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DOI <https://doi.org/10.35220/2078-8916-2021-40-2.13>**A.I. Maksymenko,**

Candidate of Medical Sciences (PhD), Associate Professor,
Associate Professor at the Department of Pediatric
Dentistry, Poltava State Medical University, 23 Shevchenko
street, Poltava, Ukraine, postal code 36011,
0666272580a@gmail.com

CLINICAL MANIFESTATIONS OF HIV INFECTION IN THE ORAL CAVITY IN CHILDREN

The aim of the study was to analyze the features of clinical manifestations of HIV infection in the oral cavity in children.

Research methods. Analysis and generalization of literature data about the features of clinical manifestations of HIV infection in the oral cavity in children.

Scientific novelty. Systematization of medical and diagnostic aspects of lesions of the oral mucosa, salivary glands and periodontal tissues, which affect the course of the disease. This will allow to develop a pathogenetic scheme of treatment and prevention measures, which will improve the quality of life of HIV-infected children.

Conclusions. Candidal stomatitis is diagnosed in most AIDS patients (up to 75%) and manifests in several clinical forms: angular cheilitis, erythematous, hyperplastic or pseudomembranous candidiasis. It is believed to be suspected of having HIV infection and requires laboratory testing for HIV if there is the "sudden" development of candidiasis in children who have not previously received antibiotics or corticosteroids.

Bacterial infections in HIV-infected children are often caused by associations of various pathogens (*fusospirochetes*, *streptococci* and *staphylococci*). Manifestations of these infections can be gingivitis, HIV-necrotic lesions of the gums or mucous membranes of the cheeks, palate, HIV-chronic periodontitis. Viral infections often contribute to lesions of the oral mucosa in HIV-infected patients. Among the viral infections in the clinical symptoms of HIV-infected people are lesions of the oral mucosa caused by the herpes simplex virus.

"Hairy" leukoplakia occurs in 98% of HIV patients and is a marker of the disease. The origin of "hairy" leukoplakia is associated with a high level of replication of Epstein-Barr virus in the epithelial cells of the tongue.

Salivary gland damage in children with HIV is much more common than in adults. They increase and swell, hyperplastic changes appear.

Key words: HIV infection, children, diseases of the oral cavity.

A.I. Максименко,

кандидат медичних наук, доцент, доцент кафедри
дитячої стоматології, Полтавський державний
медичний університет, вул. Шевченка, 23, м. Полтава,
Україна, індекс 36011, 0666272580a@gmail.com

КЛІНІЧНІ ПРОЯВИ ВІЛ-ІНФЕКЦІЇ В ПОРОЖНИНІ РОТА В ДІТЕЙ

Мета дослідження – вивчення особливостей клінічних проявів ВІЛ-інфекції в порожнині рота у дітей.

Методи дослідження. Аналіз та узагальнення літе-

ратурних даних щодо особливостей клінічних проявів ВІЛ-інфекції в порожнині рота у дітей.

Наукова новизна. Систематизація лікувально-діагностичних аспектів ураження слизової оболонки порожнини рота, слинних залоз і тканин пародонта, які впливають на перебіг захворювання. Це дозволить розробити патогенетичну схему лікувально-профілактичних заходів, що призведе до поліпшення якості життя ВІЛ-інфікованих дітей.

Висновки. Кандидозний стоматит діагностується в більшості хворих на СНІД (до 75%) і проявляється в декількох клінічних формах: ангулярний хейліт, еритематозний, гіперпластичний або псевдомембранозний кандидоз.

Вважається, що «раптовий» розвиток кандидозу в дітей, які раніше не одержували антибіотики або кортикостероїди, є підозрою на наявність ВІЛ-інфекції й вимагає лабораторного обстеження на ВІЛ.

Бактеріальні інфекції у ВІЛ-інфікованих дітей найчастіше викликають асоціації різних збудників (*фузоспірохети*, *стрепто-* і *стафілококи*). Проявом цих інфекцій можуть бути гінгівіт, ВІЛ-некротичні ураження ясен або слизової оболонки щік, піднебіння, ВІЛ-хронічний пародонтит.

Серед вірусних інфекцій у клінічній симптоматиці ВІЛ-інфікованих відзначають ураження слизової оболонки порожнини рота, викликані вірусом простого герпесу.

«Волосиста» лейкоплакія зустрічається в 98% хворих на ВІЛ-інфекцію та є маркером захворювання. Походження «волосистої» лейкоплакії пов'язане з високим рівнем реплікації вірусу Епштейна – Барра у клітинах епітелію язика.

Ураження слинних залоз у дітей при ВІЛ-інфекції зустрічається значно частіше, ніж у дорослих. При цьому вони збільшуються і набухають, відбуваються гіперпластичні зміни.

