



CLINICAL AND MORPHOLOGICAL FEATURES OF HIV INFECTION IN CHILDREN

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✓ *Resume*

HIV infection is one of the leading threats of our time. The aim of the study was to study the clinical and morphological features of HIV infection in children. General clinical, laboratory studies (general blood count, urine, feces), a detailed biochemical blood test, the study of markers of hepatitis B and C, ELISA diagnostics for HIV infection, and morphological tests were used. The results of the study established the predominance of the disease in girls, the age category is from 11 to 14 years. Patients with opportunistic infections of bacterial etiology with parenteral transmission prevailed. Patients admitted to clinical stage 4 had unexplained severe malnutrition. In conclusion, it was noted that the revealed pathomorphological changes in the immunocompetent organs confirm the clinical data indicating the development of a severe immunodeficiency state, characteristic of HIV infection in the AIDS stage, which is actually the background for the implementation of a systemic infectious process and can be the main cause of death of HIV-infected children.

Key words: HIV infection, children, clinical and morphological features.

КЛИНИКО-МОРФОЛОГИЧЕСКИЕ ОСОБЕННОСТИ ВИЧ-ИНФЕКЦИИ У ДЕТЕЙ

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✓ *Резюме*

ВИЧ-инфекция является одной из ведущих угроз современности. Целью исследования явилось изучение клинико-морфологических особенностей ВИЧ-инфекции у детей. Применены общеклинические, лабораторные исследования (общий анализ крови, мочи, кала), развернутый биохимический анализ крови, исследование маркеров гепатита В и С, ИФА диагностика на ВИЧ инфекцию, морфологические. Результатами исследования установлено преобладание заболевания у девочек, возрастная категория от 11 до 14 лет. Преобладали пациенты с оппортунистическими инфекциями бактериальной этиологии с парентеральным путем передачи. У поступивших 4 клинической стадии у пациентов сопровождалось необъяснимые тяжелые истощения. В заключении отмечено, что выявленные патоморфологические изменения в иммунокомпетентных органах подтверждают клинические данные, свидетельствующие о развитии тяжелого иммунодефицитного состояния, характерного при ВИЧ-инфекции в стадии СПИД, что собственно является фоном реализации системного инфекционного процесса и может быть основной причиной смерти ВИЧ-инфицированных детей.

Ключевые слова: ВИЧ-инфекция, дети, клинико-морфологические особенности.

БОЛАЛАРДА ОИВ ИНФЕКТСИЯСИНИНГ КЛИНИК-МОРФОЛОГИК
ХУСУСИЯТЛАРИ

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✓ Резюме

ОИВ-инфекция бизнинг давримизнинг асосий таҳдидларидан биридир. Тадқиқот мақсади: болаларда ОИВ-инфекциясини клиник-морфологик хусусиятларини аниқлаш. Умумклиник, лаборатор текширувлар (қон, сийдик, нажас умумий таҳлили), батафсил биокимёвий қон таҳлили, гепатита В ва С маркерларини текшириш, ОИВ-инфекцияга ИФА диагностика, морфологик услублар қўлланилди. Тадқиқот натижаларига кўра касаллик кўпинча қиз болаларда, 11 дан 14 ёшгача бўлган ёш оралигида кузатилган. Парентерал йўл билан ўтадиган бактериал этиологияли оппортунистик инфекцияли беморлар кўпчиликни ташкил қилган. 4-чи клиник босқичда келган беморларда, тушунарсиз оғир ариқлашлар кузатилган. Хулосада қайд этилишича, иммунокомпетент аъзоларда аниқланган патоморфологик ўзгаришлар ОИТС босқичида ОИВ инфекциясига хос бўлган оғир иммунитет танқислиги ҳолатининг ривожланишини кўрсатадиган клиник маълумотларни тасдиқлайди, бу аслида тизимли юқумли жараённи амалга ошириш учун фон бўлиб, ОИВ билан касалланган болалар ўлимини асосий сабаби бўлиши мумкин.

Калит сўзлар: ОИВ-инфекция, болалар, клиник-морфологик хусусиятлари.

