posterior position of the head of the N / h can be detected [9,12].

*Computed tomography* of the TMJ is based on the absorption of part of the radiation by the tissues of the human body. The radiation dose for joint tomography usually does not exceed 0.02 Gy. However, even in spite of such a level of radiation, diagnostics is used only on strict indications to exclude the effect on the parotid salivary glands, which are sensitive to radiation [10, 15]. The method has a fairly high resolution, due to which it is possible to differentiate anatomical structures that differ from each other in density within 1-2%.

If we compare tomography with a conventional R-image, then in the latter case, this figure is from ten to twenty percent. The method allows you to obtain an image in three mutually perpendicular planes: sagittal, frontal and axial, in addition, measurements and volumetric reconstruction of articular elements can be performed.

*Magnetic resonance imaging* (MRI) is today the gold standard for imaging soft tissue structures. This method is easily tolerated by patients and provides high contrast of soft tissues, three-dimensional image and no side effects. MRI allows you to obtain a layered image in various projections, with a step size of 1.5–3 mm, and is used to visualize both bone and soft tissue structures of the TMJ and masticatory muscles.

This technique allows detecting changes in the position of the articular disc, effusion into the joint cavity, changes in articular cartilage, soft tissue tumors of the joint and peri-maxillary tissues, and even hypertrophy of the masticatory muscles [4,7,8,11].

We know that according to the classification of V. I. Burgonskaya (1968) arthritis is divided into three groups: arthritis - acute, chronic; arthrosis - sclerosing and deforming; arthritis arthrosis. In turn, they are divided into traumatic, rheumatoid and rheumatic. Also, TMJ diseases can be divided into articular, in which there is damage to the articular tissues, and non-articular, associated with the pathology of the masticatory muscles. For the purpose of diagnostics and differential diagnosis of TMJ pathology of a non-articular nature, a specialist requires a lot of experience, knowledge of the anatomical and topographic structure of the TMJ region and addition to this information content about modern special instrumental devices that are required for research in the field not only in dentistry, but in all medicine [9 ].

## Conclusions

Thus, an analysis of the literature on methods of examination of patients with TMJ DS showed that the need to use complex examination methods as, objective, collection of anamnesis, clinical, functional and special instrumental research methods for the diagnosis and differential diagnosis of functional impairment and TMJ pathologies for planning treatment of pathological processes and restoration of the functional state in this area.

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## CLINICAL, ECHOGRAPHIC, MORPHOLOGICAL AND IMMUNOLOGICAL CRITERIA FOR EVALUATING A WELL-FOUNDED SCAR ON THE UTERUS AFTER CESAREAN SECTION

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✓ ***Resume***

***The results of the conducted studies 102 of the manufacturer testify to the presence of essential clinical and echographic, immunological and morphological features of the "wealthy" or "insolvent" scar on the uterus after the cesarean section. The correlation analysis with the calculation of the Correlation coefficient of Gamma (G) indicates a statistically significant relationship between the average degree between the way of the delivery and the scar thickness (G = 0.55, p = 0.001), strong correlation between the ultrasound data (G = 0.74, p = 0.002) and antibodies to type I collagen (G = 0.93, p = 0.003). Determining the level of antibodies to the type I collagen is the most important criterion confirming the usefulness of the scar on the uterus.***

***Key words: cesarean section, uterine scar, pregnancy.***

## КЛИНИКО-ЭХОГРАФИЧЕСКИЕ, МОРФОЛОГИЧЕСКИЕ И ИМУНОЛОГИЧЕСКИЕ КРИТЕРИИ ОЦЕНКИ СОСТОЯТЕЛЬНОГО РУБЦА НА МАТКЕ ПОСЛЕ КЕСАРЕВА СЕЧЕНИЯ

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✓ ***Резюме***

***Результаты проведенных исследований 102 рожениц свидетельствуют о наличии существенных клинико-эхографических, иммунологических и морфологических особенностей «состоятельного» или «несостоятельного» рубца на матке после операции кесарева сечения. Проведенный корреляционный анализ с вычислением коэффициента корреляции Гамма (G), свидетельствует о статистически значимой взаимосвязи средней степени между способом родоразрешения и толщиной рубца (G=0,55, p=0,001), сильной корреляционной связи между данными УЗИ (G=0,74, p=0,002) и антител к коллагену I типа (G=0,93, p=0,003). Определение уровня антител к коллагену I типа является важным критерием, подтверждающим полноценность рубца на матке.***

***Ключевые слова: Кесарево сечение, рубец на матке, беременность***

## KESAR KESISHDAN KEYIN BACHADONDAGI CHANDIQNI BAHOLASH UCHUN KLINIK, EKOGRAFIK VA IMOMUNOLOGIK MEZONLAR

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✓ ***Rezume***

***O'tkazilgan tadqiqotlar natijalari kesar kesishdan 102 xomiladorlar operaciyadan keyin "izchilik" yoki "izchiz" ligining muhim klinik va morfologik xususiyatlari mavjudligi to'g'risida guvohlik beradi. Gamma (G) ning korrelyatsion koefficentini hisoblash bilan korrelyatura koeffitsienti etkazib berish va bachadon chandiqini qalinligi (G = 0,55, p = 0.001) o'rtasidagi statistik jihatdan muhim ahamiyatga ega, ultratovush va kollagen orasidagi kuchli bog'liqlik***

***mavjudligi aniqlandi (G = 0.74, p = 0.002) (G = 0.93, p = 0.003).Shu jumladan kollagen I turidagi antigenlar darajasini aniqlash bachadonda chandiqning foydali ekanligini tasdiqlovchi muhim mezondir.***

***Kalit so'zlar: Kesar kesish, bachadonda chandiq, homiladorlik.***

## Relevance

Caesarean section (CS) is the most common operation in obstetrics. The frequency of CS does not tend to decrease and ranges from 11 to 29%, reaching 40% or more in obstetric institutions that are collectors of obstetric pathology [2]. According to the WHO, an increase in the frequency of this operation by more than 16% did not significantly affect perinatal indicators, but at the same time increased maternal morbidity and mortality [8]. The increasing frequency of CS at the present stage has created the problem of managing pregnant women with a scar on the uterus and methods of their delivery. Over 30% of women who underwent CS plan a second pregnancy and childbirth, which in 60–90% of cases end with a second operation due to fear of rupture of the

At the same time, maternal morbidity with reoperation is 3-4 times higher than with vaginal delivery. The frequency of intraoperative complications with repeated CS is from 20.5 to 47.7%, which exceeds this indicator during the first CS by 5 times [6]. One of the possible ways to reduce the frequency of abdominal delivery is vaginal delivery after a history of operative delivery. According to the WHO, many women who were operated on during a previous birth give birth safely and without any difficulties [8]. The incidence of scar dehiscence, not accompanied by complications of the mother and the fetus, does not exceed 0.5%, ruptures of the uterus with life-threatening bleeding and complications for the fetus do not exceed 0.1% [3,9,10,11]. According to V. I. Krasnopolsky and V. E. Radzinsky (2019), up to 50-75% of women with a scar on the uterus after CS in the lower uterine segment in the absence of complications leading to the first CS and a satisfactory condition of the scar can give birth naturally [5]. Summing up the above, we can state that the choice of predictors of the viability of the uterine scar and planning of labor through the vaginal birth canal is very relevant.

**Purpose of the study:** Determination of prognostically significant criteria for the state of the uterine scar after CS for possible planning of labor through the vaginal birth canal.

## Material and methods

To achieve this goal, prognostically significant clinical-anamnestic, instrumental and morphological criteria for assessing the state of the uterine scar were investigated. The work is based on the analysis of the results of a comprehensive examination of 102 women in childbirth of reproductive age with one scar on the uterus, which are divided into 2 groups and the corresponding 4 subgroups who underwent one CS in the maternity ward of 1 clinic of SamGosMI in the period from 2018-2020. Group I included 66 women with clinically and morphologically "consistent" scar on the uterus, which, in turn, were divided into 2 subgroups: 1A subgroup - 42 women in labor, who, after a complete clinical examination and the consent of the patients, delivered through the vaginal birth canal;

I In a subgroup - 24 women in labor, after a complete clinical examination, refused to give birth through the vaginal birth canal and delivered by repeated CS. Group II consisted of 42 women in childbirth who were admitted to the hospital on an emergency basis, which were also divided into 2 subgroups: subgroup 2A included 13 women in labor who entered the second stage of labor and delivered independently through the natural birth canal; 2B subgroup consisted of 24 women in labor with clinical signs of inconsistency of the scar on the uterus and they underwent repeated CS.

The inclusion criteria for the study were women in labor with a uterine scar after one cesarean section in the lower uterine segment. Exclusion criteria:

- scar on the uterus after two or more cesarean sections;
- a preliminary corporal caesarean section or T and J-shaped incision in the uterus;
- history of uterine rupture;
- preliminary reconstructive surgery on the uterus, resection of the uterine angle, history of myomectomy;
-the presence of other severe obstetric or extragenital pathology.

Along with general clinical research methods (assessment of the state of hemostasis, general analysis of blood and urine, smear for flora), special research methods were used, including ultrasound, dopplerometry of the lower uterine

segment, enzyme immunoassay (ELISA) determination of the level of antibodies to type I collagen, morphological examination of rumen biopsy uterus. Women in labor selected for attempted vaginal delivery received and signed informed consent after explaining the benefits and risks. An important factor in the selection was the women's positive attitudes toward attempting vaginal delivery. Childbirth was carried out in readiness for an emergency and under constant CTG control. Pulse, temperature, respiratory rate and blood pressure were monitored.

Patients of the study groups were comparable in age, structure of extragenital and gynecological pathology, parity, indications for the first operation of the CS, the frequency and structure of purulent-septic complications after the first operation, the value of the time interval between the first operation of the CS and real pregnancy, the frequency and structure of complications of this pregnancy. and the degree of "maturity" of the cervix at the time of re-delivery.

**Result and discussion**

In the obstetric department of 1 clinic of SamGosMI for the period from 2018 to 2020. there was an annual increase in the total number of births from 3138 to 3280, and at the same time, an increase in the frequency of CS from 387 to 542 per year was noted, with women with a scar on the uterus predominating among them. In the main study group, the method of delivery was determined on the basis of a detailed study of the anamnesis (information about the previous operation, the course of the postoperative period, the presence of abortions), the analysis of the course of the present pregnancy, clinical and echographic data of the scar on the uterus, the intrauterine state of the fetus, desire and voluntary informed consent of the woman.

To resolve the issue of the possibility of self-delivery in pregnant women with a scar on the uterus, the state of the scar on the uterus and its usefulness, which was diagnosed by ultrasound at the stage of prenatal department with an assessment of blood flow in the scar zone, were of leading importance. The thickness of the myometrium was: 2.0–3.0 mm (2.12 ± 0.23 mm) - in 16 (25%); 3.0–4.0 mm (3.43 ± 0.34 mm) - in 32 (50%); 4.0–5.0 mm (4.12 ± 0.23) - in 12 (18.75%); 5-6 mm (5.18 ± 0.23 mm) - in 4 (6.25%) surveyed women in labor.

Of all women in labor who underent Doppler examination of the lower segment in 2.1%, the resistance index was 0.59 ± 0.06 and 0.66 ± 0.07, respectively ($p < 0.001$), the pulsation index was 0.83 ± 0.10 and 1.27 ± 0.16, respectively ($p < 0.001$), diastolic ratio 2.04 ± 0.14 and 3.41 ± 0.19, respectively ($p < 0.001$), there were single vascular loci in the uterine scar. In 97.9%, satisfactory vascularization in the scar area was visualized.

To analyze the readiness for childbirth in 66 women in labor, the main group planning to give birth through the vaginal birth canal was determined by antibodies to type I collagen. For women in labor admitted in the second stage of labor (IIA subgroup), as well as for women in labor who were diagnosed with a clinically defective scar and delivered by repeated CS (IIB subgroup), antibodies to type I collagen were determined on the second day after birth.

Antibodies to type I collagen were determined by the indirect enzyme-linked immunosorbent assay (ELISA) on polystyrene plates (ELISA test) according to the classical method with modifications. The choice of ELISA as the main method is based on the facts that it is convenient and relatively easy to perform, has a high specificity and sensitivity [4]. The level of antibodies to type I collagen ranged from 0.05 to 32.7 IU / ml and averaged 17.5 IU / ml. The most frequently observed level of antibodies to type I collagen in the range of 10.7-19.5 IU / ml - in 21% of pregnant women, a little less often 28.0-30.0 IU / ml - in 19% of pregnant women. For 12% it was 7.7-9.1 IU / ml, for 10% it was 5.6-2. IU / ml. Only 2% of pregnant women had a concentration of antibodies to type I collagen of 32.7-26.0 IU / ml.

Correlation analysis with the calculation of the Gamma correlation coefficient (G) revealed a statistically significant relationship of the average degree between the mode of delivery and the thickness of the scar ($G = 0.55$, $p = 0.001$), a strong correlation between the research methods according to ultrasound data ($G = 0, 74$, $p = 0.002$) and anti-collagen antibodies ($G = 0.93$, $p = 0.003$), i.e. the thicker the scar and the lower the antibodies to type I collagen, the higher the likelihood of vaginal delivery. However, in 3% of women in subgroup IA, labor was complicated and they underwent a second CS, which was caused by assynclitic insertion of the fetal head and premature detachment of the normally located placenta.

Parturient women of the IB subgroup routinely delivered the second CS within 40 weeks, and biopsies were taken from them intraoperatively for morphological examination of the scar. In the morphological study of biopsies of the lower uterine segment obtained

during the repeated operation of cesarean section in patients of subgroup IV in 92.3%, the structure was dominated by the muscle component, represented by bundles of smooth myocytes, between which there was dense fibrous connective tissue in the form of thin layers and wide fields with numerous vessels of various types, which indicates the morphological "maturity" of the scar tissue and the absence of sclerotic changes in the vessel wall.

In women in labor II B of the subgroup of emergency deliveries due to clinical signs of a threatening rupture of the uterus along the scar, manifested by the appearance of a characteristic pain syndrome, during a morphological examination of the tissues of the lower uterine segment, the biopsy was presented mainly by coarse-fibrous connective tissue with few pathologically altered vessels, areas of edema, hemorrhages and infiltration with leukocyte and fibroblastic cells. Single, unevenly stained smooth myocytes were arranged irregularly. In the study of the presence of collagen, the connective tissue was characterized by a pronounced expression of collagen fibers due to sclerosis of the vascular wall. Sclerotic changes in blood vessels during the formation of an "inconsistent" scar on the uterus prevent full regeneration of muscle tissue, leading to metabolic disorders and local tissue hypoxia with the development of coarse fibrous connective tissue. All women in labor in subgroup 2B showed an increase in the concentration of antibodies to type I collagen - 83% (5.0 ± 22.7 IU / ml). Thus, the thickness of the uterine wall in the area of the scar according to ultrasound is a sufficiently significant diagnostic criterion for determining the "consistency" of the scar on the uterus. Thinning of the myometrium in this zone indicates the "inconsistency" of the scar. At the same time, the determination of the level of antibodies to type I collagen was the most significant criterion for the usefulness of the uterine scar.

**Conclusions**

The performed correlation analysis indicates a statistically significant relationship of an average degree between the method of delivery and the thickness of the scar on the uterus, a strong correlation between the ultrasound data and the level of antibodies to type I collagen. The greater the thickness of the scar and the lower the level of antibodies to type I collagen, the higher the likelihood of vaginal delivery in women with a history of one CS.

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## ASSESSMENT AND PREDICTION OF THE CLINICAL COURSE OF CHF IN PATIENTS WITH MYOCARDIAL REVASCULARIZATION

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✓ ***Resume***

***Chronic heart failure (CHF) is one of the most common, progressive and prognostically unfavorable diseases of the cardiovascular system, the social significance of which is determined by the high mortality rate of patients, the most common cause of hospitalization, deterioration in the quality of life (QOL) and disability of patients [1,2]. The results of the study showed that the clinical course of the disease and LV systolic dysfunction are associated with the degree of occlusion of the coronary arteries. Severe lesions of the coronary arteries - 85-95% and total occlusion were significantly more frequent in the group of patients with reduced LV systolic function (EF <40%) and a relationship was revealed between the progression of the disease, as well as an increase in volume parameters - end-diastolic and end-systolic volumes LV with degree of occlusion***

***Key words: Assessment and prognosis of the clinical course of chronic heart failure, patients with myocardial revascularization.***

## MIYOKARDIYAL REVKULYARIZATSIYA QILINGAN BEMORLARGA SURUNKALI YURAK ETISHMOVCHILIGINING KLINIK KECHSINI BAHOLASH VA BASHORATLASHLASH

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Buxoro davlat tibbiyot instituti

✓ ***Rezyume***

***Surunkali yurak etishmovchiligi (SYE) yurak-qon tomir tizimining eng keng tarqalgan, progressiv va xavfli prognozli kasalliklaridan biri bo'lib, uning ijtimoiy ahamiyati bemorlarning yuqori o'lim darajasi bilan belgilanadi, kasalxonaga yotqizishning eng keng tarqalgan sababi, bemorlarning hayoti sifati yomonlashishi (HS) va nogironligi sababi hisoblanadi.[1,2]. Natijalar. Tadqiqot natijalari shuni ko'rsatdiki, kasallikning klinik jarayoni va chap qorincha sistolik disfunktsiyasi koronar arteriyalarning okklyuziya darajasi bilan bog'liq. Chap qorincha sistolik sistolik funktsiyasi pasaygan (OF <40%) bemorlar guruhida koronar arteriyalarning og'ir zararlanishi - 85-95% va umumiy okklyuziya sezilarli darajada tez-tez uchraydi va kasallikning rivojlanishi bilan o'zaro bog'liqlik aniqlandi hajm parametrlarining ko'payishi - okkluziya darajasi bilan chap qorinchaning so'nggi diastolik va sistolik hajmlari bogliqligi aniqlandi.***

***Kalit so'zlar: Surunkali yurak etishmovchiligining klinik kechishini baholash va prognozi, miokard revaskülarizatsiyasi bo'lgan bemorlar.***

## ОЦЕНКА И ПРОГНОЗИРОВАНИЕ КЛИНИЧЕСКОГО ТЕЧЕНИЯ ХСН У БОЛЬНЫХ С РЕВАСКУЛЯРИЗАЦИЕЙ МИОКАРДА

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✓ ***Резюме***

***Хроническая сердечная недостаточность (ХСН) является одним из распространенных, прогрессирующих и прогностически неблагоприятных заболеваний сердечно-сосудистой системы, социальная значимость которой определяется высокой смертностью больных, наиболее частой причиной госпитализации, ухудшением качества жизни (КЖ) и ограничением трудоспособности больных [1,2]. Результаты. Результаты исследования показали, что клиническое течение заболевания и систолическая дисфункция ЛЖ ассоциируется с со степенью оккклюзии коронарных артерий. Тяжелые степени поражения коронарных артерий – 85-95% и тотальная окклюзия достоверно чаще встречались в группе***

***больных со сниженной систолической функцией ЛЖ (ФВ<40%) и выявлена взаимосвязь прогрессирования заболевания, а также увеличения объемных показателей – конечно-диастолического и конечно-систолического объемов ЛЖ со степенью окклюзии.***

***Ключевые слова: Оценка и прогноз клинического течения хронической сердечной недостаточности, больные с реваскуляризацией миокарда.***

**Relevance**

Chronic heart failure (CHF) is one of the most common, progressive and prognostically unfavorable diseases of the cardiovascular system, the social significance of which is determined by the high mortality rate of patients, the most common cause of hospitalization, deterioration in the quality of life (QOL) and disability of patients [1,2]. According to the Framingham Study, HF have approximately 1–2% of the adult population in developed countries [3]. CHF is the outcome of all cardiovascular diseases and the so-called cardiovascular continuum, has become one of the most important problems in practical health care [4,5]. The main causes of CHF are coronary heart disease (CHD) and arterial hypertension. The risk of sudden death in patients with CHF is 5 times higher than in those without heart failure [6]. A number of scientific studies are underway aimed at diagnosing, early detection and achieving high efficiency in approaches to the tactics of treating patients with CHF. In the development of approaches to treatment, the most important aspect is the introduction of surgical methods for the treatment of CHF using high-tech methods [7,8]. In CHF of ischemic genesis, it is important to study the features of the angiographic characteristics of coronary artery disease, the relationship between clinical and hemodynamic parameters, heart remodeling processes and disease prognosis [9, 10].

The aim of the study was to predict the course of CHF in patients with myocardial revascularization.

Material and methods. Were examined 112 patients with CHF with II-III FC CHF ischemic genesis. The average age of the patients was 56.4 ± 4.5 years. The patients were divided into 2 groups: group 1 consisted of 50 patients who received stard therapy for CHF, group 2 - 62 patients who underwent myocardial revascularization by stenting coronary arteries.

