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✓ *Resume*

*The patient's quality of life largely depends on the degree of restoration of the lost functions. In turn, the degree of their recovery depends on the timing of the beginning, dosage and continuity of the started rehabilitation measures. Statistical data continue to indicate that cerebrovascular diseases remain one of the most important medical and social problems of modern society. Rehabilitation of cerebral stroke, despite effective diagnosis and quality treatment, is not always effective enough, partly due to the fact that the patient rehabilitation system in our country is not sufficiently developed. At the same time, over the past decade, developments based on the use of digital technologies, computerized systems and robotic devices have been added to the traditional methods of rehabilitation. The review presents modern concepts of rehabilitation of patients with cerebral ischemic stroke. The issues of medical, labor and social rehabilitation are highlighted. Particular attention is paid to non-drug methods of treatment based on biofeedback using computer technology.*

*Key words: rehabilitation, rhythmic stimulation, neuropathic pain cerebral, dosage measures*

## РЕАБИЛИТАЦИЯ ПАЦИЕНТОВ ПОСЛЕ ЦЕРЕБРАЛЬНОГО ИНСУЛЬТА

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✓ *Резюме*

*Качество жизни пациента во многом зависит от степени восстановления утраченных функций. В свою очередь, степень их выздоровления зависит от сроков начала, дозировки и продолжительности начатых реабилитационных мероприятий. Статистические данные продолжают указывать на то, что cerebrovascularные заболевания остаются одной из важнейших медико-социальных проблем современного общества. Реабилитация церебрального инсульта, несмотря на эффективную диагностику и качественное лечение, не всегда бывает достаточно эффективной, отчасти из-за того, что система реабилитации пациентов в нашей стране недостаточно развита. При этом за последнее десятилетие к традиционным методам реабилитации добавились разработки, основанные на использовании цифровых технологий, компьютеризированных систем и роботизированных устройств. В обзоре представлены современные концепции реабилитации больных с церебральным ишемическим инсультом. Освещены вопросы медицинской, трудовой и социальной реабилитации. Особое внимание уделяется немедикаментозным методам лечения, основанным на биологической обратной связи с использованием компьютерных технологий.*

*Ключевые слова: реабилитация, ритмическая стимуляция, нейропатическая боль головного мозга, дозовые меры.*

## MIYA QON TOMIRIDAN KEYIN BEMORLARNI REABILITATSIYA QILISH

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Buxoro davlat tibbiyot instituti

✓ *Rezyume*

*Bemorning hayot sifati ko'p jihatdan yo'qolgan funktsiyalarni tiklash darajasiga bog'liq. O'z navbatida, ularning tiklanish darajasi boshlangan vaqt, dozalash va boshlangan rehabilitatsiya tadbirlarining davomiyligiga bog'liq. Statistika shuni ko'rsatadiki, miya qon tomir kasalliklari zamonaviy jamiyatning eng muhim tibbiy va ijtimoiy muammolaridan biri bo'lib qolmoqda. Miya qon tomirlarini rehabilitatsiya qilish, samarali tashxis qo'yish va sifatli davolanishga qaramay, har*

*doim ham etarli darajada samarali emas, bu qisman mamlakatimizda bemorlarni reabilitatsiya qilish tizimi etarli darajada rivojlanmaganligi bilan bog'liq. Shu bilan birga, so'nggi o'n yil ichida an'anaviy reabilitatsiya usullariga raqamli texnologiyalar, kompyuterlashtirilgan tizimlar va robotlashtirilgan qurilmalardan foydalanishga asoslangan ishlanmalar qo'shildi. Tadqiqotda miya yarim qon tomirlari bilan kasallangan bemorlarni reabilitatsiya qilishning zamonaviy tushunchalari keltirilgan. Tibbiy, mehnat va ijtimoiy reabilitatsiya masalalari yoritilgan. Kompyuter texnologiyalaridan foydalangan holda biofeedback asosida davolashning farmakologik bo'lmagan usullariga alohida e'tibor qaratilmoqda.*

*Kalit so'zlar: reabilitatsiya, ritmik stimulyatsiya, miya neyropatik og'rig'i, dozalash choralari.*

### Relevance

**Purpose of the work:** to summarize the achievements of countries in the field of rehabilitation and stroke patients over the past 5 years. Research method - literature review.

