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Immunological Indications for Acute Secondary Purulent Mapitis Developed Against Diabetes Mellitus in Children

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Abstract: Diagnosis and treatment of acute otitis media, which develops in children against the background of diabetes mellitus, is one of the pressing problems of otorhinolaryngology and is the focus of attention of all specialists. Despite the achievements of world science, the treatment and prevention of this pathology in children remains one of the unresolved problems of modern medicine.

Keywords: Otitis media, diabetes mellitus, immunology, otorhinolaryngology.

Diabetes mellitus (DM) is one of the most common chronic diseases in the world and is recognized as the most important medical and social problem of our time. The number of people with diabetes increased to 463 million in 2019, up from 108 million in 2010, according to the International Diabetes Federation (IDF).That's allIDFAccording to data, by 2045 the number of QD cases could exceed 630 million. Diabetes is estimated to be the seventh leading cause of death worldwide[1]. It is known that diabetes affects many organs and systems and, accordingly, affects the growth and development of the child.Acute otitis media, developing against the background of diabetes mellitus, significantly changes the clinical picture, aggravates the course of the disease and, at the same time, increases the risk of developing meningoencephalitic complications leading to adverse consequences of the disease[2].

The appearance and clinical course of acute otitis media in children is influenced by many factors that are difficult to take into account. At the same time, these factors are sometimes the most important in the development of the disease and give a certain direction to its course. In fact, this situation is more relevant for the development of acute otitis in early childhood, where even a seemingly minimal deviation from the normal physiological development of a child significantly affects the development of the pathological process in the middle ear[3].

The maturation of the immune system in children has a very wide individual time frame. The dynamics of the composition of immunoglobulins in the first year of a child's life is characterized by a clear expression; their level is only 35-38% compared to adults. In this case, there is a violation of the ratio of individual classes of immunoglobulins, as well as changes in their qualitative composition at various levels. Changes in the child's immunological status significantly affect the clinical picture of LLC[4].

According to the observations of Russian scientists, in young children with PFO there was a significant increase in the amount of albumin and a decrease in the level of globulins, mainly due to the α-fraction. Researchers found an increase in IgG and IgA in peripheral blood with a decrease in IgM in children with PFO. An increase in the content of lactate dehydrogenase and lysozyme in acute purulent otitis media and a dependence of the content of lysozyme on the severity of the inflammatory process have been established[5].

The development of PFO depends on the formation of a local immune response in the middle ear. Research by foreign scientists has shown that the middle ear has its own immune defense system. It has been proven that the mucous membrane of the middle ear contains a secretory component (Sc)[6].

The walls of the tympanic cavity in a newborn are covered with a special mucous membrane, which produces a relatively small amount of IgA, and produces a small amount of IgA, and C cannot produce IgA, since Ss and IgA are located separately in the mucus. C IgA is synthesized by plasma cells and mucous glands.

A decrease in C IgA in the mucus of the middle ear contributes to the activation of the pathological process. At the same time, there is a direct correlation between C IgA and the clinical course of PFO: the lower its level, the more frequent otitis media and its relapses[7,8].

It is known that the microbial factor plays a major role in the etiology of the development of acute purulent otitis media. The species composition of the microflora is very diverse. The frequency of pathogens depends on the clinical course of the disease. According to a number of researchers, in the clinical course of acute purulent otitis media, aerobes in monoculture form often predominate, among which staphylococci dominate[9].

Despite the fact that viruses play an important role in the development of PFO, the main etiological agents are bacteria. Streptococcus pneumoniae, Haemophilus influenzae and Moraxella cataralis play an important role in the development of acute otitis media. These microorganisms mainly live in the nose and throat of children. In most children under 6 months of age, the disease is caused by E. coli or group B streptococci[10].

It is known that any localized purulent process is accompanied by intoxication phenomena due to the entry into the bloodstream of waste products of microorganisms (endo- and exotoxins), endogenous decay products of cells and tissues, as well as their excessive accumulation.

It is logical to assume that the circulation of these substances in the nature of protein peptides leads to the chemotactic “distraction” of leukocytes necessary to ensure protective functions in the purulent focus. This, in turn, leads to a weakening of the local tissue reaction around the site of inflammation.

Immunodeficiency syndrome is characterized by the following indicators: a decrease in the relative and absolute number of T-lymphocytes, O-lymphocytes; a significant decrease in the relative and absolute number of T-helper-inducer T-lymphocytes; decreased immunoregulation index; increased sugar levels in peripheral blood.

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