**Result and discussion**

The analysis of the clinical course of the disease in the examined patients with FC III and III CHF showed: the initial indicators of HS were 327.7 ± 11.6 and 197.5 ± 7.4 meters, respectively. The study of the initial indicators of the clinical state of patients with CHF according to the results of SHOKS revealed that the indicators in patients with CHF II and III FC were 5.9 ± 0.2 and 10.2 ± 0.1 points, respectively. The analysis of the initial indicators of the quality of life according to the total index of the quality of life according to the results of the Minnesota questionnaire in the examined patients showed a significant increase in SI QOL with an increase in the FC of CHF. In patients with FC II and III CHF, SI QOL was 30.1 ± 4.6 and 42.5 ± 3.7 points, respectively (Table 1).

**Characteristics of the clinical state in patients with CHF Table 1**

| | **Age** | **six minute walk test** | **clinical assessment scale** | **the quality of life** |
|---|---|---|---|---|
| **Total 112 (100%)** | 56,4±4,5 | 244,7±10,5 | 7,4±2,1 | 34,1±0,9 |
| **FC II 39 (34,8%)** | 57,7±3,9 | 327,7±11,6 | 5,9±2,2 | 30,1±4,6 |
| **FC III 73 (65,2%)** | 56,16±3,2 | 197,5±17,4 | 10,2±1,9 | 42,5±3,7 |

When analyzing the relationship between the degree of coronary vascular lesions and the clinical course of CHF, it was found that with 55-60% coronary artery disease, the HRT was 367.5 ± 7.5 meters, with 85-95% lesions - 168.6 ± 11.3 meters. When studying the indicators of SHOC, it was also found that with lesions of the coronary artery 85-95%, this indicator was 13.5 ± 0.5 points, which was 1.7 times higher than the indicator of SHOC with lesions of coronary arteries 55-60% (Table .2).

**Table 2**

**Characteristics of the clinical state in patients with CHF depending on the erosion of coronary artery lesions**

| KA lesion degree | six minute walk test | | clinical assessment scale | | the quality of life | |
|---|---|---|---|---|---|---|
| | FC II | FC III | FC II | FC III | FC II | FC III |
| **55-60%** | 367,5± 7,5 | 240,25± 240,3 | 5,8± 0,5 | 7,8± 0,5 | 25,25± 4,4 | 29,6± 4,1 |
| **60-70%** | | 207,2± 24,5 | | 8,4± 0,4 | | 33,9± 2,8 |
| **70-85%** | 329,5± 10,3 | 184,6± 26,5 | 4,75± 0,5 | 8,8± 0,2 | 29,8± 2,3 | 36,8± 2,6 |
| **85-95%** | 335,2± 8,8 | | 5,8± 0,5 | 11,4± 0,1 | 33,5± 3,5 | 43,2± 2,1 |
| **Total occlusion** | 327,5± 25,9 | 250,5± 39,5 | 6,5± 0,5 | 13,5± 0,5 | 36,2± 3, 9 | 42,5± 4,5 |

When studying the QOL parameters in CHF patients, an association was also noted between the SI QOL parameters and the degree of coronary artery disease: in FC II patients with coronary artery lesions of 85-95%, it was 33.5 ± 8.5 points, and in FC III patients - 42 , 5 ± 4.5 points. These indicators exceeded the indicators of patients with coronary artery disease 55-60% by 1.3 ($p < 0.05$) and 1.4 times ($p < 0.01$), respectively. Revealed an inverse correlation between the degree of stenosis of the coronary arteries and indicators of SHOC, QOL.

The results of the study showed that the clinical course of the disease and LV systolic dysfunction are associated with the degree of occlusion of the coronary arteries. Severe lesions of the coronary arteries - 85-95% and total occlusion were significantly more frequent in the group of patients with reduced LV systolic function (EF <40%) and a relationship was revealed between the progression of the disease, as well as an increase in volume parameters - end-diastolic and end-systolic volumes LV with degree of occlusion.

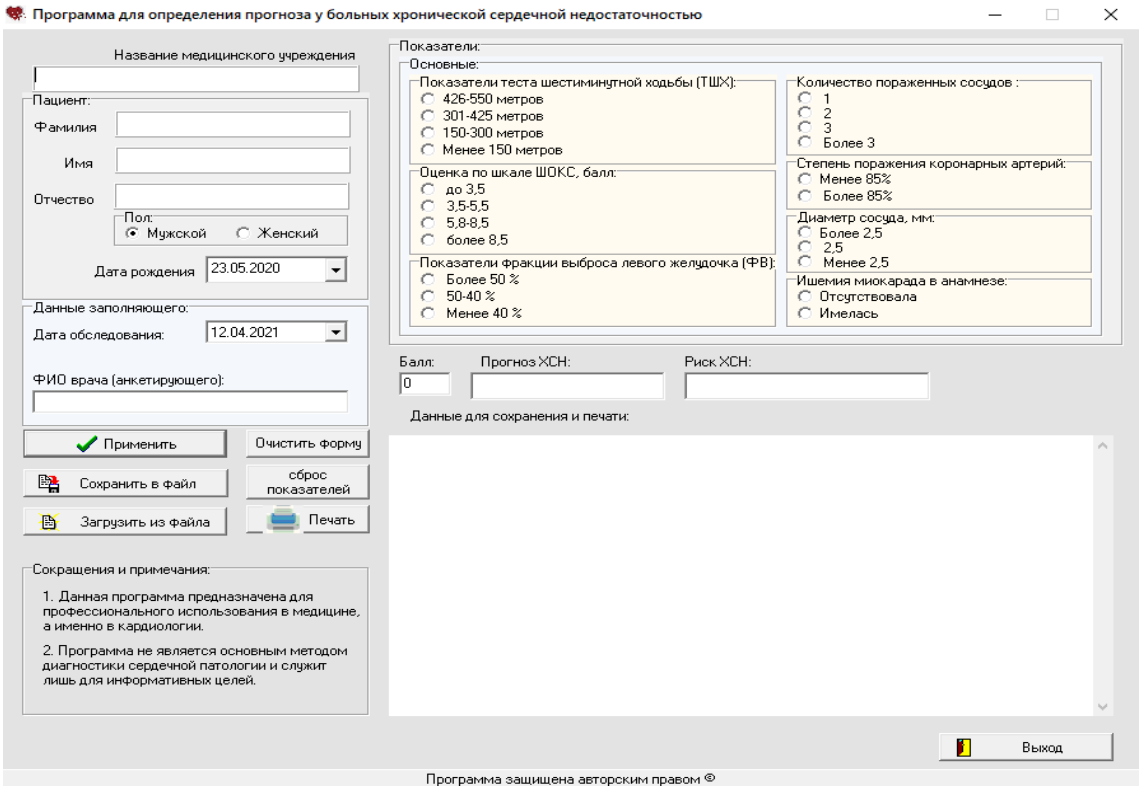
Correlation of the degree of coronary artery disease with the clinical course of the disease and indicators of cardiac remodeling was revealed: a high inverse correlation with HSH and EF (r = -0.71, r = -0.65, respectively) and a direct correlation with SHOC and LV ED (r = 0, 64, r = 061, respectively) and an indicator of the quality of life (r = -0.51).

In order to predict the progression of CHF, a calculator program has been developed to determine the prognosis of the course of CHF, taking into account angiographic indicators, LV contractility, clinical criteria of the disease, including the assessment of the significance, diagnostic value and prognostic significance of individual diagnostic criteria with the construction of a mathematical model of signs. To assess the individual risk stratification of the patient, a diagnostic table was compiled to identify the probability of an error-free prognosis and assess the severity of the patient, which makes it possible to determine the individual prognosis of the progression of CHF. To assess the significance of the parameters in predicting the course of CHF, a method based on the theory of feature recognition with a probabilistic approach was used. The method allows you to determine the diagnostic value of features by calculating diagnostic coefficients. The development of differential diagnostic tables included three stages: the first was the study of the probability of a symptom in case of a favorable and unfavorable course of CHF, the calculation of diagnostic coefficients and the determination of the information content of each symptom. The second stage was the compilation of diagnostic tables, which included only signs with high information content. The third stage is the choice of diagnostic thresholds (the sum of diagnostic coefficients), which made it possible to make the correct diagnostic decision.

The assessment of the sensitivity, specificity and prognostic significance of identifying each sign for predicting the course of CHF was carried out on the basis of the compiled matrix and with the corresponding formulas.

To assess the prognosis of the course of CHF, taking into account the methods of investigation of patients with CHF, the following parameters were selected: HSH, assessment of the clinical state by

SHOKS, angiographic data, LV systolic function - EF. The most sensitive signs for determining the prognosis of the course of CHF were: - TShH <150 m, SHOKS> 8.5, CA lesions> 80%, the presence of a small diameter of vessels <2.5 mm; 2-3 vascular lesions of the coronary arteries; History of myocardial infarction; LVEF <40%.




**Pattern 2. A calculator program for determining the prognosis in patients with CHF**

The analysis of prognostic parameters showed that patients with developed unfavorable outcomes had low exercise tolerance (according to TSS), higher scores of SHOC, pronounced stenosis of the coronary arteries (more than 80%) and lower LVEF (less than 40%), as well as the presence of lesions of several arteries compared with patients without cardiac events.

Thus, assessing the prognosis in patients with CHF is important for determining the severity of the course of the disease in each patient, optimizing treatment by selecting a treatment method, which helps to improve the course of the disease, reduce secondary complications and improve the quality of life of patients.

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## COMPARATIVE ASSESSMENT OF THE PREVALENCE OF THE MAIN COMPONENTS OF THE METABOLIC SYNDROME IN DIFFERENT AGE GROUP

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✓ ***Resume,***

***1193 men aged 20-69 years from the unorganized population were examined. Among them, the frequency of occurrence of the main components of the metabolic syndrome (MetS) was studied: arterial hypertension, obesity and overweight, impaired glucose tolerance (IGT), and hyperlipidemia. It was found that age makes a significant contribution to the increase in MetS components. At the same time, as the age increases, the number of MetS components also increases. The decrease in the frequency of MetS components at the age of 60-69 years may be associated with a more intensive dropout of persons with c from the population due to mortality. At a young age, people without or with a small number of MetS components are most often found. As the age increases, there is an increase in MetS components and, above all, such components as AH and IGT.***

***Keywords: metabolic syndrome, age, aging, impaired glucose tolerance, arterial hypertension, overweight, obesity, dyslipidemia.***

## СРАВНИТЕЛЬНАЯ ОЦЕНКА РАСПРОСТРАНЁННОСТИ ОСНОВНЫХ КОМПОНЕНТОВ МЕТАБОЛИЧЕСКОГО СИНДРОМА В РАЗЛИЧНЫХ ВОЗРАСТНЫХ ГРУППАХ

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***Обследовано 1193 мужчин в возрасте 20-69лет из неорганизованной популяции. Среди них была изучена частота встречаемости основных компонентов метаболического синдрома: артериальная гипертензия, ожирение и избыточная масса тела, нарушение толерантности к глюкозе и гиперлипидемия. Установлено, что возраст вносит существенный вклад в увеличение компонентов МС. При этом, по мере увеличения возраста растёт и количество компонентов МС. Снижение частоты компонентов МС в возрасте 60-69 лет, возможно, связано с более интенсивным выбыванием лиц с из популяции в связи со смертностью. В молодом возрасте чаще всего встречаются люди без или с малым количеством компонентов МС. По мере увеличения возраста наблюдается рост количества компонентов МС и, прежде всего, таких компонентов как АГ и НТГ.***

***Ключевые слова: метаболический синдром, возраст, старение, нарушение толерантности к глюкозе, артериальная гипертония, избыточная масса тела, ожирение, дислипидемия.***

## METOBOLIK SINDROMNING ASOSIY TARKIBIY QISIMLARINING TURLI YOSH GURUHLARIDA TARQALISHINI QIYOSIY BAHOLASH

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[2]Toshkent tibbiyot akademiyasi Urganch filiali

✓ ***Резюме,***

***Uyushmagan aholi orasidan 20-69 yoshdagi 1193 nafar yerkak tibbiy ko‘rikdan o‘tkazildi. Ular orasida metabolik sindromning asosiy tarkibiy qismlarining paydo bo‘lish chastotasi o‘rganildi: arterial gipertenziya, semizlik va ortiqcha tana vazni, glyukozaga tolerantlikni buzilishi (GTB) va giperlipidemiya. Inson yoshi MS komponentlarining ko‘payishiga salmoqli hissa qo‘shayotgani aniqlandi. Shu bilan birga yosh oshgan sari MS komponentalari soni ham ortib boradi. MS komponentalarining chastotasi 60-69 yoshlarda pasayishi, bu guruxda o‘limning ortishi bilan bog‘liq bo‘lishi mumkin. Yoshlarda MS komponentalari kam bo‘lgan yoki bo‘lmagan odamlar yeng ko‘p topildi. Yosh oshgan sari MS komponentlarida va, yeng avvalo, AG va GTB kabi komponentlarda o‘sish kuzatiladi.***

***Kalit so‘zlar: metabolik sindrom, yosh, qarish, buzilgan glyukoza bardoshlik, arterial gipertenziya, og‘ir, semizlik, dislipidemiya.***

## Relevance

Over the past few decades, metabolic syndrome (MetS) has become one of the most important problems of modern health care [1]. MS includes obesity, hypertension, and insulin resistance [2]. MetS contributes to the development of many diseases, as well as their more severe clinical course and premature mortality of patients. Therefore, in order to prevent the development of comorbid diseases, as well as to reduce the morbidity and mortality of the population, primary and secondary prevention should be carried out [3]. To do this, it is necessary to identify various risk factors. Among the most important risk factors are the main components of MetS, as well as the age of patients.

The role of age as an independent risk factor for many diseases is well known. However, questions about the state of the main components of MetS, depending on the categories of hyperglycemia in people of different ages, remain insufficiently studied. It is important to study the clinical course of MetS and related diseases in different age periods. This information is necessary for the development of programs for the early diagnosis and prevention of both MetS and related diseases in people of different ages.

For successful implementation of preventive measures, it is important to have data on the prevalence of factors [4]. To do this, it is necessary to conduct screening examinations among the population [5, 6]. Previously, it was shown that age acts as an independent risk factor for many diseases. Its relationship with blood pressure, body weight, hyperuricemia, and the hemostatic system has been established [7, 8, 9], and its importance in the mortality of the population has been shown [10, 11, 12, 13, 14]

**The purpose of the study**. To study the frequency of occurrence of the main components of MetS among people of different ages.

## Material and methods

The study included 1,193 men aged 20 to 69 years, representing a representative sample of the unorganized population. Arterial hypertension was diagnosed when the following blood pressure indicators (in mmHg) were detected: systolic blood pressure (SBP) is equal to, or more than 140 and (or) diastolic blood pressure (DBP) is equal to or more than 90.

Overweight and obesity were detected according to the criteria of the International Group on Obesity (1997): in persons with the level of the Quetelet index (weight (kg)/height(m)2) ≥25 but <30 BMI was recorded, and Quetelet index levels ≥30 were taken for obesity.

Criteria for the diagnosis of hyperlipidemia: hypercholesterolemia (HC) was detected at a level of CS more than 6.1 mmol/l, hypertriglyceridemia (HTH) was recorded at a level of TG more than 1.7 mmol/l, for hyperbettalipoproteidemia (HßLIP), beta-LIP values of more than 55 opt. Units were taken.

The state of glucose metabolism was assessed by the standard glucose tolerance test (GTT). To do this, blood glucose levels were analyzed on an empty stomach, as well as one and two hours after the sugar load (75 g of glucose dissolved in 250 ml of water). Criteria used (mmol/l): normal glucose tolerance: fasting <6.1 and glycemia <7.8 after 2 hours; fasting hyperglycemia <6.1, but <7.0 and glycemia after 2 hours <7.0; IGT - fasting glycemia <7.0 and glycemia after 2 hours < 7.8, but < 11.1; diabetes mellitus: fasting glycemia < 7.0 and glycemia after 2 hours>11.1. The violation of the activity of the sympathoadrenal phase of the glycemic curve was judged by the level of glycemia one hour after the sugar load (glucose≤8.8).

**Result and discussion**

According to the data obtained (Figure 1), the largest number of people without the main components of MetS is among young people. As the age increases, the number of individuals without MetS components decreases. In men of different age groups, the incidence of having only one component increases with increasing age. However, among the elderly (60-69 years old), the number of such cases decreases. The number of cases of a combination of 2 and 3 components of MetS also increases with age. But even in this case – in the elderly, the number of such cases decreases. However, about the combination of the 4 components of the MetS, the situation is somewhat different. This combination occurs only after 40 years old, increases to 60 years old, and then decreases.

The findings suggest that age contributes to the increase in MetS components. At the same time, a lower number of different combinations in the oldest age group may indicate a higher mortality rate among these men. And this, in turn, leads to the elimination of the risk with a large number of MetS components from the observation.

Further, specific combinations of the main components of MetS in different age groups were studied. As it turned out (table. 1), the frequency of the combination of different components of MetS differs significantly by age group. As the age increases, the frequency of occurrence of most MetS components increases. However, it should be noted that such components of MetS as IGT and AH are more common.

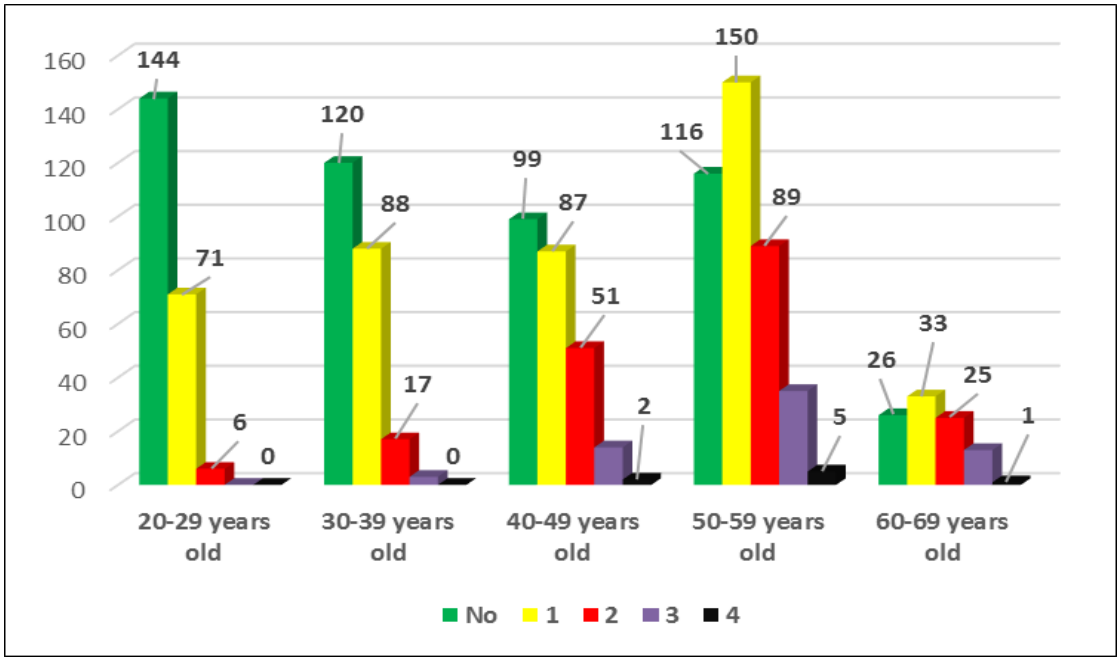


*Figure 1. The number of different combinations of the main components of MetS in individual age groups*

The findings suggest that age contributes to the increase in MetS components. Simultaneously, a lower number of different combinations in the oldest age group may indicate a higher mortality rate among these men. And this, in turn, leads to the elimination of the risk with many MetS components from the observation.

Further, specific combinations of the main components of MetS in different age groups were studied. As it turned out (table. 1), the frequency of the combination of different components of MetS differs significantly by age group. As the age increases, the frequency of occurrence of most MetS components increases. However, it should be noted that such components of MetS as IGT and AH are more common.

