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ЧАСТОТА ВЫЯВЛЕНИЯ STAPHYLOCOCCUSSPP. И CANDIDASPP. НА ПОВЕРХНОСТИ КОЖИ ДЕТЕЙ, ЖИВУЩИХ С ВИЧ ИНФЕКЦИЕЙ

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DETERMINATION RATE OF THE STAPHYLOCOCCUS SPP. AND CANDIDA SPP. ON SKIN OF CHILDREN LIVING WITH HIV INFECTION

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Аннотация. В статье приводятся результаты клинико-лабораторного обследования ВИЧ-положительных детей. Изучена частота встречаемости заболеваний кожи, а также определена частота встречаемости Staphylococcusaureus, *Staphylococcusspp., Candidaalbicans, Candidaglabrata, Candidakrusei, Candidatropicalis/Candidaparapsilosis* в структуре микробиоты кожи у ВИЧ-положительных детей методом полимеразной цепной реакции с детекцией результатов в реальном времени.

Annotation. The article presents the results of a clinical and laboratory examination of HIV-positive children. The frequency of skin diseases occurrence was studied, as well as the frequency of occurrence of *Staphylococcus aureus, Staphylococcus spp., Candida albicans, Candida glabrata, Candida krusei, Candida*

*tropicalis / Candida parapsilosis*in the structure of skin microbiota in HIV-positive children by polymerase chain reaction with detection of results in real-time.

Ключевые слова: ВИЧ, дерматозы, микробиота, дети
Key words: HIV, dermatosis, microbiota, children.

Abstract

The Global Human Microbiome Project explains the uniqueness of the human microbiome and emphasizes the need to study its structure and contribution to the development of human diseases, as well as the effect of immunity on the composition of the microbiome [7].

According to a review by C Navarrete-Dechent et al (2015), the main group of bacteria that cause skin infections are gram-positive species, especially *Staphylococcus.* The incidence of skin infections caused by *Staphylococcus* among HIV-positive patients is 8.2% compared with 3% in the HIV-negative population [4].

Since the onset of the HIV epidemic, *Candida* has been identified as a marker of immune deficiency. It is also the most common opportunistic infection. Usually *Candida albicans (C. albicans)* is detected, but *Candida glabrata (C. glabrata), Candida tropicalis (C. tropicalis), Candida krusei (C. krusei)* and *Candida parapsilosis (C. parapsilosis)* are also found [5].

The purpose of the study was to assess the incidence of *Staphylococcus aureus, Staphylococcus Spp., Candida albicans, Candida glabrata, Candida krusei, Candida tropicalis / Candida parapsilosis* in the skin microbiota in HIV-positive children.

Materials and methods of research

Clinical and laboratory examination of 49 HIV-positive children (18 boys and 31 girls; age range 3 months to 17 years, mean age was 7 ± 5.1) was carried out. All children were under follow-up care in the State budgetary institution of health care of the Sverdlovsk region “Sverdlovsk Regional Center for the Prevention and Control of AIDS.

A total of 65 samples of skin swabs were obtained from HIV-positive children. From the intact interscapular region, 49 swabs were obtained. In the case of dermatosis, an additional swab was taken from the skin lesion, thus, 5 children were swabbed from two locations, and one child from three. In the presented cases, the perinatal transmission of HIV-infection was established in all children. According to immunological examination, in 76% of children the number of CD4 lymphocytes corresponded to the age norm; moderate immunodeficiency was observed in 5% of cases, severe immunodeficiency was found in 18% of children.

All 65 samples were examined for presence of *Staphylococcus spp.* and *Candida spp*. DNA of *C. albicans, C. glabrata, C. krusei, C. tropicalis / C. parapsilosis, Staphylococcus spp., S. aureus* was detected by real-time PCR (RT-PCR) using reagent kits for scientific use and DTPrime 4M1 real-time PCR instrument according to the manufacturer's instructions (DNA-Technology, Russia).

The study was approved by the Ethics Committee of the Ural State Medical University (Protocol No. 10 from 12.20.2019).

Study results and discussion

Clinical examination revealed skin diseases in 19 (38.8%) of 49 children, including 8 (44.4%) of 18 boys and 11 (35.5%) of 31 girls.

In 8 (16.3%) of 49 children, chronic dermatoses were detected, including atopic dermatitis in 3 cases (6%), seborrheic dermatitis - 2 (2%), skin xerosis - 2 (2%), follicular hyperkeratosis - 1 (2%). Infectious skin diseases were reported in 11 (20%) children, including 4 (8.1%) bacterial (crevice impetigo, streptoderma), 4(8.1%) - fungal (oral candidiasis, scalp microsporia) and 3 (6.1%) - viral (herpes catarrhalis, viral warts). There was no statistically significant dependence of the severity of the dermatosis on the degree of immunodeficiency and viral load.

Staphylococcus spp. detected in 18 (36.7%) samples, including children without skin pathology in 9 (33.3%) of 30 cases and children with chronic dermatoses in 9 (47.3%) of 19 cases. *S. aureus* was identified in 4 samples, three of them were obtained from skin lesions (crevice impetigo, streptococcal impetigo of the nasolabial triangle, candidiasis of the oral cavity). *Candida* was f in all samples obtained from affected skin areas. *C. non-albicans (C. krusei, C. tropicalis / C. parapsilosis)*, resistant to standard antimycotic drugs, were detected In 2 (29%) cases.

The higher incidence of viral, fungal and bacterial skin infections in HIV-positive children was reported compared to HIV-negative children [2]. *Staphylococcus* is noted as the most common etiological agent causing infectious dermatoses in HIV-positive patients [3].

Our results demonstrate increased bacterial and fungal colonization of the skin, as well as a greater variety of *Candida non-albicans* species in HIV-positive children, when opportunistic microorganisms can cause infectious dermatoses.

In addition, co-infection of certain species of *C. albicans* and *S. aureu*s can lead to infectious synergies with increased toxicity and an enhanced inflammatory response [6].

Conclusions

1. We have found that in HIV-positive children *C. krusei, C. tropicalis / C. parapsilosis*, resistant to standard antimycotic treatment, and *Staphylococcus spp.* is persistant

2. The presence of opportunistic staphylococci and yeast-like fungi in the skin microbiota and the greater variety of *Candida spp.* species observed in children living with HIV infection may be the main cause of frequent relapses of skin diseases, despite an undetectable viral load and the absence of immunodeficiency.

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ЧАСТОТА ВСТРЕЧАЕМОСТИ РЕДКИХ ЗЛОКАЧЕСТВЕННЫХ ОПУХОЛЕЙ КОЖИ В СВЕРДЛОВСКОЙ ОБЛАСТИ

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THE FREQUENCY OF RARE SKIN CANCERS IN THE TERRITORY OF SVERDLOVSK REGION

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Аннотация: В статье представлен анализ частоты встречаемости редких опухолей кожи на территории Свердловской области.

Annotation: The frequency of rare skin cancers in the territory of Sverdlovsk region has been analyzed in this article.

Ключевые слова: новообразование, рак, частота, встречаемость, возраст.

Key words:neoplasm, cancer, frequence, occurrence, age.