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FEATURES OF IMMUNOLOGICAL PARAMETERS IN PATIENTS WITH CHRONIC TONSILLITIS ON THE BACKGROUND OF A VIRAL INFECTION

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Abstract:

Inflammatory diseases of the lymphoid ring of the pharynx continue to occupy one of the leading places in the overall structure of the pathology of the ENT organs. According to different authors, chronic tonsillitis is a very common disease and occurs in 4-15% of cases. Chronic tonsillitis refers to the so-called multifactorial diseases. The inflammatory process in the tonsils leads to pathological changes in them and the tonsils themselves become a source of infection. Currently, the question of the significance of the long-term persistence of the Epstein-Barr virus (EBV) in the development of inflammatory pathology of the upper respiratory tract is being discussed . At the same time, the clinical forms of diseases caused by the Epstein-Barr virus differ during primary infection and during reactivation. Active proliferation of the virus in all organs with lymphoid tissue leads to structural changes affecting all parts of the immune system, including local immunity of the lymphopharyngeal ring.

Keywords

Chronic tonsillitis, Ebstein-Barr virus, DNA, PCR, humoral immunity

Introduction

Of the total number of inflammatory diseases of the ENT organs, rheumatic fever, more than 70% are caused by a viral infection, this number includes herpesvirus [3, 9,7]. Of these, one of the first places is occupied by diseases of the ENT organs resulting from the reactivation of virus Epstein Barr EBV [2]. It is known that chronic tonsillitis is a disease caused by the development of chronic infection, the main features of which are defined as the properties of microorganisms, and the state of the immune system [4, 6]. This is the most common infectious lesion of the tonsils, characterized by impaired humoral and cellular immunity, which can develop after recurrent acute tonsillitis [7,3].

According to WHO, up to 80 - 90% of the world's population is infected with viruses of the herpes family [1].

The greatest clinical significance is represented by a group of herpes virus infections, including epstein Barr virus - infection is widespread in the human population, they are

pantropic and capable of affecting almost all human organs and systems [8]. Typical clinical manifestations are diverse, but the main symptoms are oropharyngeal lesions (chronic tonsillitis), fever, generalized lymphadenopathy, especially an increase in the lymph nodes of the cervical group [6,10,11].

In the "world" of practitioners of the ENT profile, despite the large flow of information on the clinic, immunology and therapy of herpetic infections, these pathogens are not considered at all as the leading etiological factor in the genesis of lesions of the lymphoid pharyngeal ring. Based on the foregoing, there is an urgent need to search for causative factors and study the role of herpesvirus infections in the etiology of damage to the lymphoid system of the oropharynx (hypertrophy of the tonsils) [9]. No less urgent is the problem of Epstein-Barr viral infection. Globally, between 16 and 800 individuals per 100,000 people per 100,000 population are infected daily [6]. This is due to both a true increase in morbidity and an improvement in diagnosis. Half of the human population becomes infected before the age of 5. The second half falls on the second decade of life [9]. Our study was to improve the diagnosis of children with chronic tonsillitis associated with epstein Barr virus, based on the study of changes in cellular and humoral immunity.

Materials and Methods of Research

An analysis of clinical and laboratory data of patients outpatient and inpatiently treated in the multidisciplinary clinic of SamSMU with chronic tonsillitis to 2020 - 2022years. The examination of patients consisted of the traditional collection of complaints, anamnesis, objective examination. Given that most researchers examine children under 4 years old or starting from 14 years and older, in our study was conducted in children aged 4 to 14 years. By random sampling, 145 children were examined and 30 children aged from 4 to 14 years were selected, with a diagnosis of chronic tonsillitis associated with the Epstein Barr virus, verified on the basis of complaints, anamnestic data, the clinical picture of instrumental, laboratory and bacteriological studies, the study of material from the throat for microflora and sensitivity to antibiotics, PCR determination of EBV DNA, CMV, HSV type I, HSV type II in flushing waters from the palatine tonsils and scraping of mucous membranes from the back wall of the pharynx. The control group consisted of 25 children aged 4 to 14 years without acute, chronic diseases and negative data for Epstein Barr virus.

Results and Discussion

Analysis of the literature review showed that not all researchers are unanimous in determining the direction and severity of immune disorders in herpes infectionand, including in EBV infection in persons aged 4 to 14 years. Study of T-lymphocytes (CD3 +) and their subpopulations (CD4 +, CD8 +) in patients with EBV infection against the background of chronic tonsillitis in peripheral blood, were distinguished by sufficient inconsistency, both low or normal, and high levels of them in the blood, or an imbalance of their content were recorded [2]. The choice of CD markers in our study was based on

the determination of the main immunocytes: CD3 T lymphocytes and their subpopulations (CD4+, CD8+), B lymphocytes (CD22+) and natural killer cells (CD16+).Patients aged 4 to 14 years had low levels of $CD3^+$ (0.71±0.06) and $CD4^+$ (26.25±2.4) lymphocytes compared to the control group (1.37±0.2; 42.11±0.39 respectively), this led to a significant decrease in IRI (1.37±0.2) compared with the control group (1.17±0.08) $p<0.05$.There was an increase in the relative amount of CD16 + (24.68±1.8) in patients compared with the control group (13.2±0.4), in the absence of differences in their absolute content. There was a significant decrease in the relative level of CD8 + (15.04±1.53) against 23.5±0.4 (control group). The proportion of CD22+ was high 21.6±5.4. ($p<0.001$) compared to the control group 15.37±0.23.When assessing the indicators of humoral protection, a significant decrease in IgA was revealed in patients with chronic tonsillitis with Epstein Barr virus compared with the control group ($p<0.05$), the IgG content was inaccurately increased and amounted to 13.05±0.32 against 11.85±1.5 in the control group, the IgM content was significantly increased 1.45±0.1 versus 0.98±2.1 in the control group.

Conclusion

Thus, in patients aged 4 to 14 years with chronic tonsillitis associated with the Epstein Barr virus, an insufficiency of the immune response to cellular immunity was recorded, as evidenced by a decrease in T cells ($CD3^+$, $CD4^+$). We revealed a significantly significant decrease in the IRI index, IgA in all patients compared with the control group ($p<0.05$).We also found a significant increase in the number of NK cells CD16 + and CD22 +, IgM in children aged 4-14 years with chronic tonsillitis associated with the Epstein Barr virus.The data obtained by us justify the use of antiviral drugs in cases where chronic tonsillitis is associated with the Epstein Barr virus.

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