**Table 3.**

**Cases of combination of different components of MS in age groupsa**

| MetS components | 20-29 years old | 30-39 years old | 40-49 years old | 50-59 years old | 60-69 years old | 20-69 years old |
|---|---|---|---|---|---|---|
| No | 102<br>27,3% RT<br>43,4% CT | 104<br>24,4% RT<br>37,7% CT | 81<br>19,3% RT<br>26,9% CT | 111<br>23,6% RT<br>21,0% CT | 24<br>5,4% RT<br>19,4% CT | 421<br>(35,9%) |
| AH+GH | 1<br>9,1% RT<br>0,5% CT | 2<br>18,2% RT<br>0,9% CT | 1<br>9,1% RT<br>0,4% CT | 6<br>54,5% RT<br>1,5% CT | 1<br>9,1% RT<br>1,0% CT | 11 (0,9%) |
| AH+Overweight+GH | 4<br>5,7% RT<br>1,8% CT | 8<br>11,4% RT<br>3,5% CT | 16<br>22,9% RT<br>6,3% CT | 33<br>47,1% RT<br>8,4% CT | 9<br>12,9% RT<br>9,2% CT | 70 (5,9%) |
| AH+IGT | 1<br>5,6% RT<br>0,5% CT | 0<br>0,0% RT<br>0,0% CT | 5<br>27,8% RT<br>2,0% CT | 4<br>22,2% RT<br>1,0% CT | 8<br>44,4% RT<br>8,2% CT | 18 (1,5%) |
| AH+IGT+GH | 0<br>0,0% RT<br>0,0% CT | 0<br>0,0% RT<br>0,0% CT | 5<br>29,4% RT<br>2,0% CT | 7<br>41,2% RT<br>1,8% CT | 5<br>29,4% RT<br>5,1% CT | 17 (1,4%) |
| AH+IGT+Overweight | 1<br>1,8% RT<br>0,5% CT | 5<br>8,8% RT<br>2,2% CT | 15<br>26,3% RT<br>5,9% CT | 27<br>47,4% RT<br>6,8% CT | 9<br>15,8% RT<br>9,2% CT | 57 (4,8%) |
| GH | 53<br>39,6% RT<br>24,0% CT | 36<br>26,9% RT<br>15,8% CT | 18<br>13,4% RT<br>7,1% CT | 24<br>17,9% RT<br>6,1% CT | 3<br>2,2% RT<br>3,1% CT | 134<br>(11,2%) |
| Overweight+GH | 17<br>14,8% RT<br>7,7% CT | 23<br>20,0% RT<br>10,1% CT | 30<br>26,1% RT<br>11,9% CT | 38<br>33,0% RT<br>9,6% CT | 7<br>6,1% RT<br>7,1% CT | 115<br>(9,6%) |
| MetS | 0<br>0,0% RT<br>0,0% CT | 3<br>4,5% RT<br>1,3% CT | 16<br>24,2% RT<br>6,3% CT | 35<br>53,0% RT<br>8,9% CT | 12<br>18,2% RT<br>12,2% CT | 66 (5,5%) |
| IGT | 17<br>22,1% RT<br>7,7% CT | 17<br>22,1% RT<br>7,5% CT | 18<br>23,4% RT<br>7,1% CT | 20<br>26,0% RT<br>5,1% CT | 5<br>6,5% RT<br>5,1% CT | 77 (6,4%) |
| IGT+GH | 19<br>30,6% RT<br>8,6% CT | 11<br>17,7% RT<br>4,8% CT | 6<br>9,7% RT<br>2,4% CT | 22<br>35,5% RT<br>5,6% CT | 4<br>6,5% RT<br>4,1% CT | 62 (5,2%) |
| IGT+Overweight | 5<br>7,0% RT<br>2,3% CT | 7<br>9,9% RT<br>3,1% CT | 21<br>29,6% RT<br>8,3% CT | 33<br>46,5% RT<br>8,4% CT | 5<br>7,0% RT<br>5,1% CT | 71 (5,9%) |
| IGT+Overweight+GH | 1<br>1,5% RT<br>0,5% CT | 12<br>17,6% RT<br>5,3% CT | 21<br>30,9% RT<br>8,3% CT | 28<br>41,2% RT<br>7,1% CT | 6<br>8,8% RT<br>6,1% CT | 68 (5,7%) |

There are more cases without MetS components and cases with one or two components at a young age, for example, only GH. But in the case of a combination of GH with IGT or AH, the frequency of such combinations increases significantly. The presence of IGT or AH significantly increases the combined course of these components in older age groups.

## Conclusions

1. Age contributes significantly to the increase in MetS components. At the same time, as the age increases, the number of MetS components also increases. The decrease in the frequency of MetS components at the age of 60-69 years may be associated with a more intensive dropout of persons with c from the population due to mortality.

2. At a young age, people without or with a small number of MetS components are most often found. As the age increases, there is an increase in MetS components and, above all, such components as AH and IGT.

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# INDICATORS OF BLOOD PRESSURE AND BODY WEIGHT IN WOMEN, DEPENDING ON THE NUMBER OF PREGNANCIES THAT ENDED WITH THE BIRTH OF A LIVE CHILD

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✓ ***Resume***

***Four hundred sixty women of reproductive age (15-49 years old) were examined. Among them, blood pressure and body weight were assessed depending on the number of pregnancies and births in the anamnesis. At the time of the examination, these women were not pregnant. Bodyweight was studied according to the height-weight index (Quetelet index). Cases of termination of pregnancy for various reasons and the birth of a stillborn child were not taken into account. The study did not include cases of severe arterial hypertension (AH), grade 2 and 3 obesity, decompensated diabetes mellitus, and heart failure.***

***It was found that the number of pregnancies and births of more than two is associated with an increase in blood pressure and body weight. Therefore, it seems appropriate to carry out preventive work in relation to the possible increase in blood pressure and body weight among this category of women. At the same time, the authors draw attention to the fact that a single-factor analysis was carried out and did not take into account such factors as the intervals between pregnancies, the presence of a number of concomitant diseases, as well as ranking by age. Therefore, the results obtained can only reflect the general situation.***

***Keywords: women, pregnancy, arterial hypertension, overweight, obesity, risk factors, prevention.***

# ПОКАЗАТЕЛИ АРТЕРИАЛЬНОГО ДАВЛЕНИЯ И МАССЫ ТЕЛА У ЖЕНЩИН В ЗАВИСИМОСТИ ОТ КОЛИЧЕСТВА БЕРЕМЕННОСТЕЙ, ЗАВЕРШИВШИХСЯ РОДАМИ ЖИВОГО РЕБЕНКА

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✓ ***Резюме***

***Обследовано 460 женщин репродуктивного возраста (15-49 лет). Среди них проведена оценка артериального давления и массы тела в зависимости от количества беременностей и родов в анамнезе. На момент обследования эти женщины не были беременны. Масса тела изучалась по росто-весовому показателю (индекс Кетле). Случаи прерывания беременности по различным причинам и рождение мёртвого ребёнка не учитывались. В исследование не были включены случаи тяжёлого течения артериальной гипертензии (АГ), ожирение 2 и 3 степени, декомпенсированного сахарного диабета и сердечной недостаточности.***

***Установлено, что количество беременностей и родов более двух сопряжено с повышением АД и массы тела. Поэтому, представляется целесообразным проводить профилактическую работу в отношении возможного повышения АД и массы тела среди этой категории женщин. Вместе с тем, авторы обращают внимание на то, что проводился однофакторный анализ и не учитывались такие факторы как интервалы между беременностями, наличие ряда сопутствующих заболеваний, а также ранжирование по возрасту. Поэтому, полученные результаты могут отражать только общую ситуацию.***

***Ключевые слова: женщины, беременность, артериальная гипертония, избыточная масса тела, ожирение, факторы риска, профилактика.***

## TIRIK BOLANING TUG'ILISHI BILAN YAKUNLANGAN HOMILADORLIK SONIGA QARAB, AYOLLARDA QON BOSIMI VA TANA VAZNINING KO'RSATKICHLARI

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✓ ***Rezyume***

***Reproduktiv yoshdagi 460 nafar ayol tekshirildi (15-49 yoshdagi ayollar). Ular orasida homiladorlik va tug'ilish soniga qarab qon bosimi va tana vaznini baholash amalga oshirildi. Tadqiqot davrida bu ayollar homilador emas edi. Tana vazni bo'y-vazin indeks ko'rsatkichi (Ketle indeksi) bilan o'rganildi. Turli sabablarga ko'ra homiladorlikning tugashi va o'lik bolaning tug'ilishi hisobga olinmagan. Tadqiqotda arterial gipertenziyaning og'ir kechishi, 2 va 3 darajadagi semizlik, dekompensatsiyalangan diabet va yurak yetishmovchiligi holatlari mavjud emas edi.***

***Homiladorlik va tug'ish soni ikkitadan ortiq bo'lishi qon bosimi va tana vaznining oshishi bilan bog'liq. Shu sababli, ushbu toifadagi ayollar orasida qon bosimi va tana vaznining mumkin bo'lgan o'sishiga qarshi profilaktik ishlarni amalga oshirish maqsadga muvofiqdir. Shu bilan birga, mualliflar bir omilli tahlil o'tkazilganligiga e'tibor berishadi va homiladorlik oralig'i, bir qator birgalikda kasalliklarning mavjudligi, shuningdek, yoshga qarab tartiblash kabi omillar hisobga olinmaganligini ta'kidladilar. Shuning uchun olingan natijalar faqat umumiy vaziyatni aks ettirishi mumkin.***

***Kalit so'zlar: ayollar, homiladorlik, arterial gipertenziya, ortiqcha vazn, semizlik, xavf omillari, oldini olish.***

### Relevance

Preserving and strengthening women's health is one of the priority areas of modern health science and practice. In the WHO report on gender equality, women's health is assigned to six main areas of activity [1]. "Women spend an average of 10 years of their life in a state of illness" [2]. 15.6% of women aged 18 and over have a poor or satisfactory health condition [3]. Strengthening women's health is largely associated with timely identification and control of risk factors [4]. Based on the results of a population study among the unorganized female population aged 20 to 49 years, it was shown that there is a direct and reliable correlation between blood pressure (BP) levels and body weight [5]. Simultaneously, there are problems associated with women's commitment to the treatment of arterial hypertension [6].

Overweight and obesity can have a negative impact on women's reproductive function [7]. At the same time, WHO experts reported that 40% of the female population is overweight (BMI), and another 15% of women are obese [8]. Early detection of obesity and BMI allows you to normalize body weight and reduce the risk of CVD. Obesity, which is one of the main components of metabolic syndrome (MetS), contributes to the development of many diseases and pathological conditions. In particular, obesity can act as a risk factor for obstetric complications [9], coronary heart disease [10], and hyperuricemia [11]. Of particular concern is the high maternal mortality rate. In 2017, about 810 women worldwide died every day from preventable causes related to pregnancy and childbirth [12].

**The aim of the study:** To study the average blood pressure and body weight indicators among women of reproductive age, depending on the number of pregnancies and births that ended with the birth of a live child.

### Material and methods

460 women of reproductive age (15-49 years old) were examined. Blood pressure and body weight were assessed. At the time of the survey, these women were not pregnant. BP was measured at rest. The average values of two measurements taken at five-minute intervals were taken into account. Only those pregnancies that ended with the birth of a live child were taken into account. Bodyweight was studied according to the height-weight index (Quetelet index) recommended by WHO in agreement with the

International Group on Obesity [13]. The Quetelet index was calculated according to the generally accepted formula: weight (in kg)/height (in m)$^2$. Statistical processing is carried out using the MedCalc software (https://www.medcalc.org) [14].

Cases of termination of pregnancy for various reasons and stillbirth were not taken into account. The study did not include cases of severe arterial hypertension (AH), grade 2 and 3 obesity, decompensated diabetes mellitus, or heart failure.

**Result and discussion**

According to the obtained data, there is a certain relationship between some of the studied indicators. Thus, the systolic blood pressure levels increased in accordance with the increase in the number of deliveries (Table 1). In women who gave birth from one to three times, the systolic blood pressure levels practically did not differ. At the same time, among women who gave birth four times, systolic blood pressure levels were higher, and these differences were statistically significant.

Table 1.

Average values of systolic blood pressure among women with a different number of deliveries.

| Statistical indicators | Number of births | | | |
|---|---|---|---|---|
| | 1 | 2 | 3 | 4 |
| n | 82 | 107 | 151 | 120 |
| M | 106,171 | 105,196 | 105,603 | 109,000 * |
| 95% CI | 103.485 to 108.856 | 102.667 to 107.725 | 103.670 to 107.535 | 106.665 to 111.335 |
| SD | 12.2210 | 13.1948 | 12.0200 | 12.9173 |
| RSD | 0.1151 | 0.1254 | 0.1138 | 0.1185 |
| SEM | 1.3496 | 1.2756 | 0.9782 | 1.1792 |

Diastolic blood pressure also increased as the number of deliveries increased. At the same time, the diastolic blood pressure levels between the groups of women who gave birth two and three times were more pronounced than the systolic blood pressure levels between these groups (Table 2).

Table 2.

Average values of diastolic blood pressure among women with a different number of deliveries.

| Statistical indicators | Number of births | | | |
|---|---|---|---|---|
| | 1 | 2 | 3 | 4 |
| n | 82 | 107 | 151 | 120 |
| M | 69,122 | 67,813 | 69,583 | 71,300 * |
| 95% CI | 66.945 to 71.299 | 65.954 to 69.672 | 68.020 to 71.146 | 69.449 to 73.151 |
| SD | 9.9087 | 9.6994 | 9.7210 | 10.2429 |
| RSD | 0.1434 | 0.1430 | 0.1397 | 0.1437 |
| SEM | 1.0942 | 0.9377 | 0.7911 | 0.9350 |

As well as systolic blood pressure levels, diastolic blood pressure values were statistically significantly different from this indicator in other groups.

The Quetelet index indicators did not differ significantly between the groups of women who gave birth once and twice (Table 3).

| Statistical indicators | Number of births | | | |
|---|---|---|---|---|
| | 1 | 2 | 3 | 4 |
| n | 82 | 107 | 151 | 120 |
| M | 23,174 | 23,292 | 25,106 * | 25,274 * |
| 95% CI | 22.182 to 24.167 | 22.502 to 24.081 | 24.174 to 26.038 | 24.415 to 26.132 |
| SD | 4.5177 | 4.1195 | 5.7978 | 4.7485 |
| RSD | 0.1949 | 0.1769 | 0.2309 | 0.1879 |
| SEM | 0.4989 | 0.3982 | 0.4718 | 0.4335 |

At the same time, the Quetelet index levels statistically significantly differed from similar indicators in the previous groups: the Quetelet index levels were significantly higher among women who gave birth three and four times than in women who gave birth once or twice.

**Conclusion**

Thus, it can be concluded that there is a certain positive relationship between the number of pregnancies and births on the one hand and blood pressure levels and body mass index on the other. However, from the presented data, it follows that this relationship is characteristic when the number of births is more than two (three and four). Therefore, it seems appropriate to carry out preventive work in relation to the possible increase in blood pressure and body weight among women of reproductive age.

At the same time, it should be noted that this study conducted a one-factor analysis and did not take into account such factors as the intervals between pregnancies, the presence of a number of concomitant diseases, as well as age ranking. Therefore, the results obtained can only reflect the general situation. For a more in-depth study of the relationship between blood pressure and body weight, additional studies using multivariate analysis are needed, taking into account the above factors.

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# INDICATORS OF BASAL AND POST-LOADING GLYCEMIA IN PATIENTS WITH VARIOUS MANIFESTATIONS OF CORONARY HEART DISEASE

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✓ ***Resume***

***The state of glycemia in patients with various clinical forms of CHD was studied. A total of 135 male patients aged 30-69 years suffering from coronary heart disease were examined. For the diagnosis of CHD, a survey and instrumental methods of research were used. The survey was conducted according to the standard WHO questionnaire to identify stable angina and possibly myocardial infarction. The ECG data were analyzed according to the Minnesota code. The following clinical forms of CHD were studied: a previous myocardial infarction, stable angina, pain-free myocardial ischemia, a possible history of myocardial infarction, and possible CHD according to ECG data. The level of glycemia was studied on the standard glucose tolerance test (GTT). Fasting glycemic levels were studied, as well as one and two hours after taking 75 g of glucose.***

***Established differences in the levels of basal and post-loading glycemia in various clinical forms of CHD. These data, to a certain extent, are associated with the literature data that the typical clinical picture of CHD changes under conditions of hyperglycemia. At the same time, the results of the study indicate that hyperglycemia is associated with a more severe form of CHD (a previous myocardial infarction) and an atypical course of this disease.***

***Keywords: coronary heart disease, pain-free myocardial ischemia, metabolic syndrome, glycemia, impaired glucose tolerance.***

# ПОКАЗАТЕЛИ БАЗАЛЬНОЙ И ПОСТНАГРУЗОЧНОЙ ГЛИКЕМИИ У ПАЦИЕНТОВ С РАЗЛИЧНЫМИ ПРОЯВЛЕНИЯМИ ИШЕМИЧЕСКОЙ БОЛЕЗНИ СЕРДЦА

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✓ ***Резюме***

***Изучено состояние гликемии у пациентов с различными клиническими формами ИБС. Обследовано 135 пациента мужского пола в возрасте 30-69 лет, страдающих ИБС. Для диагностики ИБС применялись опросные и инструментальные методы исследования. Опрос проводился по стандартному опроснику ВОЗ для выявления стабильной стенокардии и возможного инфаркта миокарда. Анализ данных ЭКГ проводили по Миннесотскому коду. Анализировали следующие клинические формы ИБС: перенесенный инфаркт миокарда, стабильная стенокардия, безболевая ишемия миокарда, возможный инфаркт миокарда в анамнезе и возможная ИБС по данным ЭКГ. Уровень гликемии изучали на основании показателей стандартного теста толерантности к глюкозе (ТТГ). Анализировали уровни гликемии натощак, а также через один и два часа после приема обследуемым 75 гр. глюкозы.***

***Установлены неоднозначные уровни базальной и постнагрузочной гликемии при различных клинических формах ИБС. Эти данные, в определённой степени, ассоциируются с литературными данными о том, что в условиях гипергликемии изменяется типичная клиническая картина ИБС. Вместе с тем, результаты исследования указывают на связь гипергликемии с более тяжёлой формой ИБС (перенесенный инфаркт миокарда) и атипичным течением этого заболевания.***

***Ключевые слова: ишемическая болезнь сердца, безболевая ишемия миокарда, метаболический синдром, гликемия, нарушение толерантности к глюкозе.***

# KORONER YURAK KASALLIKLARINING TURLI KO'RINISHLARI BO'LGAN BEMORLARDA BAZAL VA POSTNAGRUZOCHNOY GLYSEMIYA KO'RSATKICHLARI

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✓ ***Rezyume***

***Koronar yurak kasalligining (KYuK) turli klinik shakllari bo‘lgan bemorlarda glysemiya holati o‘rganildi. KYuK chalingan 30-69 yoshida 135 erkak bemor tekshirildi. KYuK ning tashxisi uchun so‘rov va instrumental tadqiqot usullari ishlatilgan. Tadqiqot JSST standart so‘rovnomasida barqaror stenokardiya va miokard infarktini aniqlash uchun o‘tkazildi. EKG ma'lumotlarini tahlil qilish Minnesota kodiga muvofiq amalga oshirildi. Koronar yurak kasalligining quyidagi klinik shakllari tahlil qilindi: miokard infarkti, barqaror stenokardiya, miokard ishemiyasi, anamnezda miokard infarkti va EKG ma'lumotlariga ko‘ra, mumkin bo‘lgan KYuK. Glycemia darajasi glyukoza bardoshlik (GB) standart test ko‘rsatkichlari asosida o‘rganildi. Qorin bo‘shlig‘ida glysemiya darajasini, shuningdek, 75 gr. glyukozani qabul qilgandan keyin bir va ikki soat o‘tgach tahlil qilindi.***

***Koronar arter kasalligining turli klinik shakllarida bazal va glyukoza yuklamasidan keyin glysemiyasining turli xil darajalari aniqlandi. Ma'lum darajada, ushbu ma'lumotlar, giperglisemiya sharoitida KYuK ning odatdagi klinik ko‘rinishi o‘zgarganligi haqidagi adabiy ma'lumotlarga mos kelmoqda. Shu bilan birga, tadqiqot natijalari giperglisemiyaning KYuK (miokard infarkti) va bu kasallikning atipik kechishi bilan bog‘liqligini ko‘rsatadi.***

***Kalit so‘zlar: koronar yurak kasalligi, og‘riqsiz miokard ishemiyasi, metabolik sindrom, glisemiya, buzilgan glyukoza bardoshlik.***

## Relevance

The effectiveness of the control of cardiovascular diseases (CVD) is closely related to the early detection and elimination of risk factors. The fight against risk factors is one of the main areas of modern healthcare. In many countries of the world, including Uzbekistan, preventive medicine is given priority [1]. To effectively prevent CVD, it is necessary to identify risk factors in a timely manner [2]. Predictors of many diseases, including CVD, include a wide range of risk factors that contribute to the development of diseases and mortality from them [3]. The main risk factors for CVD include insulin resistance, arterial hypertension (AH), obesity and overweight (BMI), as well as dyslipidemia [4]. It has been established that the formation, clinical course, and outcomes of coronary heart disease are influenced by both the presence of components of the metabolic syndrome and their various combinations [5,6,7]. At the same time, the dynamics of the prevalence and levels of risk factors are significantly affected by hyperglycemia [8].