Relevance

The AIDS epidemic is not only a national health problem, but it also has extraordinary implications for the well-being and security of society [3]. There are more than 40 million HIV-infected people in the world, of which 2.7 million are children under the age of 15 [2]. The prevalence of HIV infection in the Republic of Uzbekistan is at a concentrated stage of its development. According to the Agency for Sanitary and Epidemiological Welfare under the Ministry of Health of Uzbekistan, according to the latest data and estimates of specialists, as of December 1, 2019, more than 41,000 people in the republic are living with HIV infection. The almost complete coverage of HIV-infected pregnant women today by government programs makes it possible to keep the share of vertical transmission of HIV at a consistently low level. The unfavorable course of HIV infection in pediatric patients, the rapid transition to AIDS with the development of a fatal outcome dictate the need for timely diagnosis of the disease, based on a comprehensive record of epidemiological anamnesis data, clinical and laboratory examinations. Thus, HIV infection is an actual problem of infectology all over the world.

Purpose of the study. The study of clinical, morphological, epidemiological and laboratory features of the course of HIV infection in children based on the materials of the regional clinical infectious diseases hospital for 2019 in the Samarkand region.

Materials and methods

The material for research and analysis was the case history of seropositive children who were treated in the regional infectious diseases clinical hospital for 2019. For all patients with HIV infection, general clinical, laboratory studies (general blood count, urine, feces), a detailed biochemical blood test, a study of hepatitis B and C markers, and ELISA diagnostics for HIV infection were carried out. From non-specific methods, immunological studies were carried out to determine the absolute number of CD4+ lymphocytes, which was carried out in the regional AIDS center in the city of Samarkand. The fact of HIV infection in all examined children was confirmed using reference ELISA on test systems multi-reagent washer MRW - AM60, Voshер 203 and immunoblotting on test systems thermostatically controlled shaker Elmi-ST-3. Enzyme immunoassay was carried out on equipment from Ridertechnologies (USA). The HIV viral load was studied by determining the level of HIV RNA in blood plasma by PCR on test systems "Vortex Rotergi MonitorTest" by Hoffman-LaRoche. The study of immune status indicators included the determination of the parameters of cellular and humoral immunity, as well as the phagocytic level. The diagnoses of "HIV infection" and opportunistic infections were established on the basis of order No. 277 of the Ministry of Health of the Republic of Uzbekistan, 2018. Autopsy material for subsequent histological examination in the form of paraffin sections was stained with hematoxylin and eosin.

Results and discussion

All patients were referred from the regional AIDS center with a diagnosis of "B20" based on confirmed specific IB tests (+). The results of the study showed the predominance of the disease in girls (64%), compared with boys (36%). 44% of patients who applied from the city, 56% from districts. The number of organized children is 52%, unorganized 48%. When conducting an epidemiological history of the course of HIV infection in this category of patients, epidemiological

methods were used. The main routes of transmission: 1) Parenteral (72%): blood and plasma transfusion (44%), parenteral intervention (20%), surgery (8%). 2) Unclear route of transmission (20%). 3) Vertical transmission path (8%).

Which corresponds to the data of other researchers [4].

When distributing patients in Figure №1 by age category, we found that a high incidence rate falls on the age of 11 to 14 years - which amounted to (56%) of patients [Fig. 1].

