**II Міжнародна науково-практична конференція**

**«Discussions for the improvement**

**of science»**

**Медицина**

**Features of the structural and functional state of blood lymphocytes in patients with infectious mononucleosis with different course**

Ya. V. Kolesnyk

PhD in Medicine, associate professor

Department of the Pediatric Infectious Diseases

Kharkiv National Medical University

yanakolesnik8@gmail.com

O.M.Olkhovska

Candidate of Medicine, professor

Department of the Pediatric Infectious Diseases

Kharkiv National Medical University

om.olkhovska@knmu.edu.ua

O. G. Sorokina

Candidate of Medicine, associate professor

Department of infectious diseases and clinical immunology

o.sorokina@karazin.ua

The relevance of the problem of infectious mononucleosis (IM) is determined by the high level of Epstein-Barr virus (EBV) infection in children, the possibility of developing an unfavorable course of the disease and, in some cases, the formation of long-term immunosuppression with a deficiency of T-cell and phagocytic immunity [1].

The available literature clearly highlights the issues of etiology, pathogenesis and clinical manifestations of the disease [2, 3]. However, scientists' data on the early diagnosis of infectious mononucleosis are rather contradictory [4, 5]. Untimely diagnosis of active forms of EBV infection, and hence untimely treatment, can lead to uncontrolled proliferation of B-lymphocytes, which is a causative factor in the malignancy of EBV-infected cells with the development of lymphoproliferative diseases [6].

The aim. To determine the structural and functional status of blood lymphocytes in patients with acute and prolonged course of infectious mononucleosis (IM) in children.

Materials and methods. 62 children were under clinical and laboratory-instrumental supervision, the children were divided into groups: group 1 - 49 children with IM with an acute course of the disease; group 2 - 13 children with a protracted course of the disease. All children underwent standard clinical laboratory and instrumental laboratory examinations. The diagnosis of IM was confirmed by PCR (detection of EBV DNA in the blood) and ELISA (anti-EBV Ig M and Ig G).

Research results. In the study of the structural state of the cytoplasmic membrane of the lymphocytes of the blood of patients with MI in the onset of the disease, it was found that the average values of penetration rate of the electron paramagnetic resonance of the spins of the probes (PR EPR s.p.) in children of both groups were significantly higher than normal (p <0.001). There are also differences between groups of patients. In this case, the value of PR EPR s.p. in patients with a prolonged course by 15.8% exceeded those in patients with acute IM (p <0.001). According to the rate of microviscosity of the intracellular content (MV IC), its values were reduced compared with the control - by 22.1% (p <0.001) in patients with acute course of the disease and by 25.1% - with a prolonged course of IM). In addition, in patients with a prolonged course of the disease, the values were 9% lower than in the group with acute infectious mononucleosis.

When considering immunological parameters, it was found that the indicators of the T-immune system for patients with a prolonged course of the disease in comparison with the alternative group was characterized by a decrease in the content of CD3 <50% (respectively in 51.3% and 26.2% of patients; p <0 , 05); CD4 <31% (62.1% and 32.4%, respectively; p <0.05) and CD8 <15% (37.8% and 10.8%, respectively; p <0.01).

With regard to the cytokine profile, the level of IL1 <20, pg / ml was determined 3.5 times more often in patients with a prolonged course of the disease compared to the acute course (64.8% and 18.5% of patients, respectively); TNFα <20.0 pg / ml 1.9 times more often (48.6% and 24.6%, respectively) and a very high (> 30.1 pg / ml) level of IL4 in 40.5% and 20 %).

From the B-system of immunity in patients with a prolonged course of IM in comparison with the acute course was more often determined by the increased content of CD 22, as well as low levels of Ig A, Ig M <1.1 g / l and Ig G <10.0 g / l .

Conclusions. According to the results of observations, the pathogenetic role of the violation of the structural organization of blood lymphocytes in the formation of IM is established. It was found that these disorders in the form of increased permeability of their cytoplasmic membrane and reduced viscoelastic properties of their intracellular environment are more pronounced with a prolonged course of the disease, which is a factor in the prolongation of the disease.

It is determined that the indicators of cellular and humoral parts of the immune system affect the course of IM. At formation of an acute course of IM at children already in the acute period of a disease activation of both cellular and humoral links of immunity which is shown in the form of increase in relative content of CD3 +, CD4 +, CD8 + and CD22 + and levels of immunoglobulins M, A is noted. For the prolonged course of the disease depression of T-cell immunity in the form of a decrease in the relative content of CD3 +, CD4 + and CD8 + lymphocytes and an increase in CD22 +, as well as inhibition of antibody genesis are characteristically.

It was found that the variant of IM depends on the type of reaction of T-helper clones, namely - in the initial period of manifestation of IM with its acute course there is activation of T1 and T2 helper response, which manifests itself in a significant increase in IL 1, TNFα and moderate IL 4. Prolonged course of the disease is formed against the background of weak activation of pro-inflammatory interleukins (IL 1, TNFα) and significant - anti-inflammatory IL 4.

Reference

1. Cohen JI., Kimura H., Nakamura S., Ko YH, Jaffe ES. Epstein–Barr virus-associated lymphoproliferative disease in non immunocompromised hosts: a status report and summary of an international meeting. Ann. Oncol. 2009;20 (9):1472–1482.

2. Незгода ІІ., Бобрук СВ. Клініко–лабораторна характеристика проявів інфекційного мононуклеозу у дітей. Інфекційні хвороби. 2016;2:С.35-39.

3. Vey Hadinoto, Michael Shapiro, Thomas C. Greenough, John L. Sullivan, Katherine Luzuriaga, David A. Thorley-Lawson. On the dynamics of acute EBV infection and the pathogenesis of infectious mononucleosis. Blood. 2008;111:1420-1427.

4. Кіш ПП., Коваль ГМ., Петров ВО. та ін. Особливості перебігу інфекційного мононуклеозу у дітей. Науковий вісник Ужгородського університету. 2013;2(47):139-144.

5. Пікуль КВ., Ільченко ВІ., Прилуцький КЮ. та др. Особливості перебігу інфекційного мононуклеозу у дітей. Світ медицини та біології. 2011;4:137-141.

6. Chen MR. Epstein-barr virus, the immune system, and associated diseases. Front Microbiol. 2011;2(5):3.