Type 2 diabetes significantly increases the risk of coronary heart disease (CHD). At the same time, among the leading causes of death and disability, this disease in its significance rose from 15th place in 2000 to 8th place in 2016 [9]. In 129 studies involving 10,069,955 people, it was shown that prediabetes is closely associated with an increased risk of mortality, both from all causes and CVD [10]. At the same time, it was found that screening and treatment of prediabetes can improve primary and secondary prevention of CVD. CHD can occur in various forms, including in a pain-free or atypical form.

**The purpose of the study**. To study the state of glycemia in patients with various clinical forms of coronary heart disease.

## Material and methods

A total of 135 male patients aged 30-69 years with CHD were examined. Questionnaire and instrumental research methods were used to diagnose CHD. The survey was conducted according to the standard questionnaire WHO for the detection of stable angina pectoris (the presence of pain or other unpleasant sensations localized behind the sternum and /or / in the left half of the chest and left arm, which appears during physical exertion and stop after a decrease in intensity or cessation of physical exertion) and identifying a possible myocardial infarction (the presence in the anamnesis of severe pain penetrating the anterior part of the chest and lasting 30 minutes or more, in the absence of cicatricial changes on the ECG).

The ECG was taken at rest in 12 conventional leads. Data analysis ECG was carried out according to the Minnesota code according to the following criteria: definite myocardial infarction, the presence of ECG scarring (category 1-1,2 MK); angina – the presence of pain that meet the criteria of the questionnaire which, in the absence of category 1-1,2 MK; painless; coronary heart disease in the presence of ischemic ECG changes (category 4-1,2 and 5-1,2 μm) in the absence of left ventricular hypertrophy, angina, and categories of 1-1,2 MK; possible myocardial infarction in anamnesis (according to the questionnaire who) - in the absence of scarring and ischemic ECG changes and angina; possible ischemic heart disease, including possible scarring of the myocardium ECG (category 1-2-8 and 1-3 μm), possible myocardial ischemia (category 4-3, 5-3 MC), arrhythmic form (category 6-1,2; 8-3 7-1 and MK), ischemia of the myocardium in the presence of left ventricular hypertrophy (category 4-1,2 and 5-1,2 in the presence of 3-1,3 MK).

The level of glycemia was studied on the basis of indicators of the standard glucose tolerance test (TSH). Moreover, fasting blood glucose levels were analyzed, as well as one and two hours after taking 75 g of glucose.

**Result and discussion**

According to the data obtained, the lowest fasting blood glucose values occurred in patients with stable angina, and the highest glucose levels were observed in patients with previous myocardial infarction and possible coronary heart disease (Table 1). In patients with pain-free myocardial ischemia and a possible history of myocardial infarction, glycemic levels were slightly higher than in patients with stable angina. However, these differences were not statistically significant.

It should be noted that with typical angina pectoris of tension, the lowest glycemic indices were observed. At the same time, glycemic levels were higher in all groups with atypical pain. These data may indicate a link between atypical CHD and elevated fasting blood glucose levels. At the same time, the highest levels of fasting glycemia occurred in patients who had suffered a myocardial infarction.

Table 1.

Average fasting blood glucose values in various forms of CHD.

| CHD form | PMI | SAP | PFMI | PosHMI | PosCHD |
|---|---|---|---|---|---|
| n | 27 | 42 | 16 | 13 | 37 |
| M | 5,214 | 4,505 | 4,667 | 4,556 | 5,009 |
| 95% CI | 4,40-6,02 | 4,35-4,65 | 4,24-5,09 | 3,90-5,20 | 4,53-5,48 |
| Median | 4,667 | 4,444 | 4,528 | 4,278 | 4,722 |
| Variance | 4.2122 | 0.2397 | 0.6346 | 1.1605 | 2.0133 |
| SD | 2.0524 | 0.4895 | 0.7966 | 1.0773 | 1.4189 |
| RSD | 0.3936 | 0.1087 | 0.1707 | 0.2365 | 0.2833 |
| SEM | 0.3950 | 0.07554 | 0.1991 | 0.2988 | 0.2333 |
| 5-95 P | 3,73-9,75 | 3,76-5,36 | 3,80-6,60 | 3,16-7,20 | 3,87-7,81 |

***Note:*** *PMI - previous myocardial infarction; SAP - stable angina pectoris;*
*PFMI - pain-free myocardial ischemia; PosHMI - possible history of myocardial infarction; PosCHD - possible coronary heart disease.*

A similar pattern was observed for glycemic levels 1 hour after glucose loading (Table 2). The highest values of glycemia 1 hour after glucose loading were observed among patients with previous myocardial infarction and possible coronary heart disease, and the lowest values of glycemia were observed in patients with stable angina pectoris. Glycemic levels 1 hour after glucose loading were higher in all groups with atypical CHD (painless myocardial ischemia, possible history of myocardial infarction, and possible myocardial ischemia).

Table 2.

Average glycemic values 1 hour after glucose loading in various forms of CHD.

| CHD form | PMI | SAP | PFMI | PosHMI | PosCHD |
|---|---|---|---|---|---|
| n | 27 | 42 | 16 | 13 | 37 |
| M | 9,119 | 7,743 | 8,549 | 7,889 | 9,144 |
| 95% CI | 7,64-10,59 | 7,12-8,36 | 7,49-9,60 | 6,10-9,67 | 8,08-10,20 |
| Median | 8,500 | 7,222 | 8,972 | 6,444 | 7,889 |
| Variance | 13.9050 | 3.9836 | 3.9152 | 8.6831 | 10.1316 |
| SD | 3.7289 | 1.9959 | 1.9787 | 2.9467 | 3.1830 |
| RSD | 0.4089 | 0.2578 | 0.2315 | 0.3735 | 0.3481 |
| SEM | 0.7176 | 0.3080 | 0.4947 | 0.8173 | 0.5233 |
| 5-95 P | 4,68-16,35 | 5,06-11,86 | 5,79-1,90 | 5,08-14,12 | 5,65-15,96 |

***Note:*** *PMI - previous myocardial infarction; SAP - stable angina pectoris;*
*PFMI - pain-free myocardial ischemia; PosHMI - possible history of myocardial infarction; PosCHD - possible coronary heart disease.*

The general picture of glycemic control in the same age group 2 hours after glucose loading corresponded to those in relation to fasting glycemia and 1 hour after glucose loading (Table 2). Here, too, the lowest glycaemic values occurred in patients with stable angina pectoris. At the same time, the highest glycemic indices were observed, not in the group of patients who had suffered a myocardial infarction, but in the group with possible coronary heart disease.

Table 3.

Mean glycaemic values at 2 hoursa after glucose loading in various forms of CHD.

| CHD form | PMI | SAP | PFMI | PosHMI | PosCHD |
|---|---|---|---|---|---|
| n | 27 | 42 | 16 | 13 | 37 |
| M | 5,815 | 4,849 | 5,448 | 4,979 | 5,845 |
| 95% CI | 4,44-7,18 | 4,27-5,42 | 4,57-6,32 | 3,75-6,20 | 4,93-6,75 |
| Median | 4,222 | 4,361 | 5,694 | 4,111 | 5,111 |
| Variance | 12.0093 | 3.3807 | 2.7002 | 4.0960 | 7.4352 |
| SD | 3.4654 | 1.8387 | 1.6432 | 2.0238 | 2.7268 |
| RSD | 0.5960 | 0.3792 | 0.3016 | 0.4065 | 0.4665 |
| SEM | 0.6669 | 0.2837 | 0.4108 | 0.5613 | 0.4483 |
| 5-95 P | 2,65-12,96 | 2,54-8,47 | 2,87-8,18 | 2,78-9,90 | 2,62-12,30 |

***Note:*** *PMI - previous myocardial infarction; SAP - stable angina pectoris;*
*PFMI - pain-free myocardial ischemia; PosHMI - possible history of myocardial infarction; PosCHD - possible coronary heart disease.*

**Conclusion**

Thus, the study revealed certain associations of glucose levels at various points of the glycemic curve with the clinical form of CHD. These data, to a certain extent, are associated with the literature data that the typical clinical picture of CHD changes under conditions of hyperglycemia. At the same time, the results of the study indicate a link between hyperglycemia and a more severe form of CHD (previous myocardial infarction) and the atypical course of this disease (PFMI, PosHMI, PosCHD).

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# POSSIBILITIES OF METHYLENE BLUE IN PHOTODYNAMIC INACTIVATION OF BACTERIA IN VITRO EXPERIMENT

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✓ ***Resume***

***The paper presents the results of bench microbiological studies on the study of the antibacterial properties of red spectrum LED radiation with a wavelength of 630 ± 20 nm, the photosensitizer methylene blue (MB) in various concentrations. The objects of exposure were bacteria sown from hernial water in strangulated hernia and abdominal exudate in peritonitis (Staphylococcus aureus, Staphylococcus epidermidis, Escherichia coli). It was found that LED radiation and MB, separately, do not possess bactericidal properties. Photodynamic effect (PDT) (LED radiation in combination with 0.05% MB solution) has a pronounced bactericidal effect. The obtained results are discussed from the point of view of the possibility of using PDT for the prevention of postoperative proinflammatory complications.***

***Key words: methylene blue, infection, photodynamic effect***

# ОБОСНОВАНИЕ ВОЗМОЖНОСТИ УСИЛЕНИЯ БАКТЕРИЦИДНЫХ СВОЙСТВ МЕТИЛЕНОВОЙ СИНИ В ФОТОДИНАМИЧЕСКОЙ ИНАКТИВАЦИИ БАКТЕРИЙ В ЭКСПЕРИМЕНТЕ IN VITRO

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✓ ***Резюме***

***В статье представлены результаты лабораторных микробиологических исследований по изучению антибактериальных свойств светодиодного излучения красного спектра с длиной волны 630 ± 20 нм, фотосенсибилизатора метиленового синего (МБ) в различных концентрациях. Объектами воздействия были бактерии, высеянные из грыжевой воды при ущемленной грыже и брюшной экссудат при перитоните (Staphylococcus aureus, Staphylococcus epidermidis, Escherichia coli). Установлено, что светодиодное излучение и МБ по отдельности не обладают бактерицидными свойствами. Фотодинамический эффект (ФДТ) (светодиодное излучение в сочетании с 0,05% раствором МБ) оказывает выраженное бактерицидное действие. Полученные результаты обсуждаются с точки зрения возможности использования ФДТ для профилактики послеоперационных гнойно-воспалительных осложнений.***

***Ключевые слова: метиленовая синь, инфекция, фотодинамическое воздействие.***

# IN VITRO TAJRIBADA BAKTERIYALARNI FOTODINAMIK INAKTIVATSIYASIDA METILEN KO'KNING IMKONIYATLARI.

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✓ ***Rezyume***

***Ilmiy ishda 630 ± 20 nm to'lqin uzunligi bo'lgan qizil spektrli LED nurlanishining antibakterial xususiyatlarini, turli konsentrasiyalardagi metilen ko'k (MK) fotosensibilizatorini o'rganish bo'yicha mikrobiologik tadqiqotlar natijalari keltirilgan. Qisilgan churra suvidan aniqlanilgan bakteriyalar va peritonitda qorin ekssudati (Staphylococcus aureus, Staphylococcus epidermidis, Escherichia coli) ta'sir qilish ob'ekti hisoblanadi. LED nurlanishi va MK alohida-alohida bakteritsid xususiyatiga ega emasligi aniqlandi. Fotodinamik ta'sir (PDT) (0,05% MK eritmasi bilan birgalikda LED nurlanishi) aniq bakteritsid ta'siriga ega. Olingan natijalar operatsiyadan keyingi yiringli-yallig'lanishli asoratlarning oldini olish uchun PDT dan foydalanish imkoniyati nuqtai nazaridan muhokama qilinadi.***

***Kalit so'zlar: metilen ko'k, infektsiya, fotodinamik ta'sir***

**Relevance**

Methylene blue (MS) is a thiazine dye belonging to the class of basic dyes. MS is used as an external and internal antiseptic, an antidote for cyanide, carbon monoxide, hydrogen sulfide poisoning [2]. Figure 1 shows the structural formula of the MS. Based on the structural formula of the arrangement of atoms (Fig. 1), it can be seen that the ML molecule is large and differs significantly from the strength of the bond between atoms. MS can play the role of a donor and acceptor of hydrogen ions. Its antiseptic properties are associated with the ability to selectively accumulate in microorganisms and viruses, causing damage to the cytoplasmic membrane, organelles and nuclear elements.

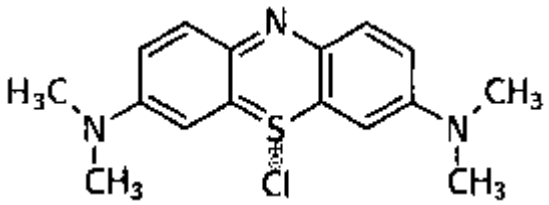



**Fig. 1.** MS structural formula

The emergence of modern antibiotics and antiseptics with high activity against a wide range of pathogenic microorganisms has led to a decrease in the frequency of clinical use of MS as an antiseptic. Recently, there has been an increase in antibiotic resistance among pathogenic bacteria [1,3,9] and dictates the need to search for new alternative methods of treating localized infections. One of these methods is photodynamic therapy (PDT) with the use of photosensitizers (PS), which was previously successfully used in oncology [4,5,7], and was recently proposed for the treatment of bacterial infections [5,6,8].

It has been proven that MS is a PS and can be effectively used in PDT. When illuminated with light that coincides with its absorption spectrum, a photodynamic (photochemical) reaction occurs with the formation of reactive oxygen species, which play a significant role in damage to bacterial cells. The absorption spectrum of MS is in the red part of the spectrum (lambda = 588-714 nm, lambda max = 660 nm) [phload]. The advantages of antibacterial PDT are its high efficiency against most pathogenic microorganisms, which persists during long-term treatment of chronic infections; the local nature of the antibacterial effect; reducing the pharmacological load on the body.

It should be noted that various concentrations and exposure times are given in

the literature to obtain an antibacterial effect, which was the basis for our own research.

**Purpose of the study.** Study of the bactericidal properties of red spectrum LED radiation (630 ± 20 nm) and the photosensitizer methylene blue in various concentrations. Determine the optimal radiation parameters, exposure time, effective concentration of methylene blue (MS) in the in vitto experiment.

## Materials and methods

Clinical and laboratory studies carried out in patients with strangulated hernias, peritonitis, postoperative purulent endo bronchitis during prolonged mechanical ventilation after abdominal operations have shown that the main culprits of postoperative pyoinflammatory complications are several microbes, among which the frequency of occurrence is priority:

1. Staphylococcus aureus – 28%
2. Staphylococcus epidermidis – 6%
3. Escherichia coli – 46%

Taking this into account, for microbiological research we used museum strains of these microbes obtained from the national collection of microorganisms for human infection, Research Institute EMIZ, Ministry of Health of the Republic of Uzbekistan with passport data.

To carry out these studies, we initially prepared inoculations of three microbial cultures taken in the experiment, while taking into account the methodological recommendations, we prepared broth cultures of microbes at a concentration of 5 × 105 CFU / ml using the US turbidity standards (Fig. 1).

Sowing of microbial cultures was carried out by the "Lawn" method on a special medium by Mueller Hinton, produced by the Indian company HeiMidia.

In parallel with this, MS dilutions were prepared in separate sterile vials at concentrations: 0.001%; 0.005%; 0.01% and 0.05%. After that, sterile discs (from filtered paper) were taken, soaked in methylene blue and placed in Petri dishes with microbial cultures. In this way, 5 sets of cups were prepared, with 1 set of cups being processed i.e. exposed to red color (PDT), in the following exposures: 1-3-5-10 min. Then all cups were closed and transferred to a thermostat at 37 ° C for 18-24 hours.

The source of LED radiation was a certified installation of domestic production "FDU-1" with a radiation range of 630 ± 20 nm, corresponding to the absorption spectrum of methylene blue.

## Result and discussion

In the first set of microbial culture dishes: Staph. aureus, Staph. epidermidis and Escher. coli, on which discs soaked in methylene blue in different concentrations were applied: 0.001% - 0.005% - 0.01% - 0.05%, after which the dishes were closed and placed in a thermostat at 37 ° C for 24 hours. After the end of the exposure, the cups were removed from the thermostat and the data obtained were analyzed. In these groups of microbiological studies, we noted a negative result, i.e. methylene blue at these concentrations did not have an antibacterial effect on the tested microbes (Table 1)

***Table 1***

***The results of the sensitivity of microbes to various concentrations of methylene blue.***

***(M ± m) mm***

| № | Microbes | Mytilene Blue Concentration | | | | |
|---|---|---|---|---|---|---|
| | | 0,001% | 0,005% | 0,01% | 0,05% | Физ р-р (К) |
| 1 | Staph. aureus | 0 | 0 | 0 | 0 | 0 |
| 2 | Staph. epidermis | 0 | 0 | 0 | 0 | 0 |
| 3 | Esch. coli | 0 | 0 | 0 | 0 | 0 |

In the second series of studies in sets of Petri dishes with nutrient media, the cultures used were inoculated: Staph. aureus, Staph. Epidermis and Esch. coli. Then the crops were exposed to red light at various exposures: 1-3-5-10 min (Fig. 2).

**Fig. 2.** Analysis of the results obtained after treatment with red light for 1-3 minutes at Sowing St. aureus.

Then the cups were closed and placed in a thermostat for 24 hours at a temperature of 37 ° C. Upon completion, the dishes were removed from the thermostat and the results were analyzed.

During these studies, we found that no antibacterial effect was noted in any dish, i.e. mono-exposure to red light (PDT), regardless of exposure, red light has no antibacterial effect (Table 2).

***Table 2***

***Evaluation of the effect of LED radiation on microbes - with mono-exposure***

| № | Types of microbes | Exposure action (min) | Mytilene Blue Concentration | | | |
|---|---|---|---|---|---|---|
| | | | 0,001% | 0,005% | 0,01% | 0,05% |
| 1 | Staph. aureus | 1 | 0 | 0 | 0 | 0 |
| | | 3 | 0 | 0 | 0 | 0 |
| | | 5 | 0 | 0 | 2,0±0,1 | 3,0±0,1 |
| | | 10 | 0 | 0 | 2,0±0,1 | 3,0±0,1 |
| 2 | Staph. epidermis | 1 | 0 | 0 | 0 | 0 |
| | | 3 | 0 | 0 | 0 | 0 |
| | | 5 | 0 | 0 | 1,0±0,1 | 2,0±0,1 |
| | | 10 | 0 | 0 | 2,0±0,1 | 1,0±0,1 |
| 3 | Esch. coli | 1 | 0 | 0 | 0 | 0 |
| | | 3 | 0 | 0 | 0 | 0 |
| | | 5 | 0 | 0 | 2,0±0,1 | 3,0±0,1 |
| | | 10 | 0 | 0 | 3,0±0,1 | 3,0±0,1 |

Note: units are in mm of microbial growth inhibition zone. (M ± m) mm

The most interesting data we obtained in the third group of microbiological studies. In these experiments, microbial cultures (3 species) were inoculated in Petri dishes with Mueller Hinton's nutrient medium, after which disks were introduced into them, which were

saturated with methylene blue solutions in various concentrations (0.001% - 0.005% - 0.01% - 0.05 %), after which all these cups were exposed to red light in different exposures (1-3-5-10 min) (Fig. 3, 4).

**Fig. 3** Analysis of the received results after processing1-3 min when sowing St. Epidermidis.

**Fig. 4.** Analysis of the obtained results after inserting discs with MS and red light treatments 1-3 min for E. coli.

Then the cups were closed and placed in a thermostat at 37 ° C.

After the expiry of the exposure period, the cups were removed from the thermostat, and the analysis of the data obtained was carried out (Table 3).

The table shows that the microbial culture Staph. aureus with the introduction of methylene blue in dilutions of 0.001% and 0.005%, and the treatment with red light was not antibacterial. Although in dilutions of methylene blue in 0.01% and 0.05%, when exposed to red light in an exposure of 1-3 min, traces of antibacterial activity appeared (5.2 ± 0.1 and 7.0 ± 0.2 mm), but they not reliable (Fig. 5).

Fig. 5. Analysis of the received results and after processing red light – 3 minutes after sowing E. coli, antibacterial no action.

