O. N. Ivanova

TREATMENT OF CHRONIC EPSTEIN BARR VIRUS INFECTION IN CHILDREN

ABSTRACT

Article is devoted to an actual problem of modern medicine – Epstein-Barr virus infection (EBV). We examined a group of children aged from 5 to 10 years with low-grade fever of unknown origin and manifestations of oral herpes with a positive ELISA for virus Epstein - Barr (IgG-VCA in high titers, IgG-EBNA, IgG-EA) and positive PCR for EBV.

The children underwent a two-stage treatment: drug inosinepranobex at a dose of 5 mg/kg per day for 10 days, the drug likopid 1 mg 1 time a day for 10 days. All children after treatment for 30 days were re-studied by ELISA and PCR for virus infection Epstein's Barr. It was revealed that in 90% of children were not detected positive IgG-VCA, IgG-EA; positive IgG-EBNA was observed in 20% of children. Positive PCR on EBV were detected in 20% of examined children. In groups of children with EBV there was an increase of reduced levels of CD3+, CD4+, CD16+.

Keywords: immunity, virus, antibody, immunoglobulin, herpes, disease.

Epstein-Barr virus infection (EBVI) is one of the most common human diseases. About 55-60% of young children (under 3 years) are infected with Virus Epstein-Barr; the vast majority of the adult population (90-98%) has antibodies to EBVI.

Chronic active EBV-infection is characterized by long duration and frequent recurrences. Patients' complaints are weakness, fatigue, excessive sweating, prolonged mild fever up to 37,2-37,5°, skin rash, and sometimes joint syndrome, pain in the muscles of the trunk and extremities, heaviness in the right hypochondrium, a feeling of discomfort in the throat, slight cough and stuffy nose, some patients have neurological disorders – causeless headaches, memory impairment, sleep disorders.

The incidence in different countries varies from 3-5 to 45 cases per 100 thousand population is relatively high. EBVI refers to a group of uncontrollable infections for which no specific prevention (vaccination), which certainly affects the level of morbidity [1, 2, 3].

The purpose: to study the characteristics of immunity and the effectiveness of treatment with combination of drugs inosin pranobex and likopid of children with chronic (low-grade fever of unknown origin) Epstein-Barr virus infection.

MATERIALS AND METHODS OF RESEARCH

We examined a group of children (n=10) aged from 5 to 10 years with low-grade fever of unknown origin, and manifestations of oral herpes with a positive ELISA for virus Epstein Barr (IgG-VCA high titers, IgG EBNA, IgG-EA) and positive PCR for EBV (table 1). A group of healthy children (n=20) and a comparison group of children matched for age was also surveyed.

The children underwent examination of immune status (CD3+,CD4+, CD8+, CD16+, CD22+, IgA, IgG, IgM, IgE) at the National medical center of Republic of Sakha (Yakutia). Comparison of mean values was assessed by univariate dispersion analysis using T-student criterion to assess the equality of average F-Fisher criterion to assess the equality of variance. The relationship between parameters was assessed using the coefficients of the linear and rank correlation.

An important method of diagnosis of EVBI infection is the PCR qualitative detection of DNA virus Epstein-Barr PCR. Material for study is saliva or oral - and naso-pharyngeal mucus, scrapings of the epithelial cells of the urogenital tract, blood, cerebrospinal fluid, prostate secretion, urine. In addition, serological examination methods (ELISA) are performed and clinical manifestations of EBV infection are determined.

RESULTS AND DISCUSSION

All children with chronic EBVI had low-grade fever, headache, recurrence of SARS, sore throats, pharyngitis, increased sweating, fatigue, irritability. In 5 children (50%) labial herpes was observed.

In study group, in 4 (40%) examined children there are noted elevated levels of IgA, IgM, CIK (table 1).

Also there was noted a decrease in the content of CD25+ cells, i.e. activated T cells, increased numbers of natural killer (CD16+), T helper (CD4+), cytotoxic T-lymphocytes (CD8+). In 6 children (60%) showed a decrease in CD 25+ lymphocytes, increased IgM, decreased content of CD4+, CD8+, CD16 (table 1).