Ключові слова: ВІЛ-інфекція, діти, захворювання органів порожнини рота.

Formulation of the problem. HIV infection in children is a pathological condition caused by the human immunodeficiency virus (HIV). It is characterized by a progressive decrease in the child's immunity. There are no specific clinical symptoms.

Infection of a child with HIV from a mother can occur in several ways: during pregnancy, during childbirth, during breastfeeding. Also, during life, children can become infected with the HIV virus through blood transfusion and other ways [1, 2].

The development of HIV infection in children has its own differences. HIV manifestations occur and rapidly progress in the first year of life in 20% of children, who become infected perinatally. The disease develops slowly, AIDS symptoms appear in school or even adolescence in 80% of HIV-positive children. Severe clinical symptoms and immunosuppression are not detected in the period up to 9 years in 25% of children infected during the perinatal period. The time of infection, the number of CD4 + T-lymphocytes during the first months of life, as well as the stage of the disease and the severity of immunosuppression in the mother

should be assessed to predict the course of the disease in children [3, 4, 5].

Progressive immunosuppression caused by the HIV virus primarily manifests subclinically. The number of CD4 and CD8 lymphocytes decreases, as well as there is an increase in the viral load in the blood. When these indicators reach a certain threshold, clinical signs of the disease appear, the first of which are lesions of the oral cavity (from 80 to 92%) [6, 7, 8].

The relationship between a low level of immunity, decrease in the number of CD4 lymphocytes in the blood (less than 500 cells / μ L) and a high incidence of various diseases of the oral mucosa, as well as periodontal diseases (more than 80%) has been proven [9, 10, 11].

The dentists must take an active position in recognizing HIV-infected and AIDS-sick children. Dentists should know the symptoms of this disease, analyze the medical history carefully.

The dentist may be the first doctor to suspect the disease due to the clinical course of HIV infection.

The aim of the study was to define the peculiarities of clinical manifestations of HIV infection in the oral cavity in children.

Research methods. Analysis and generalization of literature data about the features of clinical manifestations of HIV infection in the oral cavity in children.

Results and their discussion. A working group of leading dentists from different European countries proposed a classification of oral manifestations associated with HIV in August 1990 in Amsterdam. They proposed to distinguish three groups of manifestations based on the degree of probable connection with HIV infection. The first group – lesions of oral mucosa, which are most closely associated with HIV. The second group – lesions, which are less closely related to HIV infection. The third group – lesions, which are possibly associated with HIV infection [12].

The specific lesions that accompany HIV infection in adult patients do not always occur in children. Conversely, some diseases are specific only for childhood and do not occur in adult patients [6].

The diseases of the oral cavity in HIV infection can be divided into three groups:

- common in both adults and children;
- the diseases, which are found in adults, but not typical for children;
- diseases specific for children, but rare in adults [2].

The first group of diseases includes: candidal stomatitis, chronic aphthous ulcers, periodontal

disease, viral infections (herpes simplex virus, human papillomavirus, Varicella zoster virus).

The second group includes: hairy leukoplakia, non-Hodgkin's lymphoma, Kaposi's sarcoma, tuberculous ulcers. These diseases are closely associated with HIV infection, they often occur in adult patients, but they are rarely observed in children with HIV infection.

Disorders of the salivary glands often occur in children with HIV infection, but rarely in adults.

Analysis of the literature has shown that, two or more lesions of the oral cavity can be found at the same time in children with HIV infection [9].

Candidiasis stomatitis is diagnosed in a large number of patients with AIDS (up to 75%) and manifests in several clinical forms.

The varieties of candidiasis in the oral cavity are angular cheilitis, erythematous candidiasis, pseudomembranous candidiasis, hyperplastic candidiasis.

Angular cheilitis is a hyperemic lesion, it looks like cracks with erosions in the corners of the mouth or cracking of the corners of the lips. Sometimes it is associated with xerostomia and also it is observed in the early and progressive stages of the disease. It can occur together with erythematous and pseudomembranous candidiasis or separately from them. The disease lasts extremely long without treatment [5].

Erythematous candidiasis or atrophic candidiasis is erroneously diagnosed manifestation of HIV in the oral cavity. It has a chronic course in AIDS. The disease manifests as red, flat, barely noticeable damage on the dorsal surface of the tongue, hard, soft palate or diffuse redness. The palate is more often affected. The epithelium becomes thinner, erosions appear. The localization of lesions is on the back of the tongue and leads to atrophy of the filamentous papillae along the midline. The lesion can take a "mirror" shape: if it is on the tongue, it is necessary to examine the palate for the presence of the same lesion, and vice versa. This disease has clear symptoms: patients complain of heartburn, most often after eating salty or spicy foods and drinking acidic beverages [6].