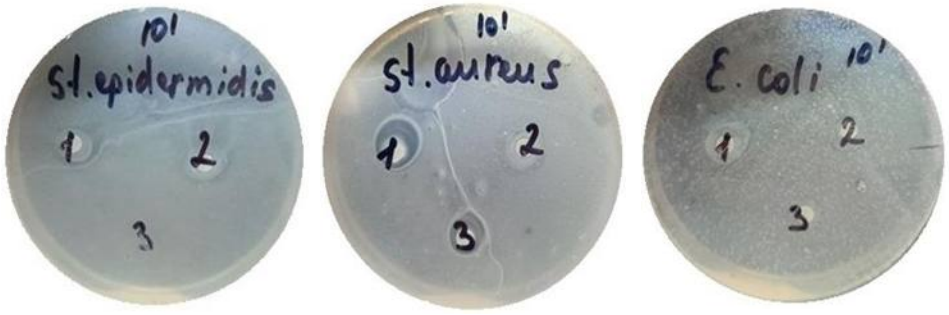
However, in Petri dishes where the dilutions of methylene blue were 0.01% -0.05% after exposure to red light for 5 and 10 minutes, the antibacterial effect significantly increased, so after 5 minutes of exposure to red light methylene blue at a concentration of 0.01%, it was 20.0 ± 0.4 mm, and with a methylene blue concentration of 0.05% and exposure to red

light for 10 minutes, it increased even more and amounted to 23.3 ± 0.5 mm (Fig. 6-7 ).

A B C

**Fig. 6.** Antibacterial activity of MS at a concentration of 0.01 and 0.05 and treatment with red light for 5 min

a) E. coli b) St. aureus c) St. epidermidis.




A B C

**Fig. 7.** Antibacterial activity of MS at a concentration of 0.01 and 0.05 and red light treatment for 10 min.

a) St. epidermidis b) St. aureus c) E. Coli

The next group of studies was devoted to the effect of methylene blue at various concentrations and treatment with red light when inoculating a microbial culture of Staph. epidermis. The data obtained from these studies are presented in tables 3 and 4.

**Table 3** Characteristics of PDT Effect on Sensitivity microbes to methylene blue.

| № | Types of microbes | Timing of light action (min) | Mytilene Blue Concentration | | | | |
|---|---|---|---|---|---|---|---|
| | | | 0,001% | 0,005% | 0,01% | 0,05% | Физ р-р (К) |
| 1 | Staph. aureus | 1 | 0 | 0 | 3,0±0,1 | 4,0±0,1 | 2 |
| | | 3 | 0 | 0 | 5,0±0,2 | 4,0±0,1 | 1 |
| | | 5 | 0 | 0 | 12,0±0,3 | 18,0±0,4 | 0 |
| | | 10 | 0 | 0 | 15,0±0,2 | 22,0±0,5 | 1 |
| 2 | Staph. epidermis | 1 | 0 | 0 | 2,0±0,1 | 4,0±0,1 | 2 |
| | | 3 | 0 | 0 | 5,0±0,1 | 6,0±0,1 | 1 |
| | | 5 | 0 | 0 | 17,0±0,5 | 19,0±0,5 | 1 |
| | | 10 | 0 | 0 | 16,0±0,3 | 20,0±0,5 | 1 |
| 3 | Esch. coli | 1 | 0 | 0 | 2,0±0,1 | 2,0±0,1 | 2 |
| | | 3 | 0 | 0 | 3,0±0,1 | 4,0±0,1 | 1 |
| | | 5 | 0 | 0 | 10,0±0,2 | 11,0±0,2 | 1 |
| | | 10 | 0 | 0 | 11,0±0,2 | 13,0±0,2 | 1 |

*Note: units are in mm of microbial growth inhibition zone. (M ± m) mm.*

**Table 4** Microbial sensitivity to methylene blue after exposure to red light.

| № | Types of microbes | Mytilene Blue Concentration | | |
|---|---|---|---|---|
| | | Exposure k/c (min) | 0,01% | 0,05% |
| 1 | Staph. aureus | 5 | 14,0±0,3 | 16,0±0,2 |
| | | 10 | 13,0±0,2 | 18,0±0,3 |
| 2 | Staph. epidermis | 5 | 17,0±0,3 | 18,0±0,3 |
| | | 10 | 11,0±0,2 | 15,0±0,2 |
| 3 | Esch. coli | 5 | 10,0±0,1 | 11,0±0,1 |
| | | 10 | 10,0±0,1 | 10,0±0,1 |

*Note: units are in mm of microbial growth inhibition zone. (M ± m) mm.*

It can be seen from the table that methylene blue after treatment of a plate with crops with red light in an exposure of 1-3 min, has some antibacterial activity, but these data are not reliable.

At the same time, 0.01% methylene blue on Staph. epidermis after treatment with red light for 5 minutes significantly increased its antibacterial activity, which was 17.2 ± 0.2 mm, and at a methylene blue concentration of 0.05%, these data increased even more and amounted to 19.1 ± 0.3 mm.

When conducting the same research, when studying the culture of Esch. coli has been installed. These data are presented in table 3, from which it can be seen that methylene blue at a dilution of 0.01% and 0.05% and treatment with red light in an exposure of 1-3 minutes does not show its antibacterial effect, and the traces that show are unreliable.

However, in the case when methylene blue at a concentration of 0.01% and treatment of crops with red light, the antibacterial effect slightly increased and amounted to 11.3 ± 0.2 mm. At the same time, methylene blue at a concentration of 0.05% and processing of crops of microbes of the Esch culture. coli with red light in an exposure of 10 min slightly increased the antibacterial effect, which was 13.1 ± 0.2 mm.

## FINDINGS

1. Thus, the analysis of the conducted microbiological studies dedicated to the assessment of the antibacterial activity of methylene blue in various dilutions (0.001% -0.005% -0.01% -0.05%) after treatment with red light at various exposures (1-3-5-10 min) when sowing: Staph. aureus, Staph. Epidermis, Esch. coli isolated from the contents of the hernial sac and peritoneal exudate was found:
2. At microbiological crops of hernial waters in patients with strangulated abdominal hernias and peritonitis, about ten species of various microbes were isolated. Moreover, the bulk of these microbes is made up of the families: Micrococcaceae and Enterolacteriaceae. At the same time, staphylococci and Escherichia constitute the largest sowing in quantitative terms
3. It is quite obvious that one of the most serious problems of modern medicine is a significant increase in resistance to many antibiotics, while this resistance is especially high in staphylococci to β-lactam antibiotics. Taking these positions into account, it is quite advisable to develop new approaches to the creation of drugs (antiseptics) that would have a wide range of antibacterial activity.
4. The conducted microbiological studies showed that the concentration of methylene

blue solutions: 0.001% - 0.005% - 0.01% - 0.05% in the study of sensitivity, taken in the experiment: Staph. aureus, Staph. epidermis, Esch. coli did not have an antibacterial effect, that is, they do not have an antimicrobial effect.

5. When exposed to microbes in Petri dishes and treated with red light at exposure 1-3-5-10 minutes, there is also no positive effect, that is, the growth of microbes is not delayed.
6. However, when inoculating the same microbes in Petri dishes, applying methylene blue in the form of discs at a concentration of 0.01% and 0.05% and treating them with red light at an exposure of 5 and 10 minutes has a completely positive antibacterial effect when the indicator of the growth inhibition zone microbes is 20.3 ± 0.5 mm. It should be noted that this complex has a more pronounced antibacterial effect on gram-positive microbes than on gram-negative ones.

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## MORPHOLOGICAL SUBSTANTIATION OF THE EFFICIENCY OF PHOTODYNAMIC THERAPY IN EXPERIMENTAL PERITONITIS IN MULTIPLE PERITONITIS

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✓ ***Resume***

***The article presents the results of experimental studies to study the effect on the parietal and visceral peritoneum of intact animals and with simulated widespread peritonitis on white outbred rats weighing 140-180 g. It was found that methylene blue at a concentration of 0.05% in intact animals after exposure for 5 minutes causes desquamation and small foci of necrosis of mesothelial cells, and with peritonitis against the background of photodynamic therapy, it has a beneficial effect on reparative processes in connection with the formation of singlet oxygen.***

***The histological picture of the peritoneum in rats after the sanitation of the abdominal cavity by PDT at all stages of the study was qualitatively better than in the representatives of the group during the sanitation of the abdominal cavity with 0.02% chlorhexidine solution. The authors, on the basis of the results of morphological studies, recommend the developed method of photodynamic sanitation of the abdominal cavity to be introduced into clinical practice.***

***Key words: methylene blue, chlorhexidine, peritoneum, peritonitis, photodynamic therapy, singlet oxygen.***

## EKSPERIMENTAL PERITONITISDA FOTODINAMIK TERAPIYA SAMARALIGINING MORFOLOGIK ASOSIYLASH

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Respublika patologik markazi

✓ ***Rezyume***

***Maqolada soglom hayvonlarning parietal va visseral peritoniga va 140-180 g og'irlikdagi oq tanli kalamushlarda sunniy hosil qilingan keng tarqalgan peritonitga ta'sirini o'rganish bo'yicha eksperimental tadqiqotlar natijalari keltirilgan. 5 daqiqa davomida ta'sir o'tkazgandan so'ng sog'lom hayvonlar tarkibida 0,05% konsentratsiyali metilen ko'k, desquamation va mezoteliya hujayralarining kichik nekroz o'choqlarini keltirib chiqaradi va fotodinamik terapiya fonida peritonit bilan bu reparativ jarayonlarga foydali ta'sir ko'rsatadi. singlet kislorod hosil bo'lishi bilan bog'liqlik. Tadqiqotning barcha bosqichlarida PDT tomonidan qorin bo'shlig'ini sanitarizatsiya qilishdan keyin kalamushlarda peritonning peritonning histologik surati qorin bo'shlig'ini 0,02% xlorheksidin eritmasi bilan sanitariya qilish paytida guruh vakillariga qaraganda sifat jihatidan yaxshiroq edi. Mualliflar morfologik tadqiqotlar natijalariga ko'ra ishlab chiqilgan qorin bo'shlig'ini fotodinamik sanitariya usulini klinik amaliyotga kiritishni tavsiya etadilar.***

***Kalit so'zlar: metilen ko'k, xlorheksidin, periton, peritonit, fotodinamik terapiya, singlet kislorod.***

# МОРФОЛОГИЧЕСКОЕ ОБОСНОВАНИЕ ЭФФЕКТИВНОСТИ ФОТОДИНАМИЧЕСКОЙ ТЕРАПИИ ПРИ РАСПРОСТРАНЕННОМ ПЕРИТОНИТЕ В ЭКСПЕРИМЕНТЕ

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✓ ***Резюме***

***В статье представлены результаты экспериментальных исследований по изучения воздействия на париетальную и висцеральную брюшину интактных животных и с моделированным распространенным перитонитом на белых беспородных крысах весом 140-180 гр. Установлено, что метиленовая синь в концентрации 0,05% у интактных животных при экспозиции 5 минут вызывает десквамацию и небольшие очаги некроза мезотелиальных клеток, а при перитоните на фоне фотодинамической терапии воздействует благоприятно на репаративные процессы в связи с образованием синглетного кислорода. Гистологическая картина брюшины у крыс после проведения санации брюшной полости методом ФДТ на всех этапах исследования была качественно лучше, чем у представителей группы при санации брюшной полости 0,02% раствором хлоргексидина. Авторы на основании полученных результатов морфологических исследований рекомендуют разработанный метод фотодинамической санации брюшной полости внедрить в клиническую практику.***

***Ключевые слова: метиленовая синь, хлоргексидин, брюшина, перитонит, фотодинамическая терапия, синглетный кислород.***

## Relevance

Despite the achievements of modern medical science, the issues of prevention, diagnosis and treatment of peritonitis remain relevant. Mortality in acute peritonitis varies from 32.4-45.5% to 50- 90% [2,7,9]. Various microorganisms play an essential role in the etiology of peritonitis. In the vast majority of cases, peritonitis is the result of autoinfection, which is usually polymicrobial in nature [3,8,10].

It is known that the successful result of treatment of diffuse purulent peritonitis depends only 15-20% on the effectiveness of antibacterial therapy, and the remaining 80% are associated with adequate surgical tactics, including full sanitation of the abdominal cavity [8]. It should be noted that the question of the choice of the sanitizing solution remains one of the most controversial, the discussion about the methods of intraoperative sanitation of the abdominal cavity continues to this day [6,7], and according to Gostishchev G, it is advisable to use those solutions that can be administered parenterally [5].

In recent years, the method of photodynamic therapy has been introduced into surgical practice in connection with the bactericidal properties of photosensitizers associated with the formation of singlet oxygen against the background of photochemical reactions. There are publications on the use of photodithiazine, chlorophyllipt, dimegin, etc. as photosensitizers. The problem of the choice of a photosensitizer for PDT [10], as well as the study of their effect on the ultrastructural elements of the peritoneum in peritonitis [4,7], remains urgent. However, studies on the effect of methylene blue (MS) on the ultrastructure of the healthy peritoneum, and in experimental peritonitis on the inflamed peritoneum, we have not seen.

In this regard, **the purpose of our study was:** to study the effect on the ultrastructural elements of the visceral and parietal peritoneum of methylene blue, 0.02% chlorhexidine, LED radiation and photodynamic therapy in normal conditions and in experimental peritonitis.

## Material and methods

The experiments were divided into 3 stages:

1) to study the histological structure of the visceral and parietal peritoneum in healthy experimental animals;

2) to study the effects of methylene blue, chlorhexidine and LED radiation on the intact peritoneum separately;

3) to study the effect of 0.02% chlorhexidine solution and photodynamic therapy, i.e., LED radiation and methylene blue at a concentration of 0.05% per peritoneum in experimental peritonitis in a comparative aspect. To create a model of acute experimental widespread purulent peritonitis, we used the technique of Yu.Yu. Blinkov, (RF Patent No. 2338265) [1].

In the group of animals with experimental peritonitis during the operation, the abdominal cavity was drained with suction, then washed with saline. 3 ml of 0.05% methylene blue

solution was poured into the abdominal cavity with a syringe and left for 5 minutes, then the solution was removed by suction and PDT was started. The laparotomic wound was sutured through all layers with silk, the animals were marked and placed in standard vivarium conditions. The animals were taken out of the experiment by decapitation immediately after their introduction into ether anesthesia.

As a light source for the PDT session, a domestic-made LED installation "FDU-1" with an output power of 100 mW / cm2, a wavelength of 630 ± 20 nm in a continuous red optical range was used. The energy density during the LED irradiation session was 25-35 J / cm2, the exposure time was 3-5 minutes.

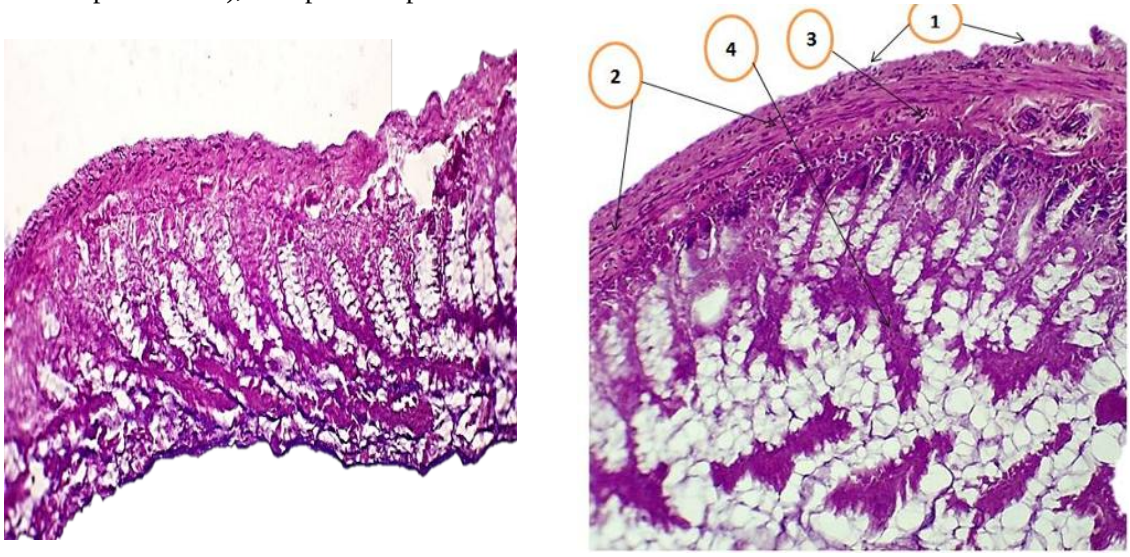
In the control group, the abdominal cavity was sanitized by a similar method as in the main group, then 0.02% chlorhexidine solution was poured into the abdominal cavity, draining. The laparotomic wound was sutured through all layers with silk, the animals were marked and placed in standard vivarium conditions.

To study the ultrastructural elements of the visceral and parietal peritoneum, the intestine with the visceral peritoneum in rats was taken in the area of the ileocecal junction (with the visceral peritoneum), the parietal peritoneum in the lateral surface of the abdomen. Pieces of 0.5-1.0 cm in size of the small and large intestines of all experimental animals were fixed in 10-12% neutral formalin with a volume of 0.5 cm3, then washed in running water, dehydrated in alcohols of increasing concentration, impregnated with xelol and embedded in paraffin.

Sections were stained with hematoxylin and eosin using a conventional method, fixed with Canadian balsam, and then covered with glass. When viewing and describing the micro preparations, an electronic binocular microscope CYAN was used. Model DN-30OM. With 34 MP MICROSCOPE Camera attachment, ocular-objective magnification from x = 4x10x0.5, x = 10x0.25x0.5, x = 40x0.65x0.5.

**Result and discussion**

At the first stage of our research, we studied the ultrastructural structure of the parietal and visceral peritoneum of healthy outbred white rats. The histological visceral layer consists of mesothelial cells (they originate from a single-layer squamous epithelium). Mesothelial cells produce a secretion - serous fluid (synovial fluid). It provides free sliding between organs and ensures normal intestinal motility. Figure 1A shows the small intestine.



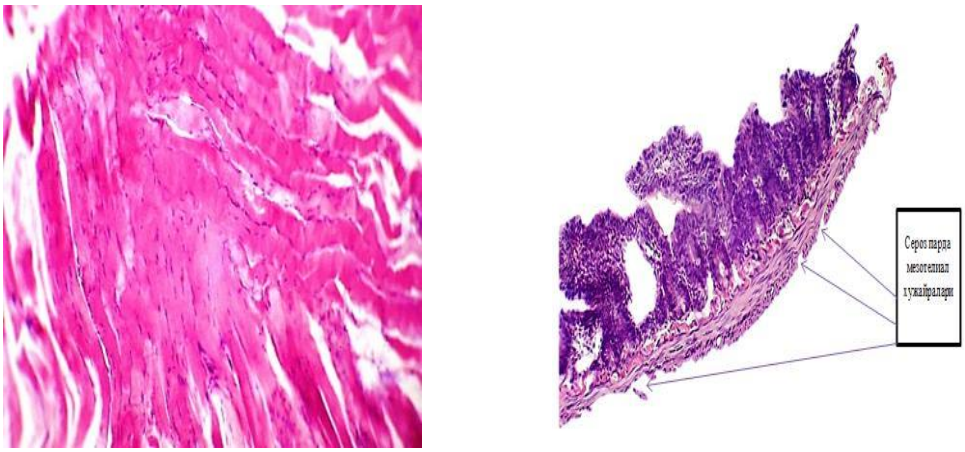

**A** **B**

***Figure 1A.*** *Normal small intestine with all layers. Serous membrane, muscle and mucous membranes (with its own plate). G / E coloring. Magnification 10X10.*

***Figure 1B.*** *Normal small intestine. Mesothelial cells of serous foliage (1), muscular membrane in the longitudinal and transverse directions (2), intrinsic plastic of the mucous membrane (3), villi of the mucous membrane (4). G / E coloring. Magnification 10X10*

Figure 1B shows a normal small intestine with mesothelial cells; the muscularis is presented in the longitudinal and transverse directions.

In the striated muscle of the anterior abdominal wall, uneven interstitial edema of the muscular plexuses is noted (Fig. 2A).