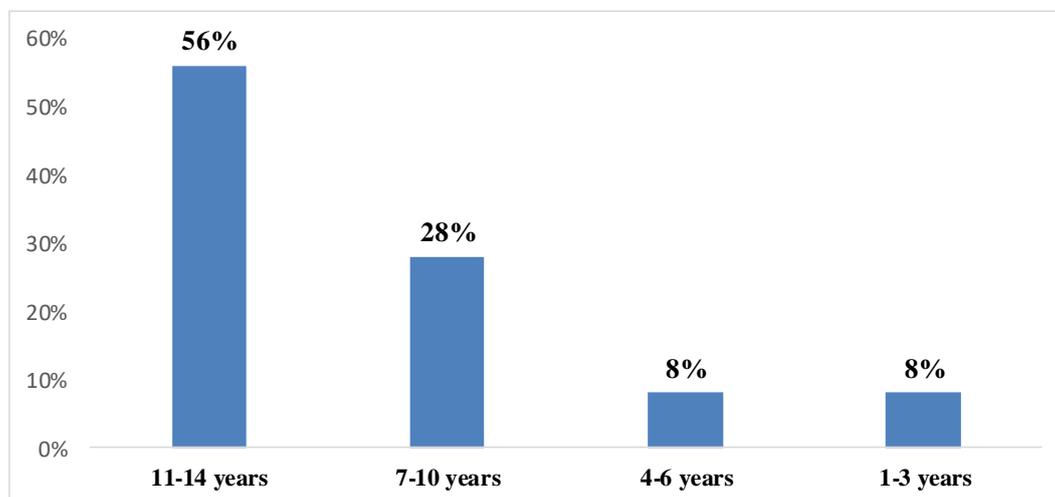
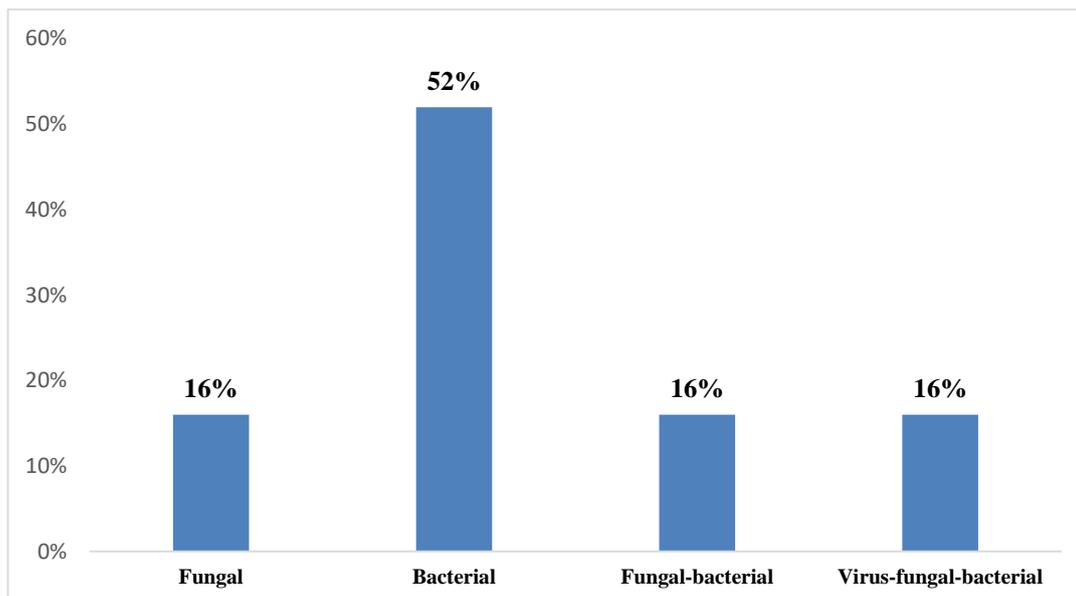


Fig. 1. Distribution of patients by age category

An analysis of the distribution of patients according to the etiological structure showed a high level of patients with opportunistic infections of bacterial etiology, which amounted to (56%) [Fig. 2].



Rice. 2. Distribution of patients according to the etiological structure

The diagnoses of "HIV - infection" and opportunistic infections were established on the basis of the order Volume 1 "On the introduction into practice of national clinical protocols for HIV infection" [6,7].

Upon admission to the hospital, the patient's complaints were assessed, the anamnesis of life and illness, objective data, and laboratory examination were carefully collected. The leading complaints at admission were fever syndrome in 100% of patients, asthenic syndrome was also observed in all admitted patients, lymphadenopathy syndrome was observed in 92% of patients, hepatosplenomegaly syndrome was observed in 44% of patients, chronic fatigue syndrome was observed in 88% of patients. All 25 patients were admitted to the hospital with varying degrees of fever (37.2-40⁰ C).

When distributing patients according to diagnoses according to order № 277 of the Ministry of Health, 2018, it was found that 64% of patients were admitted at the 3rd clinical stage, 36% were admitted at the 4th clinical stage.

Of the 64% of patients, 44% were admitted with a diagnosis of B 20 stage 3, chronic bacterial respiratory infection, bronchitis, unexplained malnutrition of moderate severity. 20% were admitted with a diagnosis - B 20 3 stage, candidal stomatitis, unexplained malnutrition of moderate severity. 36% were admitted with a diagnosis of B 20 3 stage, acute gastroenteritis, unexplained malnutrition of moderate severity. Of the 36% of patients, 44% were admitted with a diagnosis of B 20. Stage 4, candidal stomatitis, recurrent diarrhea, unexplained severe malnutrition. 36% were diagnosed with B 20 stage 4, chronic diarrhea, unexplained severe malnutrition, severe malnutrition. 12% were diagnosed with B 20 stage 4, chronic bronchitis, HIV encephalopathy, unexplained severe malnutrition. 8% were diagnosed with B 20 stage 4, chronic viral hepatitis C, chronic pyelonephritis, unexplained severe malnutrition. Other authors have similar data [1].

