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THE ROLE OF CYTOMEGALOVIRUS INFECTION AND EPSTEIN BAR VIRUS IN HUMAN PATHOLOGY

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Abstract:
Cytomegalovirus infection (CMVI) is ubiquitous in nature. Usually has no age limit when affected, and is in the human body for a long time. In this case, a person can become infected immediately after birth. The infection may be present in the body and not cause disease or other pathologic symptoms [1].

Keywords: cytomegalovirus infection, tonsillitis, chronic adenoiditis, immune system, humoral immune system.

INTRODUCTION

Arslan F, Babakurban ST (2015), in their studies revealed the impact of CMV and VEB on human health, when the latter is in the body, inflammation of organs and tissues, for a long time leads to various changes. The immune system is gradually depleted due to which its function is impaired and it cannot resist the development of infection activation. The above mentioned disorders directly lead to the development of secondary immune, autoimmune and degenerative disorders [9].

Numerous studies have focused on infected newborns who were infected by their mothers during pregnancy with CMV infection. The infection was severe in these children, and when the children were born, they had multiple organ and systemic lesions
which subsequently led to the development of disabilities in this group of children. Approximately 25% of these children develop complications, so early diagnosis is important.

Cytomegalovirus infection is now well understood by numerous studies. The virus belongs to the herpes viruses. In the body of an infected person, the virus genome is directly synthesized in the cells of various tissues.

Studies of foreign scientists have proved that cytomegaloviruses have many strains and these strains differ among themselves in virulence and lesions of different tissues. In addition, this is their peculiarity is associated with their genetic data. The human body produces antibodies against the outer envelope, this is taken into account nowadays for the development of vaccines [12,13,15].

Gossman W. G et al [2018] defined several forms of cytomegalovirus infection in the organism depending on the course of the infection. Primary infection if no cytomegalovirus has been previously identified in a person, re-infection or reactivation if CMVI has been

previously identified in the body; as for the course, it can be acute, latent and chronic in congenital or acquired CMVI. [8,9,10,14].

In acute CMV infection, all tissues are affected. Nigro G. et al [2015] found that cytomegalovirus infection if the body has reduced T-cell immunity, for a long time can be introduced into the body and then the infection can manifest itself as a subacute course. [13,14]. Jones R. P. et al [2014] and Kallemeijn1 M. J. [2017]. et al. in their studies found that children with congenital cytomegalovirus infection have a very high incidence of death, neurological disorders, and HIV infection progresses more rapidly. [1,3,7,11].

Опасность цитомегаловирусной инфекции состоит в том, что он подавляет вырыботку как клеточного, так и гуморального иммунитета, это приводит к восприимчивости организма к различным инфекциям, особенно вирусным. [4,5,6]. Todorovic M.M., Zvrko E.S. [2013] изучили содержание цитокинов при тонзиллитах и выявили снижение противовирусного иммунитета.

Most researchers have concluded that cytomegalovirus infection can contribute to the exacerbation of many chronic and recurrent diseases. In addition, they can directly cause autoimmune reactions in the body. [2,3,4,11,15].

If cytomegalovirus infection is detected in the elderly, they have reduced antiviral and post-vaccine immunity, and interferon treatment may not respond well. Thus cytomegalovirus infection reduces immunity at any age, whether it is an infant or an elderly person. [9,10,12,15].

Jones R. P., Goldeck D (2014), in their publications, found a high incidence of CMVI if the pregnant woman has this infection and it becomes active. Lazzarotto T., Guerra B. (2011) provide evidence that the role of new strains of cytomegalovirus infection is not excluded in their scientific works [12,13,14].

In 30-50% of cases, if the mother has acute primary CMVI, the child is at risk of developing a congenital form of this infection.

Schleiss M. R (2017) believes that if a woman has antibodies against cytomegalovirus infection, the child born from subsequent pregnancies will be 69% protected from this infection. [3,6,7].

Currently, in order to determine antibodies against cytomegalovirus infection in the human body are offered many methods, some of them are not safe, especially in pregnant women and can cause various complications, such as amniocentesis, which can lead to miscarriage, rupture of membranes, infection of the fetus. But of course there are other non-invasive methods [1,4,6,8]. If anti-CMV IgM antibodies are detected in a pregnant woman, only 4-5 of them may have primary cytomegalovirus infection. Scientists have proven that these antibodies can remain in the human body for six or nine months, this is the so-called latent reactivation. [7,9,10]. Nishida K., Morioka I., Nakamachi Y. In their study of women with antibodies against cytomegalovirus infection, they found that if the fetus has symptoms of fetal abnormalities, it is necessary to treat the newborn to reduce the effects of cytomegalovirus infection, especially on the nervous system of the child. Some scientists still suggest antiviral therapy before 12-16 weeks if the pregnant woman is positive for anti-CMV IgG and CMV IgM. [11,12,13].

It should be taken into account that according to the international Consensus 2017, pregnant women who have had symptoms of influenza without confirmation of influenza and who show symptoms of congenital infection on ultrasound , MRI, the pregnant woman is offered screening for anti-CMV IgG, IgM and IgA by ELISA [1,3,5,8].

According to the International Consensus 2017, after 20-21 weeks of gestation or at least 6 weeks after the diagnosis of maternal infection, a diagnosis of confirmed fetal CMV infection should be made by testing amniotic fluid for CMV DNA. In this case, the level of evidence should be at least 2b [14].

For the diagnosis of newborn CMV infection, the following peculiarities should be kept in mind: if the child has no symptoms of the disease, serologic diagnostic methods are not informative The best way to detect infection in children is by culture or PCR tests. Congenital cytomegalovirus infection is diagnosed when a positive result is obtained by PCR diagnosis on the 21st day of life. In this case, cord blood is not tested, there is a high probability of contamination.

Researchers do not recommend that all pregnant women be screened for CMVI, but all newborns with deafness should be screened for CMVI. According to the 2017 International Consensus, congenital CMV infection in newborns requires real-time PCR in urine or saliva preferably after birth but no later than the first 3 weeks of life, with saliva preferred, level of evidence should reach 2b. Some researchers have argued that it is virtually impossible to distinguish congenital from postnatal cytomegalovirus infection by PCR and ELISA in children older than 3 weeks of age (5,6,7).

In addition to newborns, for the diagnosis of acute cytomegalovirus infection is carried out by - detection of low-avid anti-CMV IgG with subsequent seroconversion, acute-phase anti-CMV IgM, as well as the detection of the viral genome in PCR or virus antigens in ELISA in the study materials from the patient.

The 21st century is a century of discovery in medicine and science. What do we know about vaccines? The search for CMV vaccines is ongoing. The vaccine developed has a 50% efficacy rate in patients with apparent clinical disease but negative tests. The same data were obtained in the research studies of Schleiss M. R. [3,4,5].

The clinical picture of acute tonsillopharyngitis in which the etiologic factor is Epstein-Barr does not differ from tonsillopharyngitis of other etiologies, in general there is an acute onset, febrile fever, marked intoxication syndrome. It should be emphasized that the distinctive features of tonsillopharyngitis of Epstein-Barr virus etiology are the presence of nasal breathing difficulties without discharge from the nasal passages due to edema of lymphoid tissue, enlargement of all groups of cervical lymph nodes, superficial fibrinous plaque on tonsils, hepatosplenomegaly. Laboratory diagnosis in tonsillopharyngitis of Epstein-Barr virus etiology is observed leukocytosis or leukopenia, lymphocytosis, monocytosis are characteristic, the presence of atypical mononuclei is diagnosed in 83% of patients [13,14,15].

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