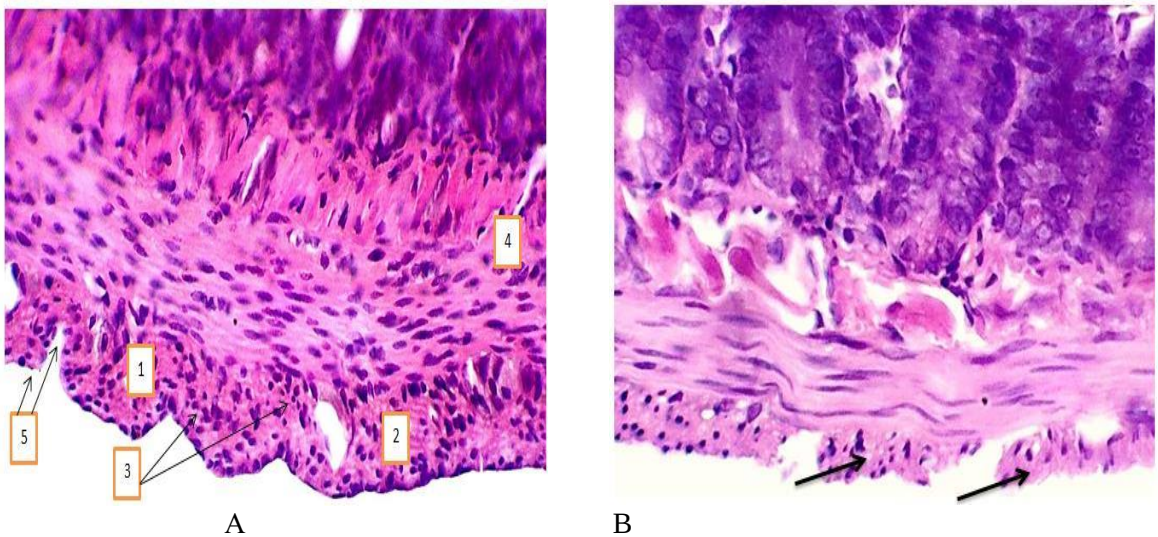



**A** **B**

***Figure 2A.*** *The striated muscle of the anterior abdominal wall. Uneven interstitial plexus edema. The cross-striping of muscle cells is preserved. Some cores are enlarged. G / E coloring. Magnification 10X10.*

***Figure 2B.*** *Small intestine. Serous membrane of different thickness. The blood vessels are full-blooded. The mesothelial cells of the serous membrane have different textures. Desquamation of focal mesothelial cells. G / E coloring. Magnification 10X10.*

At stage 2, the effect of 0.05% MS solution on healthy peritoneum (visceral and parietal) of intact animals was studied. MS was injected into the abdominal cavity by puncture of the abdomen in its lower floor with a 3 ml syringe. Due to the fact that MS is used in medicine as an antiseptic and is also an oxidant, it causes some changes in organs and tissues. So, when MS is injected into the abdominal cavity, the mucopolysaccharides of the serous fluid interact and promotes the formation of acidic glycosaminoglycans. In this regard, the number of mesothelial cells decreases, the latter are labile cells (actively multiplying). As a result, MS begins to exert cytostatic and cytotoxic effects. These changes are presented in Figures 2B, 3A.

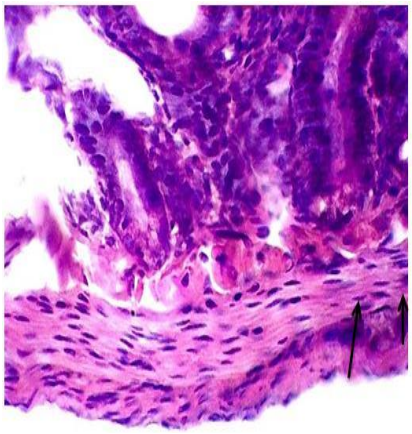



A B

***Figure 3A.*** *The impact of MS on the serous membrane of the small intestine is marked by desquamation and necrosis of mesothelial cells, in defective places, proliferation and uneven arrangement of mesothelial cells are observed.*

***Figure 3B.*** *Erosive-necrotic changes in the serous membrane of the small intestine under the influence of MS. G / E coloring. Magnification 60X10.*

*There are multiple recovery processes in the foci of desquamation (3B, 4A). They are indicated by arrows. In the patient's own plastics, uneven edema is noted, in plastics of the connective tissue, fibrinoid swelling and focal fibrinoid necrosis. G / E coloring. Magnification 40X10.*



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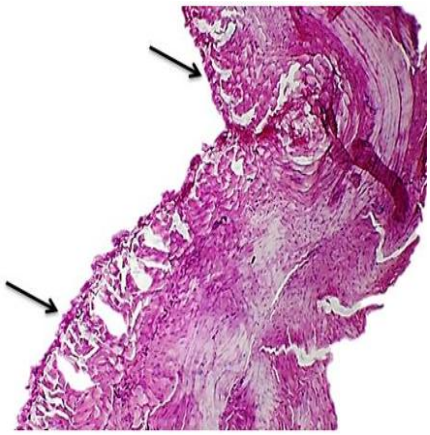
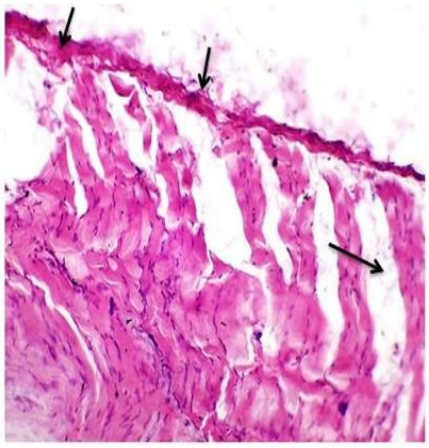


B

***Figure 4A.*** *In the bare surfaces of the serous membrane of the small intestine, under the influence of MS, scar surfaces of transformed fibroblasts are formed. They are shown by arrows.*

***Figure 4B.*** *The striated muscle of the anterior abdominal wall. On the side of the parietal peritoneum, there are multiple foci of fibrinoid necrosis. Indicated by an arrow. Dystrophic changes are observed in the striated muscles, the transverse is lost. G / E coloring. Magnification 10X10.*

Figures 4B - 5A show that MS on the parietal peritoneum of healthy animals cause fibrinoid necrosis; however, below ultrastructural changes in animals with peritonitis will be presented, when MS, on the contrary, enhances proliferative processes.



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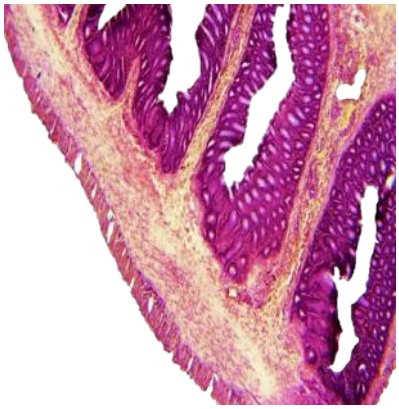


B

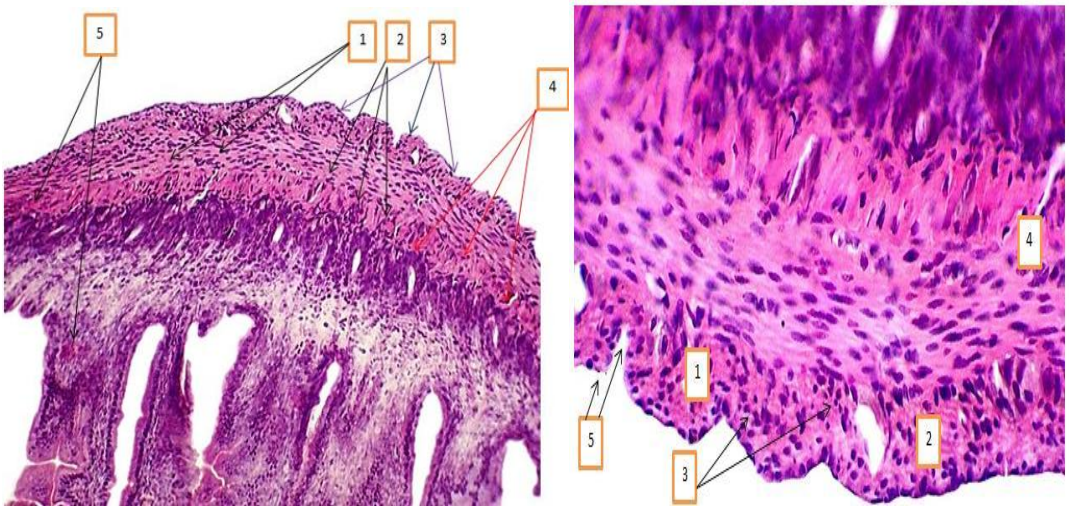
***Figure 5A.*** *In the parietal peritoneum (in the structures of the basal layer of fine-fibrous connective tissue), fibrinoid swelling, desquamation of mesothelial cells are noted, they are indicated by arrows, there are interstitial edema of different sizes between the muscle bundles, different staining of the dystrophic altered cytoplasm. G / E coloring. Magnification 40X10.*

***Figure 5B.*** *Colon after exposure to PDT with MS. The serous membrane contains many tortuous and hyperplastic mesothelial cells (1). The muscular membrane of the same texture, not pronounced interstitial edema (2). The mucous membrane and its own plate are full-blooded. In the general background, the histtioarchitectonics of the tissue is absolutely unchanged.*

Thus, in healthy experimental animals, when MS is injected into the abdominal cavity, a focal one is observed on the surface of the serous membrane, or massive foci of desquamation are determined in places of a large accumulation of MS. In the blood vessels of the visceral peritoneum there is uneven plethora, on the basal plate there are bare areas, the transformation of macrophages into fibroblasts and the formation of adhesions, in the vessels of muscles there is uneven plethora, dystrophic changes in the muscles, in the lamina propria there is interstitial edema, foci of mucoid swelling in the vasculature.

**At the 3rd stage of the study**, we studied morphological changes in the parietal and

visceral peritoneum under the influence of PDT with MS in experimental peritonitis (Fig. 5B, 6A).




А Б

***Figure 6A.*** *Condition after PDT with MS. On the cut of the small intestine. The visceral peritoneum is of varying thickness, clearly basophilic. Interstitial edema to varying degrees (1). Full-blooded capillaries (2). Increased proliferation of (3) mesothelial cells. Basement membrane of uneven thickness (4). There is obvious plethora in the muscle layer and in the lamina propria (4).*

***Figure 6B.*** *Visceral peritoneum after PDT with MS. There is plethora in the vessels of the visceral peritoneum (1). Intensive proliferation of mesothelial cells of the visceral peritoneum (2). A group of not yet formed mesothelial cells (3). Congestion in the lamina propria of the muscular and mucous membranes (4). Due to proliferation, the surface is tortuous. G / E coloring. Magnification 10X10.*

Thus, under the influence of PDT with MS in experimental peritonitis, the following changes were revealed:

firstly, due to the release of singlet oxygen during a photochemical reaction, it can damage the membranes of any cells and cause a necrotic process.

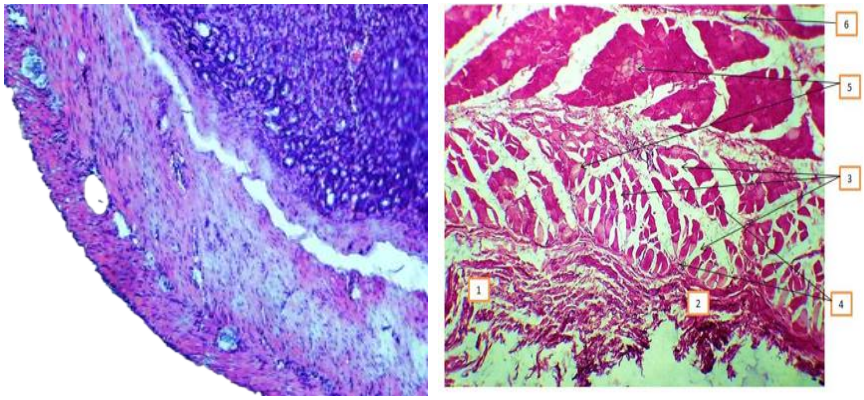
If a cell contains a large number of mitochondria, singlet oxygen is involved in the Krebs cycle and utilized by mitochondria. These properties are mainly observed in organs formed (parenchymatosis) from the epithelial cell. It is due to the fact that mesothelial cells by origin are epithelial in nature, they are not significantly damaged and due to the increase in the proliferative properties of the mesothelial layer cell, proliferative processes occur. Their number is increasing, they are multi-row and one-story (Fig. 6A, 6B);

Secondly, due to the release of singlet oxygen from the sensitized molecule, the membranes of the infectious agent are damaged and, as a result, the inflammatory process fades away;

Thirdly, fibroblasts, the main component of which is connective tissue, by origin, which are mesenchymal tissues, containing a small number of mitochondria, their resistance to PDT and a decrease in proliferation, the plate of mesothelial cells thickens (Fig. 6A);

**Fourthly**, there is a decrease in the activity of the inflammatory process; in the lamina propria of the muscular and mucous membrane, a reaction of macrophageal infiltration is noted (Fig. 6A, 6B). The accumulation of basophilic stained cells is determined; fifthly, the exudative phase of inflammation fades away, since reparative processes (restoration of damaged tissues) are enhanced under the influence on the surface of damaged tissues.

Morphological changes in the parietal and visceral peritoneum after the introduction of 0.02% chlorhexidine solution into the abdominal cavity were as follows (Fig. 7A, 7B):




А Б

***Figure 7A.*** *Part of the colon. Serous membrane (visceral leaf), the surface is uneven, tortuous (1). There are many foci of neutrophilic infiltration between the muscular membrane (2). There is swelling in the lamina propria of the mucous membrane (3). In the mucous and submucosal layers vascular congestion.*

***Figure 7B.*** *The striated muscle and parietal peritoneum after exposure to 0.02% chlorhexidine solution. Components of the parietal peritoneum: destruction in fiber structures, disorganization, necrosis (1). Congestion in the vessels (2). In the interstitium of muscle tissue, uneven edema (3), in Andy's muscle plexuses, foci of emerging foci of fragmentation and decomplexation are determined (4), myocytes are focally chromophobically stained (5), zones of forming thin-fibrous connective tissue are determined in interstitial spaces (6).*

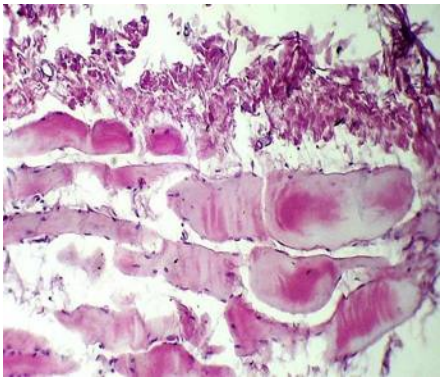


***Figure 8.*** *Changes after exposure to chlorhexidine. Disorganization and destruction of the components of the parietal peritoneum. The muscular plexuses lose their striation. The cells are chromophobic stained. Incession is unevenly edematous. In the interstitium, fine-fibrous connective tissue connective tissue is formed. Myocyte nuclei are reduced. The foci of lymphocytic infiltration are determined.*

Rom the presented figures 7B, 8 it follows that 0.02% chlorhexidine solution in healthy animals in the parietal peritoneum causes destruction in fiber structures, disorganization and necrosis. In the muscular plexuses, the zones of forming foci of fragmentation and decomposition are determined. The muscular plexuses are likely to be affected due to the absorption of chlorhexidine. It should be noted that in the work of S.A. Pusty. it was shown about the toxic effect of 0.05% chlorhexidine solution on the parietal and visceral peritoneum, even on the functional state of the liver and spleen [5].

Thus, in healthy experimental animals, when MS is injected into the abdominal cavity, a focal one is noted on the surface of the serous membrane, especially in places of a large accumulation of MS, massive foci of desquamation are determined.

Meanwhile, with experimental peritonitis, i.e. with a damaged peritoneum, due to the formation of singlet oxygen against the background of a photochemical reaction, cell membranes can be damaged, however, if the cell contains a large

number of mitochondria, oxygen is involved in the Krebs cycle and is utilized by mitochondria. These properties are mainly observed in organs formed from the epithelial cell. Mesothelial cells are epithelial in origin and contain a large number of mitochondria, and in this regard, proliferative processes in the cells of the mesothelial layer are activated. Consequently, mesothelial cells are less susceptible to damage.

The results of morphological studies clearly confirm the differences in the results of intraoperative sanitation of the abdominal cavity and treatment of experimental fecal peritonitis in rats with PDT using MS in comparison with the group with sanitation with 0.02% chlorhexidine solution. The histological picture of the peritoneum in rats after abdominal sanitation by PDT at all stages of the study was qualitatively better than in the representatives of the group after abdominal sanitation with 0.02% chlorhexidine solution. Moreover, dystrophic and destructive changes in the mesothelial layer, edema and vascular disorders in the main group are less pronounced.

**Findings**

1. Methylene blue and LED radiation in the red range with a wavelength of 630 ± 20 nm, with a power density of 100 mW / cm2, an energy density of 25-35 J / cm2, an exposure duration of 3-5 minutes, individually and in combination, cause desquamation, plethora vessels of the visceral and parietal peritoneum of intact animals, but the mesothelial cells contain a large number of mitichondria and they utilize singlet oxygen, and therefore the damage is not significant. Moreover, proliferative processes are induced in the cells of the mesothelial layer.
2. Aqueous 0.02% chlorhexidine solution, when administered into the abdominal cavity of animals, has a damaging effect on the visceral and parietal peritoneum. This is expressed in the following: destruction of fiber structures, disorganization, necrosis, plethora in the vessels, uneven edema in the muscular plexuses, and in the plexuses of Andy, foci of emerging foci of fragmentation and decomplexation are determined.
3. In conditions of acute experimental widespread purulent peritonitis, photodynamic sanitation of the abdominal cavity with methylene blue at a concentration of 0.05% with LED radiation with a wavelength of 630 ± 20 nm, with a power density of 100 mW / cm2, an energy density of 25-35 J / cm2, duration
4. Exposure 3-5 minutes showed that the histological picture of the peritoneum in dynamics is better with PDT in comparison with 0.02% chlorhexidine solution.The availability of methylene blue, the reliability, the simplicity of the method, the exclusion of the damaging effect of the combination of photodynamic action with MS allows us to conclude that the method of photodynamic sanitation of the abdominal cavity can be introduced into clinical practice.

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# MORPHOFUNCTIONAL DISTURBANCES OF CELL MEMBRANES IN UREROLOGICAL DISEASE COMPLICATED BY OBSTRUCTIVE PYELONEPHRITIS IN EXPERIMENT

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✓ ***Resume***

***Currently, the problem of urolithiasis and urinary tract infection in childhood, especially in hot climates, remains in the focus of pediatric urology.***

***Purpose of the research: To study morphofunctional disorders of cell membranes in urolithiasis complicated by obstructive pyelonephritis in experiment.***

***Material and methods: Experimental studies were carried out on 65 (5-6 months old) male rabbits of the "chinchilla" breed, weighing 3000-3500 g. All animals were divided into 2 groups: group 1, EOP, against the background of traditional treatment - 30 rabbits; Group 2, EOP, against the background of metabolic treatment - 35 rabbits.***

***Results and discussion: In experimental animals, on day 15 without treatment, glomeruli plethora is observed, the epithelium of the proximal and distal tubules is flattened, and the brush border is reduced in places. In 3 months after metabolic therapy in animals, the structure is mosaic, along with destructively altered areas, they are revealed with a normal structure. In 6 months after the start of metabolic treatment, the main part of the renal tissue has a normal structure, areas with destructively altered nephron tubules are relatively less often visible, and sclerosis is almost not detected.***

***Key words: morphofunctional disorders of cell membranes in urolithiasis, complicated obstructive pyelonephritis, experimental studies***

# МОРФОФУНКЦИОНАЛЬНЫЕ НАРУШЕНИЯ КЛЕТОЧНЫХ МЕМБРАН ПРИ МОЧЕКАМЕННОЙ БОЛЕЗНИ ОСЛОЖНЕННОЙ ОБСТРУКТИВНОМ ПИЕЛОНЕФРИТОМ В ЭКСПЕРЕМЕНТЕ

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✓ ***Резюме***

***В настоящее время проблема мочекаменной болезни и инфекция мочевого тракта в детском возрасте, особенно в регионах жаркого климата, продолжает оставаться в центре внимания детской урологии.***

***Цель исследования: Изучить морфофункциональные нарушения клеточных мембран при мочекаменной болезни осложненной обструктивном пиелонефрите в эксперименте.***

***Материал и методы: Экспериментальные исследования проведены на 65 (5-6 месячных) кроликах-самцах породы «шиншилла», массой 3000-3500 г. Все животные были распределены на 2 группы: 1-группа, ЭОП, на фоне традиционного лечения - 30 кроликов; 2-группа, ЭОП, на фоне метаболитного лечения - 35 кроликов.***

***Результат и обсуждения: У опытных животных на 15 день без лечения наблюдается полнокровие клубочков, эпителий проксимальных и дистальных канальцев уплощен, щеточная каемка местами редуцирована. Через 3 мес. после проведения метаболитной терапии у животных структура мозаична наряду с деструктивно измененными участками выявляются с нормальной структурой. Через 6 мес. после начала метаболитного лечения основная часть почечной ткани имеет нормальную структуру, сравнительно реже видны участки с деструктивно измененными канальцами нефронов, склероз почти не выявляется.***

***Ключевые слова: морфофункциональные нарушения клеточных мембран при мочекаменной болезни, осложненный обструктивный пиелонефрит, экспериментальное исследования***

# EKSPEREMENTDA OBSTRUTIV PIYILONEFRIT BILAN ASORATLANGAN BUYRAK TOSH KASALLIGIDA HUJAYRA MEMBRANALARI MORFOFUNKSIONAL BUZILISHLARI

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✓ ***Rezyume***

***Hozirgi vaqtda bolalar nefrolitiazida, ayniqsa quruq issiq iqlim sharoitida urolitiyoz va siydik yo'li infektsiyasining muammosi urologiyaning diqqat markazida bo'lib kelmoqda.***

***Tadqiqot maqsadi: Obstruktiv pielonefrit bilan asoratlangan urolitiyozdagi hujayra membranalarining morfofunksional buzilishlarini tajribada o'rganish.***

***Material va usullar: ekperemental quyonlar "Shinshilla" zotining 65-35 kunlik (5-6 oylik) erkak quyonlariga eksperimental tadqiqotlar o'tkazildi, quyonlar vazni 3000-3500 g. Barcha hayvonlar 2 guruhga bo'lingan: 1-guruh, eksperimental obstruktiv pielonefrit (EOP), an'anaviy davolash fonida - 30 quyon; Metabolik davolanish fonida 2-guruh, EOP - 35 quyon.***

***Natijalar va tahlillar: Eksperimental hayvonlarda 15-kuni davolashsiz glomeruli ko'pligi kuzatiladi, proksimal va distal tubulalar epiteliysi tekislanadi, joylarda cho'tka chegarasi kamayadi. 3 oydan keyin. hayvonlarda metabolik terapiyadan so'ng, struktura mozaikali bo'lib, halokatli o'zgargan joylar bilan bir qatorda ular normal tuzilish ham aniqlanadi. 6 oydan keyin. metabolik davolash boshlangandan so'ng, buyrak to'qimalarining asosiy qismi normal tuzilishga ega, destruktiv ravishda o'zgartirilgan nefron tubulalari bo'lgan joylar nisbatan kam tez-tez ko'rinib turadi, skleroz deyarli aniqlanmaydi.***

***Kalit so'zlar: urolitiyozda hujayralar membranalarining morfofunktsional buzilishi, murakkab obstruktiv pielonefrit, eksperimental tadqiqotlar***

## Relevance

Currently, the problem of urolithiasis and urinary tract infection in childhood, especially in hot climates, remains in the focus of pediatric urology. [1,2,3,4,5,19,14,15,16]. Environmental pollution, changes in dietary patterns, vitamin deficiencies, increased mineralization of water, etc. [8,9,10,12,18,20,21], led to an increase in the number of children with obstructive pyelonephritis, urolithiasis [7,10,11]. ICD, obstructive pyelonephritis refers to the most severe renal pathology in childhood and adolescence, occupying a leading place in the structure of chronic renal failure, especially in the sclerosing variant [6,20,13].