The analysis of body weight deficit showed that weight was below 10% in 36% and above 10% in 44% of patients. A large weight deficit with cachexia was noted in 20% of patients. The number of CD4+ lymphocytes in children is normally 1500 cells. in 1 ml. in 44% of patients, a decrease in this indicator from 633-567 cells was noted, in 28% of patients from 567 to 143 cells in 24% of patients below 143 cells. The study of hemoglobin in peripheral blood showed: 100-90 g/l was noted in 44%, 90-80 g/l in 28%, 80-70 g/l in 20%, 70 g/l and below in 8% of patients. The study of the number of lymphocytes showed: from 50-40% in 60% of patients, from 40-30% in 16%, from 30-20% in 12%, 20% and below in 12% of patients. A similar picture was noted by other researchers [5].

Discharge from the hospital was carried out after the improvement of the general condition of the patients, out of 25 patients, 80% were discharged in a relatively satisfactory condition, 8% of the patients were transferred to other medical institutions, 8% of the patients left without permission, 4% of the patient was taken home in serious condition.

In one case, a fatal outcome was observed in a 6-month-old baby born to an HIV-infected mother. The results of a pathoanatomical study of the organs of immunogenesis made it possible to identify a number of morphological features. Changes were observed both in the central and peripheral organs of immunogenesis. The leading sign in the macroscopic examination was a decrease in the mass and size of the thymus, spleen and lymph nodes up to organ atrophy, which was determined by the severity of the immunodeficiency state. Visible macroscopic changes were represented by a wrinkled capsule, the tissue acquired a dense texture and a whitish-gray color. Microscopic examination diagnosed an accidental involution of the thymus of the degree, which was manifested by inversion of the cortical and medulla layers with a gradual loss of division of the substance due to the loss of lymphocytes in the medulla and progressive collapse of the stroma of the cortical layer. Thymic bodies (Hassal's bodies) were mostly small, the number was insignificant, 2-3 in the field of view of the microscope, their content was homogeneous, brightly stained with eosin, among them cystic changes were detected, the number of T-lymphocytes was sharply reduced. In the immunodeficient state, wide interlobular layers of coarse fibrous connective tissue were detected, areas of replacement with adipose tissue were noted, and a decrease in the volume of parenchyma lobules occurred. Among the collapsed stroma, single petrified Hassall bodies were found, which is a consequence of the loss of the ability to empty their contents into the lymphatic capillaries of the organ, the extinction of lymphopoiesis and, thus, the impossibility of effective immune protection. Pathological examination of the spleen tissue and lymph nodes was also characterized by a change in their general histostructure. Macroscopically, the lymph nodes at the terminal stages of the disease are reduced in volume, moderately dense in consistency, whitish-pink in section, divided by layers of connective tissue into large and small lobules. Microscopically, changes in the lymphoid tissue are characterized by a variegated morphological pattern, which was manifested by a combination of follicular hyperplasia, follicular involution, and signs of lymphocytic depletion.

Conclusions

The results of the study showed the prevalence of the disease in girls. When distributing patients by age category, a high incidence rate for the age from 11 to 14 years was revealed. In the diagnosis according to the etiological structure, patients with opportunistic infections of bacterial etiology prevailed. The main route of transmission: parenteral. When distributing patients according to diagnoses, it was revealed that the number of patients admitted to the 3rd clinical stage was higher. There were no appeals at the 1st and 2nd clinical stages. In patients admitted to the 3rd clinical stage, patients were accompanied by unexplained malnutrition of moderate severity. Patients admitted

to clinical stage 4 had unexplained severe malnutrition. When examining the parameters of body mass deficiency in most of the admitted patients, it turned out to be above 10%.

Thus, the identified pathomorphological changes in the immunocompetent organs confirm the clinical data indicating the development of a severe immunodeficiency state, characteristic of HIV infection in the AIDS stage, which is actually the background for the implementation of a systemic infectious process and the main cause of death in HIV-infected children.

Given the unfavorable course of HIV infection in pediatric patients, it is necessary to timely diagnose laboratory markers of opportunistic infections.

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