Thus, at EBVI there are two types of immune status changes:

a) Enhance its activity (increase in the level of serum immunoglobulins IgA, IgM, increase CEC, increase of CD16+ natural killer enhancing or T-helper cells CD4+, or T-suppressor CD8+),

Table 1

Indicators of immune status in children of Sakha (Yakutia) with the Epstein Barr Virus infection and healthy children

Indicator	Children with infection of the Virus Epstein Barr (n = 4) M ± m	Children with infection of the Virus Epstein Barr (n = 6) M ± m	Healthy children (n = 20) M ± m
CD3+	25,2 ± 1,03	26,1 ± 1,0	27,2±1,04
CD4+	28,9 ± 0,5*	10,1 ± 0,2*	21,3±0,6
CD8+	36,9 ± 0,8*	8,2 ± 0,5*	12,1±2.5
CD16+	22,1 ± 1,2*	6,4 ± 1,4*	11,0±1,01
IRI	0,7 ± 0,6	0,8 ± 0,5	1,08±0,02
IgA	3,6 ± 0,1*	2,4 ± 0,1	2,9±0,6
IgG	18,2 ± 0,7	18,1 ± 0,2	17,1±0,09
IgM	3,2 ± 0,08*	3,8 ± 0,02*	2,2±0,09
CD25+	13,9 ± 1,2*	12,2 ± 1,2*	24,6±0,7
CIK	186,2 ± 1,5<0,05*	85,1 ± 1,5<0,05	70±0,07

Note. In the Tab 1and 2 *p < 0.05 between norms and obtained indices in each group.

b) Immune dysfunction or failure (increase in IgM, a reduction in CD25+ lymphocytes, a decrease in CD16+, CD4+, CD8).

The children underwent a two-stage treatment: drug inosine pranobex at a dose of 5 mg/kg per day in 1 reception for 10 days, the drug Likopid 1 mg 1 time a day for 10 days. All children after treatment for 30 days followed by a re-study of ELISA and PCR for virus infection Epstein Barr. Revealed that 90% of children were detected positive IgG-VCA, IgG-EA, положительныйIgG-EBNA were observed in 20% of children.A positive PCR on MBI detected in 20% of examined children. Also observed changes in the immune status of the examined children (table 2). In groups of children with EWBI was an increase of reduced levels of CD3+, CD4+, CD16+.

Thus, in the treatment of a virus infection Epstein Barr in children with drugs inosine pranobex and likopid changes in serological studies (ELISA) and normalization of the immune status are revealed.

Table 2

Indicators of immune status in children of Sakha (Yakutia) with Epstein Barr virus infection after therapy and healthy children

Indicator	Children with virus infection Epstein Barr (n = 4) M ± m	with virus infection Epstein Barr (n = 6) M ± m	Healthy children (n = 20) M ± m
CD3+	26,2 ± 0,03	27,1 ± 1,1	27,2±1,04
CD4+	23,1 ± 0,15	19,6 ± 0,9	21,3±0,6
CD8+	16,9 ± 0,3	10,2 ± 0,2	12,1±2.5
CD16+	12,1 ± 1,0	10,3 ± 1,0	11,0±1,01
IRI	1,7 ± 0,6	1,9 ± 0,1	1,08±0,02
IgA	2,6 ± 0,4	2,5 ± 0,1	2,9±0,6
IgG	18,1 ± 0,8	18,9 ± 0,2	17,1±0,09
IgM	2,2 ± 0,1	2,4 ± 0,2	2,2±0,09
CD25+	23,4 ± 1,2	22,1 ± 1,2	24,6±0,7
CIK	80,1 ± 1,5	72,1 ± 1,0	70±0,07

CONCLUSIONS

1. At EBVI there are two types of immune status changes:

a) Enhance its activity (increase in the level of serum immunoglobulins IgA, IgM, increase CEC, increase of CD16+ natural killer enhancing or T-helper cells CD4+, or T-suppressor CD8+),

b) Immune dysfunction or failure (povysheniem, reduction of CD25+ lymphocytes, a decrease in CD16+, CD4+, CD8).

2. In the treatment of a virus infection Epstein Barr in children with drugs inosine pranobex and likopid changes in serological studies (ELISA) and normalization of the immune status are revealed. All the surveyed children had a decrease in CD 25+.

REFERENCES

1. Didkovskij N.A., Malashenkova I.K., Tazulakhova E.B. Induktory interferona – novyj perspektivnyj klass immmunomodulyatorov [Interferon inducers — a new promising class of immunomodulators]. Allergologiya, 1998, № 4, p. 26-32.

2. Egorova O.N., Balabanova R.M., Chuvirov G.N. Znachenie antitel k gerpeticheskim virusam, opredelyaemykh u bol'nykh s revmaticheskimi zabolevaniyami [Value of antibodies to herpes viruses that is determined in patients with rheumatic disease] // Terapevticheskijarkhiv. 1998. № 70(5). S. 41-45.

3. Malashenkova I. K., Didkovskij N. A.,Govorun V. M., Il'ina E. N., Tazulakhova EH. B., Belikova M. M., Shepetkova I. N. K voprosu o rolivirusa Ehpshtejna-Barr v razvitii sindroma khronichesko justalosti I immunnoj disfunktsii [To the question of the role of Epstein-Barr in the development of chronic fatigue syndrome and immune dysfunction].

The author

Ivanova O. N., MD., Professor of Department of Pediatrics and pediatric surgery of the Medical Institute the North-Eastern Federal University named after M. K. Ammosov.