The study of the action of membrane stabilizers, which perform a coenzyme function in the composition of many enzymes, as well as the study of coordination compounds of individual microelements with organic ligands, seems to be a promising direction in terms of uncovering the molecular mechanisms of the disease and in the development of pathogenetic therapy of ICD, prevention of recurrence of stone formation using metabolic therapy [22.23].

**Purpose of the research:** To study morphofunctional disorders of cell membranes in urolithiasis complicated by obstructive pyelonephritis in experiment.

## Material and methods

Experimental studies were carried out on 65 (5-6 months old) male rabbits of the "chinchilla" breed, weighing 3000-3500 g. All animals were divided into 2 groups:

Group 1, EOP, against the background of traditional treatment - 30 rabbits;

Group 2, EOP, against the background of metabolic treatment - 35 rabbits.

Modeling of experimental obstructive pyelonephritis (EOP) (calcifying damage to cell membranes) was carried out in two stages according to the method of E.F. Yuriev (1979), D. Ishkabulov (1980) with the addition of a modification by the author N. Utegenov (AS USSR No. 456 122 dated 12.09.1988).

The animals of the comparison group underwent traditional therapy, which consisted of eliminating the kink of the ureter, antibacterial therapy using broad-spectrum antibiotics: amikacin, cefexim, cefuroxime, cefamizin 20-50 mg / kg of weight every 6 hours i/m; vitamin C at 20 mg / kg; B1, B6 2 mg / kg once a day i/m for 10 days.

In the (metabolite) group, vitamins and microelements were used against the background of traditional therapy (riboflavin mononucleotide, pyridoxal phosphate, lipoic acid at 2 mg / kg, alphatocopherol acetate - 5 mg / kg, nicotinamide

- 20 mg / kg, calcium pantothenate - 20 mg / kg i/m, copper and zinc sulfate, 5 mg / kg per os, through a gastric tube VUK - 5 mg / kg) i/m according to the method developed by us (rational proposal No. 372 "Method of using metabolite drugs in obstructive pyelonephritis"). The course of treatment for groups 1 and 2 was 30 days. The drugs were administered daily. Studies of experimental animals were carried out in dynamics at 15.30.45 days and after 3 and 6 months. At the indicated time, clinical and biochemical laboratory tests of blood and urine were conducted in rabbits, and a piece of kidney tissue was taken in dynamics under general anesthesia for morphological examination from 60 animals (15 drugs from each group) at various time after treatment. Pieces of renal tissue were fixed with a 12% solution of neutral formalin, Carnoy's fluid, and in absolute alcohol. Paraffin sections with a thickness of 4 μs stained histologically with hemotoxylin-eosin, picrofuchsin according to Van Gieson, Mallory, and histochemically with the Schick reaction according to Hale.

To study the ultrastructural picture of the kidneys, in the dynamics of treatment, freshly obtained biopsies of 1 mm in size were fixed in a 2.5% solution of glutaraldehyde in 0.1 m phosphate buffer at pH 7.4. The tissue dehydrated in alcohol and acetone was filled with a mixture of epon-araltide. Semi-thin (STS) and ultrathin (UTS) sections were obtained on an Ultracut ultramicrotome using a light microscope. The UTS was contrasted in an Ultrasten-2168 instrument (LKB, Sweden) with lead acetate and lead citrate and studied in an H-6000 transmission electron microscope (Hitachi, Japan).

On experimental models with obstructive pyelonephritis, in order to develop a complex method of metabolic therapy in the dynamics of the disease, we conducted morphological and clinical-biochemical studies in 4 groups of animals: 1 - intact, 2 - untreated, 3 - traditional treatment and 4 - metabolic treatment.

**Result and discussion**

In experimental animals, on day 15 without treatment, glomeruli plethora is observed, the epithelium of the proximal and distal tubules is flattened, and the brush border is reduced in places. The tubular lumens is not changed. Electron microscopically, cytopodia are partially reduced in podocytes, in the cells of the proximal tubules, microvilli of irregular length, some in a state of vesiculation. Mitochondria are enlightened, cristae are reduced, and the number of polymorphic bodies increases. The basement membrane is thickened, loosened. In the distal tubules, the mitochondria are swollen; the basement membrane is thickened and loosened. In the lumen of the tubules, desquamated epithelial cells, cell detritus are detected. Around the tubules, the interstitial tissue is edematous, infiltrated, blood vessels are filled with blood; in some places, there is stasis of erythrocytes. The mucous membrane of the pelvis is edematous, full-blooded, infiltrated with polymorphic leukocytes. The epithelium is desquamated in places.

On the 30th day of the experiment, the above-mentioned picture progresses. On the 45-90th day of the experiment, structural changes correspond to obstructive pyelonephritis, which is characterized by glomeruli of different sizes with a sharp swelling of the Shumlyansky-Bowman capsule (their average diameter is 79.8 ± 2.7 μm). In the proximal tubules, the epithelium is vacuolated and flattened. Electron microscopic examination of the cells of the proximal and distal tubules in different states: along with little changed, cells with clear, flattened, sharply swollen mitochondria and fragmented microvilli are revealed.

*Fig. 1. Rabbit kidney of the control group. 30 days without treatment. Vascular glomeruli of various sizes with spasmodic capillaries. The tubules are lined with a flattened epithelium, unevenly expanded. Hematoxylin-eosin staining. Eyepiece 10, ob. 20*

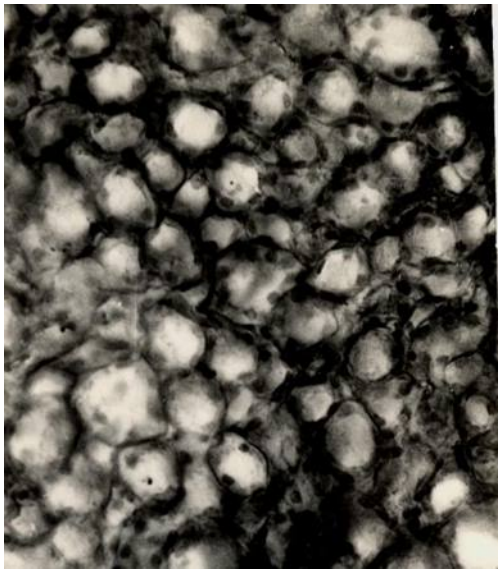

*Figure: 2. Kidney of a rabbit of the control group. 30 days without treatment. Sharply thickened basement membrane of the nephron tubules. Schiff (PAS) reaction is positive. Coloring Schiff (PAS) reaction eyepiece 10, ob. 20*

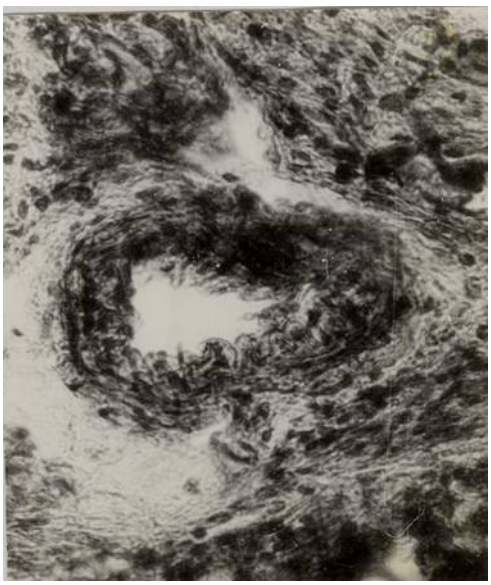

*Fig. 3 Kidney of a rabbit in the control group without treatment for 3 months. Thickening and sclerosis of the vascular wall, perivascular edema and an increase in collagen fibers in the interstitial tissue of the medulla. Staining according to Van Gieson: eyepiece 10, ob. 20.*

*Fig. 4. Rabbit kidney of the comparative group after 6 months treatment. The epithelium of the distal nephron contains polymorphic lysosomes; the folds of the basal plasmolemma are moderately developed The intercellular space is expanded. The basal lamina is moderately thickened, the blood capillary is enlarged.Inc. × 8000*

A similar structure of the kidneys was also revealed 3 months later, after modeling the disease and carrying out traditional treatment. Only a number of tubules have a structure where the epithelium and connective tissue are gradually normalized. The epithelium of such tubules is of moderate electron density, with a well-defined structure of microvilli and endocytic formations.

The basement membrane forms pronounced folds, between which are marked elongated cristae with densely located. The Golgi complex is moderately developed, lysosomes of various sizes and numbers. The basement membrane is of moderate thickness. In the tubules, where the structure of the epithelium is disturbed, the tubular lumens are unevenly expanded; contain destructively altered cells and their fragments. In these tubules, the basement membrane is sharply

thickened. In the intertubular connective tissue, the phenomena of edema, accumulation of lymphocytes were revealed.

After 6 months traditional treatment, signs of chronicity of the disease were noted in the kidneys. Vascular glomeruli have various sizes and shapes, some of them are cleaved, and others are unevenly expanded in the cavity of the renal corpuscles. The proximal and distal tubules are either sharply dystrophic or have a normal nephron structure. In dystrophically altered tubules, the epithelium is vacuolated, flattened; its basement membrane is thickened. The lumen of the tubules is unevenly expanded, contains cellular detritus, extruded epithelium. The stroma between the tubules contains bundles of collagen fibers, the capillaries become smaller. In the preserved vessels, the wall is thickened. Focal leukocyte accumulations are also preserved.

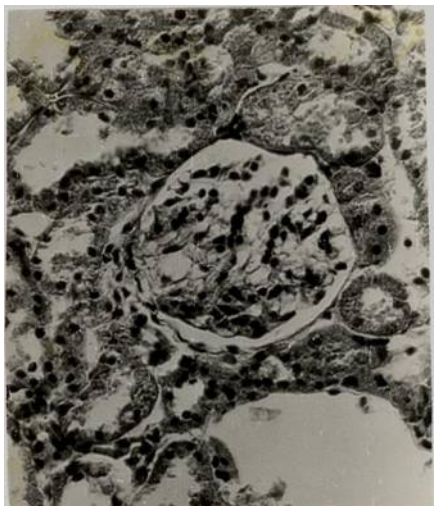

Fig. 5. Rabbit kidney of the main group 45 days after the start of treatment. Irregular plethora of glomeruli, individual tubules of the kidney are cystically dilated, the epithelium is thickened, vacuolated, the brush border is reduced. Hematoxylin-eosin staining. Eyepiece. 10, ob. 20.

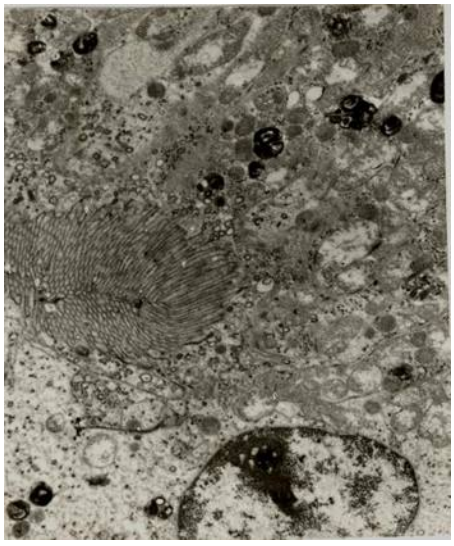

Fig. 6. Rabbit kidney of the main group after 3 months treatment. Pronounced brush border, endocytic vesicles and vacuoles, polymorphic bodies in the cytoplasm of the cells of the proximal tubules. Mitochondria with an enlightened matrix and reduced cristae. Inc. × 12000

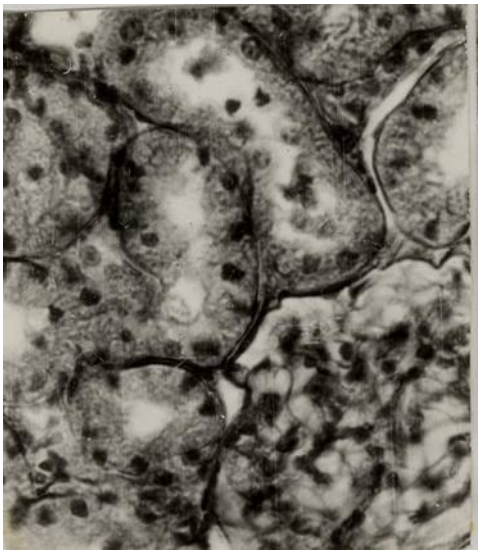

Fig. 7. Rabbit kidney of the main group after 6 months treatment. Almost normal structure of the kidney tubules. In their lumen, there are single listened cells, cell fragments. The capillaries of the vascular glomerulus are moderately dilated. Hematoxylin-eosin staining. Eyepiece 10, ob. 20

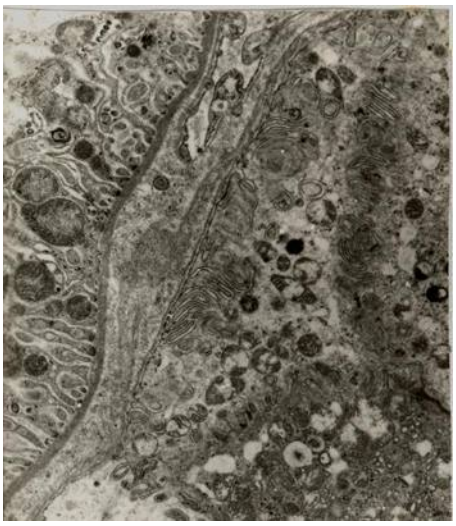

Fig. 8. Rabbit kidney of the main group, after 6 months treatment. Cells of the proximal tubules with pronounced folds of the basal plasmolemma, lysosomes, and numerous polymorphic lysosomes. Inc.12000

After 3 months of metabolic therapy in animals, the structure is mosaic, along with destructively altered areas, they are revealed with a normal structure. In the damaged areas, the tubular lumens are dilated; the cells are atrophic, vacuolated. Extruded cells in the tubular lumen. Between the tubules, the interstitial tissue is edematous, contains areas of sclerosis and erythrocyte stasis. However, there are relatively fewer such tubules than with basic treatment.

In 6 months after the start of metabolic treatment, the main part of the renal tissue has a normal structure, areas with destructively altered nephron tubules are relatively less often visible, and sclerosis is almost not detected.

Electron microscopically, the epithelial cells of the proximal and distal tubules show signs of normalization. The basement membrane is of moderate thickness. The tubular lumens are not dilated. In the interstitial tissue, only a few areas show signs of inflammation and infiltration by lymphocytes. The vessels are moderately dilated without blood stasis. The endothelium and their basement membrane are not changed.

Thus, metabolic treatment of experimental obstructive pyelonephritis in animals leads to a gradual decrease in the inflammatory response and restoration of the nephron structure.

Only a few areas undergo reverse development due to the severity of the destructive process in individual nephrons of the interstitial tissue.

To assess the effect of metabolic therapy and bioactive complexes on the functional state of the urinary system, we carried out a comparative analysis of the data of laboratory studies of urine and blood.

Therefore, on the 15th day after the first course in general urine analyzes in all studied groups of animals, leukocyturia, proteinuria and hematuria, calciuria, uricosuria, oxalaturia fofaturia and increased ESR persisted. Meanwhile, it should be noted that these changes in urine were also expressed in the animals of the comparison group. On the 45th day after two courses of treatment, significant differences were noted in the indicators of the general analysis of urine in the animals of the main group and the comparison group.

By this time, the differences between both groups were also significant in terms of the specific gravity of urine, proteinuria, leukocyturia, and especially in the content of erythrocytes. In animals of the main group that received metabolite therapy on the 45th day, the indicators of the general analysis of urine approached the norm and remained stable in the subsequent periods of the experiment. By this time, the animals of the comparison group maintained a high specific gravity of urine, leukocyturia and hematuria, which indicates insufficient hydration and impaired reabsorption processes in the tubular apparatus of the kidneys.

Thus, the general analysis of urine of the main group of animals receiving metabolite therapy showed a lower level of proteinuria and leukocyturia.

On the 45th day of treatment of the main group, other changes in biochemical parameters were noted: decreased excretion of oxalates in the urine, significantly decreased urinary excretion of uric acid, inorganic phosphorus, calcium, protein, and increased the concentration function of the tubular epithelium. As evidenced by experimental and clinical data, the combined use of coenzyme pyruvate dehydrogenase vitamins is more effective than their separate use. The combined use of vitamin preparations B1, B2, B6, PP, C, lipoic acid, calcium pantothenate provides the activation of energy-supplying processes, the utilization of alpha-ketoglutarate, which indicates an increase in the throughput of the Krebs cycle at the stage of conversion of alpha-ketoglutarate into succinate. In all animals, the content of total lipids, phospholipid fractions, lipid peroxidation products (Malondialdehyde (MDA), DC), phospholipases: A2, D, C, initial level, after 15-45 days of treatment were determined in the erythrocyte membrane and in daily urine.

Taking into account the results of the study of neutral total lipids, phospholipid fraction in the membrane of erythrocytes, and their excretion in the urine and products of lipid peroxidation of LPO, phospholipase A2, D, C, it can be assumed that the main pathogenetic role plays in the genesis of the development of membrane-destructive processes in the kidneys. Thus, when considering the dynamics of the content of lipids in the membrane of erythrocytes, LPO products and the activity of enzymes, phospholipids in urine with obstructive pyelonephritis, during treatment, there is a clear general trend of a significant decrease in their level in the membrane of erythrocytes and in urine after complex treatment. In contrast to the basic treatment (comparison group), with complex treatment in the main group, the level of LPO products, phospholipid fraction, phospholipase A2, D, C is completely normalized. The relative normalization of the level of LPO products and the activity of enzymes, phospholipids after complex treatment in the main group indicates a sharp decrease in the process of destruction of kidney membranes.

