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ASSESSMENT OF SERUM IMMUNOGLOBULIN LEVEL DEPENDING ON NUTRITION IN CHILDREN

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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", "NAN") - 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 0.07 ± 0.05 g/l and 0.15 ± 0.10, $p<0.01$).

Keywords: children, natural feeding, artificial feeding, immunoglobulins, blood serum.

Introduction

In our society, proper nutrition is at the center of medical attention and is actively promoted. In all countries, interest in them is constantly growing among the most diverse segments of the population, scientists and government agencies. The problem of nutrition is included in the list of the most important global problems put forward by the UN to mankind along with such problems as environmental protection, energy supply [1,2,8,10,13,17].

The protective properties of human 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 [3,4,6,9,11,15].

Breast milk protects the baby from infection, allergies, rickets, anemia. Breast milk also contains biologically active components that strengthen the infant's immature system, providing protection against infections, and other components that help with digestion and absorption 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 age. However, on the issue of the formation of humoral immunity in children with different types of feeding, there are only a few works that deal with children of only the 1st month of life and mainly premature babies [5,7,12,14,16].

PURPOSE OF THE STUDY

Identification of the relationship between the level of serum immunoglobulins and the nature of feeding of children.

MATERIALS AND METHODS

Determination of the content of serum immunoglobulins of three classes (A, M and G) was carried out by the method of simple radial immunodiffusion according to Mancini using standards and antisera I.I. Research Institute of Vaccines and Serums named after Mechnikov. The observed data were divided into 2 groups: the 1st group consisted of 20 children aged from 10 days to 1.5 months; Group II included 65 children aged 1.5 to 5 months. There were 50 children on natural feeding, on artificial feeding (children received adapted mixtures "Detolact", "Nutrilak", "Nan") 15 children.

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 media, 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. Of these, 19 children had an uncomplicated course, and 24 had such complications as bronchitis, catarrhal and purulent otitis media, bronchiolitis, pneumonia, pyelonephritis; 2 children had a combined course of SARS and a 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 disease proceeded against a aggravated background: rickets in 18, malnutrition in 17, encephalopathy in 23, exudative diathesis in 13, iron deficiency anemia in 11 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 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 changed during the first 5 months of life.

The absence of an increase in the level of immunoglobulin G during viral and 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 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; $p<0.01$). 26 ± 0.05 g/l, in the 2nd group - 0.39 ± 0.03 g/l, in healthy children the content of IgA was 0.07 ± 0.05 g/l and 0.15 ± 0.10 g/l according to age groups, $p<0.01$). With age, the concentration of

immunoglobulins of classes M and A increased. An increase in the content of immunoglobulins A and M in the blood serum is due to viral-bacterial stimulation, and an increase in the level of immunoglobulins M and A with age, apparently, reflects the maturation of the child's own humoral immunity system.
The content of immunoglobulins, depending on the type of feeding in the children examined by us, is presented in the table.

Table 1 The content of immunoglobulins in blood serum with different types of feeding

Age children	Kinds feeding	Concentration of immunoglobulins (M ± m), g/l		
		IgA	IgM	IgG
From 10 days to 1.5 months. From 1.5 to 5 months.	natural 8 Artificial 17 natural 61 Artificial 17	0,20± 0,02 0,31± 0,12 0,30± 0,05 0,47± 0,03	0,84± 0,08 0,83± 0,10 0,96± 0,09 1,01± 0,05	6,58± 0,98 5,18± 0,95 5,96± 0,60 5,55± 0.28

RESULTS AND ITS DISCUSSION

Analysis of the content of immunoglobulins in the 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 immunoglobulins with mother's milk. The protective role of immunoglobulins A in human milk is well studied and proven [4]. It is also possible that human milk contains some currently unknown substances that can affect the synthesis of immunoglobulins.

CONCLUSION

Thus, our data reveal the relationship between the level of serum immunoglobulins and the nature of feeding in young children and reflect the processes of formation of the humoral immunity system.

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