**And the relevance.** Stroke is the most important medical and social problem. More than a million stroke survivors live in our country, and more than 450 thousand new cases of this disease are registered annually. [1,2] In more than half of patients who have suffered intracerebral bleeding, domestic independence is not restored, and therefore more than 80% of people of working age become disabled. The leading factor of disability in a significant number of patients is movement disorders - a symptom of brain damage in both the acute and chronic stages of the disease. [3,4] In the acute stage, they are detected in 70-90% of patients, after a year the residual defect persists, in at least half of the survivors. Stroke ranks first among all causes of disability in middle-aged and elderly people. In recent years, about 30% of cases of morbidity have been in the working age (up to 65 years). The main disabling disorders after a stroke are motor and speech defects, cognitive and psychoemotional disorders, and dysfunction of the pelvic organs. [3] dysfunctions of the upper limb In this regard, the question of selecting the most effective methods of rehabilitation for patients with this pathology is of particular relevance [1,2].

Rehabilitation of patients with cerebral stroke remains one of the most urgent tasks of modern angioneurology. This is due to the high prevalence of the disease, the high degree of disability and mortality of patients, the ambiguity of approaches to the choice of treatment tactics. According to WHO materials, the incidence of strokes ranges from 1.5 to 7.4 per 1000 population [2]. The highest incidence is observed between the ages of 50 and 70 years. So, at the age of 50-59 years, the incidence of strokes is 7.4, and at the age of 60-69 years - 20 per 1000 population. Vascular lesions of the brain in now they are among the leading causes of mortality in the population, accounting for about 14% in its

structure [5]. The factors contributing to the development of vascular diseases of the heart and brain are the conditions of modern life, primarily environmental problems, urbanization and automation, nervous tension, insufficient physical activity, the growth of diabetes mellitus, the peculiarities of modern nutrition, increased alcohol consumption, the absence of radical means and methods of combating atherosclerosis and hypertension. More than 400,000 registered in Russia strokes every year, this disease ranks second in the structure of overall mortality after cardiovascular diseases and first place as a cause of permanent disability. Mortality rates from cerebrovascular diseases (CVD) in our country are constantly increasing and are among the highest in the world (1980 - 243.6, 1985 - 264.4, 1996 - 279.2, 1997 - 285.9 per 100 000 population) [1,2]. Mortality in the acute period of stroke reaches 30-35% and increases by 12-15% by the end of the first year after stroke. In general, cerebral stroke in half of patients occurs before the age of 60, i.e. strikes people who are still full of strength and capabilities. Most of the survivors become disabled (no more than 20% of patients return to work) and require long-term rehabilitation treatment, and often outside care. Thus, the solution of the problem of cerebrovascular diseases, their prevention, treatment and labor rehabilitation seems to be a task of both medical and medico-social importance for the state and its economy. Medical and social rehabilitation is a multidisciplinary field of health care, which includes a variety of types of intervention - medical, physical, psychological, social, professional, economic, pedagogical.

The goal of rehabilitation is achievable only under the condition of close integration and coordination of the activities of specialists of various profiles participating in the rehabilitation process. The diversity of rehabilitation tasks necessitates a conditional division of all areas of this work into types or aspects: therapeutic (WHO calls it "medical"), physical,

psychological, social, professional, pedagogical, occupational therapy. The main tasks of complex rehabilitation therapy for the purpose of rehabilitation are the restoration of impaired functions and the development of compensatory mechanisms of the patient's motor activity for his physical and social adaptation. This is a system of medical activities aimed not only at restoring the patient's ability to self-service and work.

**Purpose of the work:** to summarize the achievements of countries in the field of rehabilitation of stroke patients over the past 5 years. Research method - literature review. And analysis of the effectiveness of modern methods of rehabilitation of patients, and the influence of modern technologies in the aftercare of patients with stroke. Organization of a complex system of care with the obligatory consideration of the specifics, clinical features and variants of the course of the disease.

