

EVALUATION OF THE LEVEL OF IMMUNOGLOBULINS IN THE BLOOD SERUM IN YOUNG CHILDREN DEPENDING ON THE TYPE OF FEEDING

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Abstract. The observed patients were divided into 2 groups: the 1st group consisted of 20 children aged from 10 days to 1.5 months; Group 2 included 65 children aged 1.5 to 5 months. 50 children were breast-fed, artificial (children received adapted mixtures "Detolact", "Nutrilak", "NAS") - 15 children. The predominant class of immunoglobulins in the blood serum of the examined children was immunoglobulin G. Its concentration in children of the first age group was 5.75 ± 0.26 g/l. The content of immunoglobulin M in the blood serum of the observed children (in the 1st group - 0.83 ± 0.05 g/l; in the 2nd group - 0.99 ± 0.05 g/l) was significantly higher than in healthy children (0.32 ± 0.14 g/l and 0.48 ± 0.16 g/l, respectively; $p < 0.01$). The same changes were observed in the concentration of class A immunoglobulin (in the 1st group, 26 ± 0.05 g/l, in the 2nd group - 0.39 ± 0.03 g/l, in healthy children, the IgA content was 0.07 ± 0.05 g/l and 0.15 ± 0.10 , $p < 0.01$).

Key words: children, natural feeding, artificial feeding, immunoglobulins, blood serum.

In our society, proper nutrition is the focus of medical attention and is actively promoted. In all countries, the interest of the most diverse segments of the population, researchers and government agencies is constantly increasing. The problem of nutrition is included among the most important global problems that the UN has put forward for humanity, along with such problems as environmental protection, energy supply [1,2,8].

The protective properties of breast milk are well known to practitioners. It is natural feeding that is one of the factors that ensure the full-fledged immunological reactivity of the child [3,4,6].

Breast milk protects the baby from infection, allergies, rickets, anemia. Breast milk also contains biologically active components that strengthen the immature system of the baby, providing protection against infections, and other components that help digestion and assimilation of nutrients. A sufficient number of works have been devoted to the problem of the formation of humoral immunity in healthy and sick children of 1 year of life. However, on the issue of the formation of humoral immunity in children with different types of feeding, there are only isolated works in which we are talking about children of only the 1st month of life and mostly premature babies [5,7,].

The purpose of the work. To determine the content of serum immunoglobulins of three classes (A, M and G) by simple radial immunodiffusion according to Mancini using standards and antisera of the I.I. Mechnikov Research Institute of Vaccines and Serums.

Materials and methods. The observed data were divided into 2 groups: group I consisted of 20 children aged 10 days to 1.5 months; group II included 65 children aged 1.5 to 5 months. There were 50 children on natural feeding, 15 children on artificial feeding (children received adapted mixtures "Detolact", "Nutrilak", "Nan").

Among 20 children of group I, 11 had acute respiratory viral infections, of which 4 children had complications in the form of bronchitis, pneumonia, otitis, pyelonephritis, and 2 had a combined course of acute respiratory viral infections and purulent bacterial infection (omphalitis, pseudofurunculosis). The remaining 9 children were treated for purulent local catarrhal and purulent infections (omphalitis, pyoderma, pemphigus, pseudofurunculosis, purulent conjunctivitis, paraproctitis, pyelonephritis).

In the second age group, the vast majority of children also had ARVI (55). Of these, 19 children had an uncomplicated course, and 24 had complications such as bronchitis, catarrhal and purulent otitis, bronchiolitis, pneumonia, pyelonephritis; 2 had a combined course of acute respiratory viral infection and bacterial infection in the form of pseudofurunculosis, abscess, lymphadenitis, osteomyelitis, and only 10 children had a purulent local infection (pseudofurunculosis, abscess, pyelonephritis, meningitis).

In most children of both age groups, the diseases occurred on a burdened background: rickets 18, hypotrophy - in 17, encephalopathy – in 23, exudative diathesis – in 13, iron deficiency anemia – in 11 children.

The prevailing class of immunoglobulins in the blood serum of the examined children was immunoglobulin G. Its concentration in children of the first age group is 5.75 ± 0.26 g/l. The level of immunoglobulin G was practically the same as in healthy children [12] of the corresponding age groups (6.17 ± 0.16 g/l and 5.09 ± 0.17 g/l; $p < 0.5$), and did not change during the first 5 months of life.

The absence of an increase in the level of immunoglobulin G in viral-bacterial infections in children of the first months of life indicates the immaturity of their own synthesis of immunoglobulin G in these children, which corresponds to the literature data [4]

The content of immunoglobulin M in the blood serum of the observed children (in group 1 - 0.83 ± 0.05 g/l; in group 2 - 0.99 ± 0.05 g/l) was significantly higher than in healthy children (0.32 ± 0.14 g/l and 0.48 ± 0.16 g/l, respectively; $p < 0.01$). The same changes were observed in the concentration of class A immunoglobulin (in group 1 - 0.26 ± 0.05 g/l, in group 2 - 0.39 ± 0.03 g/l, in healthy children the IdA content was 0.07 ± 0.05 g/l and 0.15 ± 0.10 g/l, respectively, age groups; $p < 0.01$). With age, the concentration of immunoglobulins of classes M and A increased. The increase in the content of immunoglobulins A and M in the blood serum is due to viral-bacterial stimulation, and the increase in the level of immunoglobulins M and A with age, apparently, reflects the maturation of the child's own humoral immune system.

The content of immunoglobulins, depending on the type of feeding in the children we examined, is presented in the table.

Table 1

The content of immunoglobulins in blood serum during different types of feeding

Age children's	Kinds Feeding	Concentration of immunoglobulins (M± m), g/l		
		IgA	IgM	IgG



From 10 days to 1.5 months.	Natural 8	0,20± 0,02	0,84± 0,08	6,58± 0,98
	Artificial 17	0,31± 0,12	0,83± 0,10	5,18± 0,95
From 1.5 to 5 months.	Natural 61	0,30± 0,05	0,96± 0,09	5,96± 0,60
	Artificial 17	0,47± 0,03	1,01± 0,05	5,55± 0.28

Results and their discussion. Analysis of the content of immunoglobulins in blood serum depending on the type of feeding of children showed that the content of immunoglobulins M and G practically did not depend on the type of feeding ($p>0.05$)

The level of immunoglobulin A with natural feeding was lower than with artificial feeding ($p < 0.02$). This, apparently, can be explained by the earlier maturation of the own synthesis of immunoglobulin A in artificially fed children. With natural feeding, this process is delayed due to the passive intake of class A immunoglobulin with mother's milk. The protective role of immunoglobulins A in breast milk has been well studied and proven [4]. It is also possible that women's milk contains some unknown substances that can affect the synthesis of immunoglobulins.

Conclusion. Thus, the data obtained by us reveal the relationship between the level of serum immunoglobulins and the type of feeding of children in the first months of life and reflect the processes of formation of the humoral immunity system.

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