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## MICROBIOLOGICAL CHARACTERISTICS OF EXPERIMENTAL MODELS OF OSTEOMIELITIS

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✓ ***Resume***

***The aim of the study was to develop a methodology for the selection of various strains of microorganisms to create models of experimental acute and chronic osteomyelitis, to determine the properties of the formation of experimental osteomyelitis. It has been established that for the creation of acute and chronic experimental osteomyelitis, it is advisable to use collection strains as an infectious agent; to create a model of acute experimental osteomyelitis, it is recommended to use Staphylococcus aureus strains with high pathogenicity, and chronic experimental osteomyelitis pathogenic strains of Staphylococcus in -inflammatory process on the surface of the femur of animals is proven by clinical, microbiological and morphological signs.***

***Key words: model of expert osteomyelitis, white outbred rats, infecting microorganisms, collection strains, identification of microorganisms.***

## ЭКСПЕРИМЕНТАЛ ОСТЕОМИЕЛИТЛАР МОДЕЛЛАРИНИ ЯРАТИШНИНГ МИКРОБИОЛОГИК ЖИҲАТЛАРИ

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✓ ***Резюме***

***Тадқиқот мақсади тажрибавий ўткир ва сурункали остеомиелитлар моделларини яратиш мақсадида турли микроорганизмлар штаммларини танлаш усулини яратиш, тажрибавий остеомиелитлар чақира олиш хусусиятини аниқлаш бўлди. Аниқланишича, ўткир ва сурункали тажрибавий остеомиелитлар моделларини яратиш учун инфицирловчи микроорганизмлар сифатида коллекцион штаммлар танланиши мақсадга мувофиқ, тажрибавий ўткир остеомиелит моделини яратиш учун Staphylococcus aureus нинг патогенлиги юқори штаммлари, тажрибавий сурункали остеомиелит моделини яратишда ассоциация кўринишида Staphylococcus aureus ва Pseudomonas aeruginosa танланган, ҳайвонлар сон суяги суяк устки қаватида йирингли-яллиғланиш жараёни кузатилгани микробиологик, клиник ва морфологик белгилар асосида исботланган.***

***Калит сўзлар: экспериментал остеомиелит модели, оқ зотсиз сичқонлар, инфицирловчи микроорганизмлар, коллекцион штаммлар, микроорганизмлар идентификацияси.***

## МИКРОБИОЛОГИЧЕСКИЕ ОСОБЕННОСТИ СОЗДАНИЯ ЭКСПЕРИМЕНТАЛЬНЫХ МОДЕЛЕЙ ОСТЕОМИЕЛИТОВ

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✓ ***Резюме***

***Целью исследования было разработка методики выбора различных штаммов микроорганизмов для создания моделей экспериментальных острых и хронических остеомиелитов, определение свойств формирования экспериментальных остеомиелитов. Установлено, что для создания острых и хронических экспериментальных остеомиелитов в качестве инфицирующего агента целесообразно использование коллекционных штаммов, для создания модели острого экспериментального остеоомиелита рекомендуется использовать штаммы Staphylococcus aureus с высокой патогенности, а хронического экспериментального остеомиелита патогенные штаммы Staphylococcus aureus и Pseudomonas aeruginosa в ассоциации, развитие гнойно-воспалительного процесса на поверхности бедренной кости животных доказаны клиническими, микробиологическими и морфологическими признаками.***

***Ключевые слова: модель экспертментального остеомиелита, белые беспородные крысы, инфицирующие микроорганизмы, коллекционные штаммы, идентификация микроорганизмов.***

**Relevance**

It has been established that the causative agents of acute and chronic osteomyelitis are various microorganisms, such as the genus Staphylococcus, Pseudomonas, Candida, members of the Enterobacteriaceae family, non-clostridial anaerobes, and others [1, 8].

To create a model of experimental osteomyelitis, various microorganisms were used as an infectious agent. Katz S.A. (1954) and Nechaevskaya M.R. (1955) used anaerobic microorganisms, Matusis Z.E. (1959) used the genus Proteus. For this purpose, many researchers used the reference culture Staphylococcus aureus [4, 10], Le C.T. (1982) and Belzunegui J., Lopez L. (1997) used Salmonella spp. Tiller F.N., Tietze V. (1979) used Candida albicans to create acute hematogenous osteomyelitis, and Nondan C.N., Shinners E. (1979) and Matkurbanov A.Sh. [4] chose Pseudomonas aeruginosa for this purpose. Matkurbanov A.Sh. [5], Nuraliev N.A. et al. [6] used a museum strain of Staphylococcus aureus as an infectious agent. There is evidence of an infection experiment using a reference culture of Staphylococcus aurus and Pseudomonas aeruginosa to create a model of chronic osteomyelitis.

To create an experimental model of osteomyelitis, Gahukamble A.D. et al. [12] infected rabbits with the bacteria Propionibacterium acnes and Staphylococcus lugdunensis, and thus created a model of chronic osteomyelitis. After surgery, ways to optimize treatment were proposed based on the clinical aspects of this model.

Analysis of the published literature on the problem under study showed that using models of experimental osteomyelitis, it is possible to determine the formation, development and regularities of the course of acute and chronic osteomyelitis. Even if models of experimental osteomyelitis have been created, the problem of infectious agents has not been fully studied, the choice of an infectious microorganism that is suitable for all parameters has not been brought to its logical conclusion.

Since it is necessary to start treatment measures immediately after the diagnosis of the disease, today the immuno-microbiological aspects and pathogenetic mechanisms of various osteomyelitis are not fully assessed, the influence of various methods of treatment on the microorganism, specific and nonspecific factors of protection of the macroorganism, has not been fully studied.

**Purpose of the study:** To create a way to select different strains of gram-positive and gram-negative microorganisms in order to create experimental models of acute and chronic osteomyelitis, to assess the ability to cause experimental osteomyelitis.

**Material and methods**

In order to create experimental models of acute and chronic osteomyelitis, 150 white outbred mice of 2-3 months of age, weighing 18-22 grams of both sexes, were used.

The experimental animal room was warm, light and dry, and the floor was cemented to prevent the entry of wild rodents. Animal storage cages (there were 20 mice in one cage) were placed at a height of 30-70 cm.All animals brought for scientific work were kept in quarantine for 10 days, and after confirming the absence of infectious, parasitic and other diseases in the animals, the experiments were carried out. When feeding the mice, they adhered to the traditional diet [6]. At the end of the experiment, the euthanized mice were disposed of according to the same rules. When working with laboratory animals, we adhered to the safety rules and ethical principles of working with animals, accepted at the international level [2, 6, 11].

Taking into account the differences in the course, duration of the disease, the occurrence of pathogens as a monoculture or as an association of microorganisms, as well as the principles of treatment, it was decided to create separate experimental models of acute and chronic osteomyelitis. When choosing an infectious agent, we used materials on the study of biological material (pus) of 448 patients (380 adults and 68 children) with acute and chronic osteomyelitis; data of the microbial landscape were obtained as a result of bacteriological research. Collection strains were used to create an experimental model of acute and chronic osteomyelitis. They were kindly presented from the "National Collection of Microorganisms of Human Infections" of the Scientific Research Institute of Epidemiology, Microbiology and Infectious Diseases of the Ministry of Health of the Republic of Uzbekistan (now renamed the Republican Scientific and Practical Specialized Center for Epidemiology,

Microbiology, Infectious and Parasitic Diseases). The authors express their sincere gratitude to the staff of this collection. All used collection strains were stored in a refrigerator (40C) in a semi-liquid nutrient medium. All used strains were taken from patients with pyoinflammatory diseases living in the territory of Uzbekistan. The studies were carried out for the period 2010-2018.

In the course of statistical data processing, traditional statistical variational methods and the "Exsel" program on a Pentium-IV computer were used. When organizing and conducting research, the principles of evidence-based medicine were adhered to.

**Result and discussion**

In order to create an experimental model of acute and chronic osteomyelitis in selected animals under laboratory conditions, strains of Staphylococcus aureus were used. This choice was facilitated by the following main factors:

firstly, the obtained clinical and microbiological studies have shown that Staphylococcus aureus is the main causative agent of acute and chronic osteomyelitis in people of different ages living in different regions of the world; secondly, when using strains of Staphylococcus aureus as an infectious agent of acute and chronic osteomyelitis, the clinical signs of this disease are pronounced;

third, Staphylococcus aureus is easy to identify and differentiate by bacteriological methods;

fourthly, many researchers use this gram-positive microorganism as an infectious agent to create experimental models of acute and chronic osteomyelitis. The biological properties of Staphylococcus aureus used to create an experimental model of acute osteomyelitis in white outbred mice are given in table. one.

Identification of Staphylococcus aureus strains showed that all studied strains were identical in basic biological properties corresponding to their genus - morphological, tinctorial, cultural, enzymatic and antigenic characteristics [7]. , mucus from the throat or nose). When choosing the studied five strains, the fact that these microorganisms can be found in different biotopes of the body and can act as an etiological agent of the disease, and can also enhance their pathogenetic features, was taken into account.

**Table 1**

**The main biological properties of Staphylococcus aureus strains for the creation of acute experimental osteomyelitis**

| Biological properties | Sequential number of collection strains | | | | |
|---|---|---|---|---|---|
| | 003994/ Wood-46 | 003846/ 11 | 003851/ 2 | 003926/ M-4 | 004174/ M3-85 |
| Morphological | Coccus | Coccus | Coccus | Coccus | Coccus |
| Tinctorial | Gram "+" | Gram "+" | Gram "+" | Gram "+" | Gram "+" |
| Cultural | S shape, RFP | S shape, RFP | S shape, RFP | S shape, RFP | S shape, RFP |
| Enzymatic | Typical | Typical | Typical | Typical | Typical |
| A source | Hemocultur e | Pus | Pus | Mucus from the throat | Mucus from the nose |

Note: ZP - golden pigment.

Before carrying out experimental studies, the collection strains were sown in the media corresponding to their taxonomic groups. Then the selected strains were identified and differentiated based on the study of morphological, tinctorial, cultural, enzymatic, toxigenic and antigenic properties.

It was revealed that the colonies of Staphylococcus aureus slightly rose from the surface of the nutrient medium, the surface was smooth, moist, after 24 hours they were covered with a golden pigment. With the help of additional microbiological tests, the formation of urease, phosphatase and other taxonomic characteristics were studied, pathogenic factors - plasmacoagulase, hemolytic abilities, lecithinase and hyaluronidase activity were studied. It should be noted that Staphylococcus aureus strains are characterized by high hemolytic activity.

To create acute experimental osteomyelitis, the experimental method proposed by M.M. Soloviev was used. (1969) in our modification.

To form an experimental model of acute osteomyelitis, laboratory animals were infected with the selected five strains of Staphylococcus aureus twice.

At the first infection with Staphylococcus aureus, a mixture of the five aforementioned strains was used, before their use to enhance the infectious effect of microorganisms were cultivated separately in a liquid nutrient medium. After that, a fresh one-day culture was prepared for introduction into the animal's body.

According to the literature and our clinical observations, osteomyelitis mainly develops in the tubular bones. Taking this into account, the infection was carried out on the femur of the hind legs of a laboratory animal.

For this, the site of the operation was cleared of hairs 2-3 days before the operation. The animals were fixed with a traditional method, the upper part of the thigh of the hind legs was cut under local anesthesia, the bone was opened, the outer layer of the bone was damaged with a scalpel, and a one-day culture mixture of the selected strains of Staphylococcus aureus was injected in an amount of 0.1 ml at a concentration of 6x109 microbial bodies / ml (m t / ml). After that, the dissected part of the femur was sutured operatively. The animals were placed in cages separately from each other, then they were observed in a general vivarium.

The second infection was carried out on the 7th day of the beginning of the experiment in the same order, only, unlike other researchers, a mixture of a one-day culture of 5 strains was used (other authors used one strain for repeated infection). The rapid introduction of strains into the organism of laboratory animals is especially significant.

On visual observation, clinical signs of acute experimental osteomyelitis appeared on the 3rd day after secondary infection, that is, on the 10th day after the start of the experiment. The results of these observations were supplemented by a clinical visual study of the femur, where acute experimental osteomyelitis developed in laboratory conditions, and also by the study of the morphology of the tissues of the damaged part of the bone.

From a clinical point of view, edema was observed in the projection of the infected femur, such clinical manifestations as increased body temperature, careful stepping on the injured paw, and dragging the paw with difficulty. Also, they noted the bulging of the hairline, inactivity, lack of appetite, the slow manifestation of various conditioned and unconditioned reflexes.

Bacteriological studies showed that mainly Staphylococcus aureus was identified from the pus of the pathological focus in 96.7% of cases (in other cases, no growth was noted), the average concentration of microorganisms was noted in the amount of 8x1011 colony-forming units / ml (CFU / ml).

Other gram-positive and gram-negative microorganisms were not identified from the pathological focus. Apparently, the following factors contributed to this:

- in the pathological focus, other microorganisms, except for Staphylococcus aureus, could not multiply in sufficient quantities during the short period of the experiment;
- the selected strains of Staphylococcus aureus were introduced into the pathological focus for the formation of experimental osteomyelitis in sufficiently large quantities, in addition, other pathogens were prevented from entering the pathological focus during the operation;
- the absence of various infectious and pyoinflammatory diseases in laboratory animals (white outbred mice) before the start of the experiment, which would have entered the focus of the hematogenous route;
- a comparatively increased antagonistic ability of the effect of Staphylococcus aureus on other gram-positive and gram-negative microorganisms, therefore, other microorganisms were not sown from the pathological focus.

In addition, morphological studies made it possible to detect purulent-inflammatory signs on the damaged surface.

Thus, observing the clinical, microbiological and morphological signs, it was possible to induce acute experimental osteomyelitis in 96.7% of laboratory animals involved in the experiment. This shows that the choice of the infectious agent for forming the model was made correctly.

In the formation of chronic experimental osteomyelitis, the results of experience on the creation of an experimental model of acute

osteomyelitis, the results of microbiological studies of patients were used. As a result, it became known that in chronic osteomyelitis, a high sowing rate of Staphylococcus aureus is detected, and also often in the form of an association of microorganisms with other microorganisms, including the main representative of nosocomial infections Pseudomonas aeruginosa.

Based on the above, for the formation of an experimental model of chronic osteomyelitis, it was decided to use associations of microorganisms of 2 species – Staphylococcus aureus and Pseudomonas aeruginosa. Of the 5 collection strains (serial numbers 003994 / Wood-46, 003846/11, 003851/2, 003926 / M-4, 004174 / M3-85) used to create an experimental model of acute osteomyelitis, we selected the most pathogenic strain 003926 / M -4 for the formation of a model of chronic osteomyelitis.

Both strains of microorganisms were kindly submitted by the National Collection of Microorganisms for Human Infections. The biological properties of the strains are presented in table. 2.

**Table 2**

**Basic biological parameters of microorganism strains used to form an experimental model of chronic osteomyelitis**

| **Biological properties** | ***Staphylococcus aureus*** | ***Pseudomonas aeruginosa*** |
|---|---|---|
| Serial number | 003926/M-4 | 003480/237 |
| Morphological | Coccus | Bacterium |
| Tinctorial | Gram "+" | Gram "-" |
| Cultural | S shape, | S shape, |
| Enzymatic | golden pigment | green pigment |
| Source of receipt | Typical for the species | Typical for the species |

When identified by a bacteriological method, the selected Staphylococcus aureus strain (serial number 003926 / M-4) showed all the properties typical of the genus and type of microorganism.

After repeated sowing of Pseudomonas aeruginosa into the nutrient medium, all the typical features of the bacteria in their taxonomic group were revealed: the colonies are typical, there was a green pigment, a peculiar smell, lysis zones and the phenomenon of "rainbow sheen". Detection of the phenomenon of "rainbow sheen" is a characteristic sign of the pathogenicity of Pseudomonas aeruginosa [3]. This means that the collection strain we have chosen has a high virulence. I would like to emphasize that this microorganism is widespread as a causative agent of chronic pyoinflammatory processes, a hospital strain, it is characterized as a "problem" microorganism with resistance to antibiotics.

When forming a model of chronic experimental osteomyelitis, the method [5] proposed by MM Soloviev was used. (1969) in our modification.

For this, the operation site was completely cleared of hairline 2-3 days before the operation. The mice were fixed in the traditional way, the upper part of the thigh of the hind legs was cut under anesthesia, the bone was opened, and before infection the upper part of the femur was treated with 0.1 ml of 3% acetic acid as a stress and damage factor. The treatment was carried out carefully, only on the surface of the bone. Acetic acid was injected after the transfusion needle reached the hard part of the bone. The acid was injected carefully so that it did not enter the blood vessel, since if it enters the bloodstream, hemolysis of erythrocytes may occur and the animal may die.

4 days after exposure to acetic acid, the pathological focus where inflammation was caused was infected with strains of Staphylococcus aureus, at a concentration of 6x109 bw / ml, which caused chronic experimental osteomyelitis. On the 7th day of infection, Pseudomonas aeruginosa strains (serial number 003480/237) were introduced into this focus at a concentration of 6x109 bw / ml.

In order to increase the efficiency of infection, both strains were cultivated in liquid nutrient medium separately and standardized. Of particular importance was the rapid introduction of one-day fresh cultures of microorganisms into the body of white outbred mice.

The reason for the use of various microorganisms in order to form an experimental model of chronic osteomyelitis is that they stimulate a broad antigenic stimulus, lead to a strong microbial sensitization of the body, and provide a variety of pathogenic factors.

In-depth bacteriological studies have shown the practical aspect of the absence of antagonistic interaction of both strains of microorganisms with each other.

Infection with microorganisms with various antigenic and pathogenic properties led to a prolonged purulent-inflammatory process in the bone tissue (up to 60 days or more). In the chronic type of the disease, clinical, bacteriological and morphological signs were also manifested as in acute osteomyelitis. All the results obtained proved the formation of experimental chronic osteomyelitis in laboratory animals.

At the end of the research, the results obtained showed that it is necessary to pay attention to the following features when choosing infectious microorganisms in order to form an experimental model of acute and chronic osteomyelitis:

- after identification of the selected strains for infection to the genus and species, you need to make sure that this is a monoculture;
- to prove the high pathogenic properties of strains of microorganisms before introduction into laboratory animals, as well as the need for infection with a one-day fresh culture;
- take into account the need to use a microorganism of one type in acute experimental osteomyelitis, as well as the use of an association of microorganisms (two or more different strains) in the formation of a model of experimental chronic osteomyelitis, since the chronic form lasts a long time and there is a likelihood of other pathogens entering the pathological focus;
- to ensure the concentration of cultures of microorganisms used during infection, not less than 6x109 MT / ml;
- pay attention to the dependence of effectiveness on the variety of microorganisms that caused acute and chronic experimental osteomyelitis, on the degree of pathogenicity, time of administration and concentration in the pathological focus.

The medical effectiveness of the proposed methods lies in the fact that it became necessary to form experimental models of acute and chronic osteomyelitis, taking into account the fact that when assessing the effectiveness of any treatment, it is necessary to take into account possible difficulties in assessing the microbiological and immunological aspects of this pathology.

The creation of these experimental models will allow testing new methods of treatment, new modern medicines. This, in turn, will increase the medical efficiency of patient care.

The social effectiveness of the proposed method is that the created experimental models of acute and chronic osteomyelitis will allow the implementation of the proposed various methods of treatment into healthcare practice without prejudice to the health of patients, and clinically evaluate the dosage of new drugs.

This, in turn, will improve the quality of life of patients through adequate treatment. An increase in the effectiveness of treatment will lead to a rapid recovery of the patients' ability to work, a decrease in disability from this ailment.

The economic efficiency of the proposed method lies in the fact that the introduction of a method for selecting an infectious microorganism in order to create experimental models of acute and chronic osteomyelitis, will save money on each series of experimental studies, and also increase the efficiency of experimental studies by 15%.

## Findings

1. The choice of collection strains as infectious microorganisms for the creation of experimental models of acute and chronic osteomyelitis was expedient, since they have been identified and all their biological properties are known. The use of hospital strains is not advisable.
2. To create a model of experimental acute osteomyelitis, 5 pathogenic strains of Staphylococcus aureus were injected twice into the injury site (femur) of experimental animals (white outbred mice) at a concentration of 6x109 MT / ml with an

interval of 7 days. During the observation period, all clinical, microbiological and morphological signs of experimental acute osteomyelitis appeared in the pathological focus.

3. In the formation of experimental chronic osteomyelitis, associations of microorganisms - Staphylococcus aureus and Pseudomonas aeruginosa were selected. The strains were injected into the femur of animals at a concentration of 6x109 bw / ml twice with an interval of 2 days. On the 15th day of infection, a purulent-inflammatory process on the upper part of the femur was confirmed in terms of clinical, microbiological and morphological properties. The pathological process lasted 60 days or more, which confirms the chronic nature of the process.
4. After complete identification and determination of the pathogenic properties of the strains Staphylococcus aureus and Pseudomonas aeruginosa are recommended for use as an infectious agent for the formation of experimental models of acute and chronic osteomyelitis.

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