### Result and discussion

In order to analyze the effectiveness of modern methods of rehabilitation of stroke patients, we studied the data of domestic and foreign scientific sources. Subject of research: rehabilitation of stroke patients. Subject of research: the impact of modern technologies (video training) on the quality of rehabilitation of stroke patients. 235 The study involved 20 men, aged 45-50 years, who underwent stroke 1 month ago and were discharged for follow-up treatment at an outpatient center at their place of residence. According to the conclusion of the neurologist, all patients had the same impairment of motor function - paresis of the left arm with an assessment of muscle strength of 2 points (pronounced paresis). The subjects were divided into 2 equal groups. The first underwent rehabilitation only in the clinic. The second - in addition to classes in the clinic, received a disk for classes at home, compiled together with a rehabilitation therapist. A video lesson was presented on the disk, according to which patients were taught to independently perform the necessary exercises. After 1 month, the patients underwent a second examination by a neurologist, the results of which revealed: 1. In the group of subjects who underwent rehabilitation only in the polyclinic, 8 patients at the time of the second examination had paresis of the left arm with an assessment of muscle strength of 3 points (moderate paresis) and 2 patient at 3-4 points. 2. In the group that worked additionally at home, using a video lesson, 7 patients had paresis with an assessment of muscle strength of 4 points (mild paresis) and 3 patients

fully restored movement in the arm and muscle strength. It should be noted that the studies were conducted with the participation of patients admitted for rehabilitation, dysfunction of the upper limb • acute period, • early recovery period, • late recovery period, • residual period in which 222 patients took part, as well as those who did not have cognitive and coordinating impairments. The discussed works differed in terms of quality, type and duration of procedures, conditions for their implementation (on an inpatient or outpatient basis), duration of classes, measuring instruments (tests, scales, questionnaires, etc.) and evaluation of results. 75% of the studies were conducted in patients who had a stroke more than 6 months ago and completed standard rehabilitation. It noted statistically significant improvements in the function of the upper limb at a period of 3 to 9 months after a cerebral accident. Also, the timely use of rehabilitation therapy presented in the Cochrane database indicates the relationship of clinical improvement with the nature and amount of exercise, as well as with the individual characteristics of patients. It was noted that further study of these parameters is necessary in order to identify factors that increase the intensity of such therapy. It has been proven that in 54% of patients, arm strength increases after training with the use of electromechanical or robotic devices, while no side effects have been identified. At 62 % of recovered observed ulu h w ix functions top horse chnosti by invoking a method of a claim sihonevrologicheskoy correction. Evidence from systematic reviews suggests that the effectiveness of such therapy may depend on the area of the upper limb (shoulder or elbow) that is being addressed.

The discussed works differed in terms of quality, type and duration of procedures, conditions for their implementation (on an inpatient or outpatient basis), duration of classes, measuring instruments (tests, scales, questionnaires, etc.) and evaluation of results. It indicates statistically significant improvement of upper extremity function with the use of m electromechanical technology with cerebral accidents.

### Conclusion

Rehabilitation of patients after a stroke requires the organization of a complex system of care with the obligatory consideration of the specifics, clinical features and variants of the course of the disease. Along with numerous approaches to the rehabilitation of patients, new ones are being created, which have shown their

effectiveness in the recovery of patients. The use of modern technologies, for example, a video lesson, improves the quality of rehabilitation of stroke patients and helps to speed up the recovery process. As far as proved to be effective such technologies as a combined application of paragraph sihonevrologicheskoy correction, training on the Code platform (multi-purpose training systems), and non-invasive brain-computer interface. As a result of the work carried out, a number of techniques with the greatest evidence base were identified, as well as techniques with unproven efficacy and not recommended for use to improve the function of the upper limb in patients with stroke were established. Let's consider them sequentially. The use of hypercapnic hypoxia in the rehabilitation of patients is being studied, which shows a clear increase in the tolerance of the brain to ischemia, the use of a number of stimulating technologies, including transcranial magnetic stimulation and electromyostimulation. Thus, the presented data indicate the effectiveness of the method of dynamic correction in the residual stage of stroke. The results of rehabilitation of patients using this method are influenced by the initial clinical features of the pyramidal defect, lateralization, the degree of tension and the preservation of homeostatic autonomic mechanisms of the motor act, the severity of emotional-affective disorders [5,9].

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