Pseudomembranous candidiasis occurs in 83.3% of HIV patients. The disease is usually caused by the bacterium *Candida albicans*; however, there is information about the presence of bacteria that do not belong to this species.

Pseudomembranous candidiasis more often begins as an acute disease, however, it can be long-term or recur, so it is considered as a chronic process in AIDS.

Fungal lesions are manifested in the form of soft, white syrupy plaques, yellowish plaque on the hyperemic or unchanged oral mucosa. Plaques are easily removed with a spatula; plaque is tightly held on the surface of the epithelium, difficult to separate, while exposing areas of bleeding mucosa.

Bacterial infections are often caused by associations of various pathogens (fusospirochetes, streptococci and staphylococci). Manifestations of these infections can be gingivitis, HIV-necrotic lesions of the gums or mucous membranes of the cheeks, palate, HIV-chronic periodontitis. HIV-gingivitis manifests as an erythematous continuous band at least 1.0 mm wide, running along the border with the teeth. Gum bleeding and an anemic attached part of the gums are its symptoms. They can disappear after 3–4 weeks, but soon they recur again. The edge of the gums and interdental gingival papillae becomes necrotized, covered with a yellow-gray plaque, weakly welded to the underlying tissues. The mucous membrane in the area of the front teeth are more often affected [9].

Necrotic periodontitis can also be a sign of AIDS, because necrotic ulcerative periodontitis is a sign of severe decreased immunity. The disease is characterized by severe pain, tooth loss, gum bleeding, bad breath, gingival ulcers and rapid loss of bone and soft tissue.

Viral infections often contribute to lesions of the oral mucosa in patients with HIV infection. They are often caused by the herpes simplex virus.

Herpes simplex virus is a DNA-containing virus (Herpes simplex) from the family Herpesviridae. There are 8 antigenic types of virus; the most common type is 1. Type 2 virus is associated with genital herpes and generalized infection in infants. The primary infection may be asymptomatic.

The main clinical signs of herpes simplex are the simultaneous appearance of rashes in the form of grouped small blisters (vesicles) on the skin and mucous membranes, filled with a serous liquid. Herpes often appears on the lips, skin around the mouth, nose, less often – on the skin of the cheeks, eyelids, ears.

Herpetic ulcers up to 3 cm in diameter, acquire the shape of a crater with raised, irregularly shaped edges and a red bottom, may be covered with a grayish-white plaque in HIV infected persons.

“Hairy” leukoplakia (oral viral leukoplakia, flat condyloma, villous leukoplakia) occurs in 98% of patients with HIV infection, thus being a marker of the disease. The origin of “hairy” leukoplakia is associated with a high level of Epstein-Barr virus in the epithelial cells of the tongue.

“Hairy” leukoplakia is characterized by unilateral or bilateral lesions of the lateral surfaces of the tongue in the form of white folds or protrusions. They can spread to the back of the tongue, the cheek mucosa, the bottom of the mouth and the palate. Plaque cannot be removed. This disease is usually asymptomatic and does not require treatment, except for cosmetic reasons. Patients sometimes can be bothered by the unpleasant appearance of the tongue [1].

A specific feature of “hairy” leukoplakia is that the elements of the lesion are tightly welded to the mucous membrane, the surface of which varies from smooth to wrinkled. These dense white areas of the mucosa are comparable to the classic leukoplastic lesions observed in old people.

Aphthous ulcers are also common for AIDS. Their cause is unknown. The lesions are characterized by their surrounding inflammation and gray pseudomembrane membrane. They are quite painful, especially when eating salty, spicy, sour foods or drinks, as well as solid foods [2].

Large, unusual-looking or sudden ulcers in the mouth that cannot be attributed to any other type of ulcer should make the dentist consider HIV / AIDS.

The diseases of the salivary glands in children are much more common than in adults. So it is the difference between the manifestation of HIV infection in childhood. Salivary glands increase and swell, hyperplastic changes occur [13].

Such symptoms appear according to the development of the disease and a decrease in the number of immune cells, and may also be a consequence of the action of some medications (for example, proteinase inhibitors) [14]. The symptom of xerostomia (dry mouth) is specific for HIV-infected patients. It occurs in both adults and children [15].

Many authors say that the diseases of salivary glands are among the fundamental factors, which are responsible for the development of caries in HIV-infected children [16, 17, 18].

Conclusion. HIV infection in children is characterized by faster course compared to adults. Bacterial and viral infections in HIV-infected children are severe, with a tendency to recur. Therefore, the dentist must know the main manifestations of HIV infection in the oral cavity in children and be able to provide special dental care to such patients.

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