



## Characteristics of Immunological Parameters in Functional Diseases in Children

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**Abstract:** The review analyzes modern views on the problem of functional constipation in children, discusses immune factors and their relationship with the nervous system that contribute to the formation of constipation. The current data on the intestinal microbiota, which plays a dominant role in maintaining the immune balance of the body, are considered, the pathogenetic and diagnostic principles of functional constipation in pediatric practice are described.

**Keywords:** children, gastrointestinal tract, functional constipation, immunological parameters, interleukin.

**Relevance of the problem:** Constipation is a common problem worldwide that impairs quality of life but is often underestimated.

Children with constipation often visit general practitioners or pediatricians. These children are also often admitted to the emergency room or treated in a hospital.

Constipation is a significant economic problem for the health care system. Studies show that the risk of developing FD increases with a history of intrauterine hypoxia, caesarean section, prolonged conjugative hyperbilirubinemia, and neurological disorders of hypoxic-ischemic origin [1]. Changes in the composition of the microbiota play an important role in the pathogenesis of many functional disorders of the gastrointestinal tract, including constipation. It has been observed that the composition of the gastrointestinal microbiota in individuals with constipation is significantly different from those without constipation.

Gut function is maintained by a number of factors that play an important role, including the nervous system, immune system, bile acid metabolism, and gut microbiota. The causal relationship between changes in the gut microbiota and intestinal motility remains unclear. Some changes in the composition of the gut microbiota may be secondary to slowing down gastrointestinal transit [2]. It is known that long-term constipation without treatment can have a negative effect on the condition of the intestines and the body as a whole. The delay of fecal masses, as well as straining when trying to defecate contributes to the development of hemorrhoids, kolita, paraproctitis, prolapse of the rectum, koprostasis, enkoprez, secondary megacolon, general intoxication organism of the body.

Megacolon is one of the causes of chronic constipation in children. Osnoexternaloy contingent of patients with megacolon is made up of children, so this aspect of the problem is not only medical, but also social in nature.

**Purpose of the study:** To study the immunological parameters of blood in functional constipation in children.

**Materials and methods:** The materials of the study were retrospectively studied 3745 case histories of children who received inpatient treatment at the regional children's multidisciplinary medical center (RCMMC) of the Bukhara region from 2018 to 2020 for diseases of the gastrointestinal tract.

During the analysis, 295 case histories of sick children with constipation were selected. Immunological blood parameters were studied in 53 sick children with constipation.

**Results and discussions:** It are known that IL-1, IL-6, TNF- $\alpha$ , IL-8 and other cytokines produced by macrophages during early inducible response are proinflammatory cytokines. Their action completely determines the development of an inflammatory process that develops when the microbiome is introduced into the microorganism.

In order to study the state of synthesis of cytokines in constipation, depending on the development of megacolon, megarectum and other complications of functional constipation, the examined sick children were divided into 2 groups:

1. group consisted of 30 sick children with a functional problem;
2. group consisted of 23 sick children with complications of constipation (megacolon, megarectum, dolihosigma, etc.).

The control group consisted of 30 healthy children at the age of 4 to 7 years.

As shown by our studies, in patients with functional constipation, there is an increase in the synthesis of IL-6 in the blood relative to the control values (Table 1)

### The level of secretion of cytokine in patients with functional constipation and in healthy children

Table 1

INDICATOR	Healthy children n=30	1-gr N=30	2-gr n=23
IL-6 ПГ/МЛ	18,9 $\pm$ 2,6	35,0 $\pm$ 6,0*	67,3 $\pm$ 7,0*
IL-8 ПГ/МЛ	15,5 $\pm$ 2,3	36,7 $\pm$ 8,6*	32,4 $\pm$ 9,8
TNF- $\alpha$ ПГ/МЛ	24,6 $\pm$ 2,4	58,4 $\pm$ 9,8*	49,7 $\pm$ 8,3*

Note: \* Values are sure to be true to the relation to the control group (P<0,05 - 0,001)

Known as a multifunctional protein, IL-6 is involved in the regulation of immunity and hematopoiesis. And also, this marker is important in the development and regulation of inflammatory and immune responses caused by infection or damage. In our research, the factors of damage to the large intestine with the formation of secondary anatomic changes in its divisions (dolihosigma, megarectum, megacolon) were taken into account.

The study of the state of synthesis of cytokine IL-6 showed its increase by 1.85 times in the 1-group of patients, 3.5 times in the 2-group of patients with respect to the ratio of its control values. We interpreted the graceful result in such a collection, 2-multiple of the IL-6 in the sequestration of the krotovina 1-group; it sets the same phase of the development of out-of-the-impurity of the intestines.

In confirmation of inflammation, leukotomies was also established in the blood of a patient in 2 groups -  $7.5 \pm 2.0 \times 10^9$  l, against control -  $5.7 \pm 1.3 \times 10^9$  l. At the same time, the process of inflammation proceeds on the basis of relative lymphocytosis in patients of the 1-group -  $43.3 \pm 10.3\%$ , and in patients of the 2-group on the basis of relative lymphopenia -  $25.8 \pm 6.4\%$  against the values of the control group- $34, 8 \pm 4.1\%$ .

This leads to the conclusion that the increase in IL-6 over 35.0 pg / ml in the blood serum on the basis of relative lymphopenia, testifies to the stage of formation of secondary anatomic changes in the large intestine as a result of damage to the interstitial cells of Cahal, which control the spontaneous motility of the gastrointestinal tract (GIT), controlling the spinal motility Gastrointestinal tract (GIT). This conclusion was made by the obtained result of the study in patients with secondary complications of functional constipation in children hospitalized in the Department of Surgery for surgical correction.

To study the nature of inflammation, we studied the state of synthesis of IL-8 in examined children. Received a result showing an increase in its level of do 36.7 $\pm$ 8.6 pg/ml (P<0.05) in the 1st group of patients, till 32.4 $\pm$ 9.8 pg/ml in the 2nd group against control values-15 .5 $\pm$ 2.3pg/ml. All obtained

evidence of the presence of inflammation of the viral-bacterial nature and confirms the importance of normobiocenosis in the mechanism of constipation in children.

At the same time, it is important to determine the level of TNF- $\alpha$  - indicator of decay and tissue destruction. The study revealed a statistically significant increase in its level in both groups of examined patients (till  $58.4 \pm 9.8$  pg/ml in group 1, up to  $49.7 \pm 8.3$  pg/ml) against control  $24.6 \pm 2, 4$  pg/ml ( $P < 0.05$ ).

It is known that the degree of severity of biological effects in TNF- $\alpha$  depends on its concentration in the blood. At low concentrations of TNF- $\alpha$  acts locally, opoenvironment of local immune oin inflammatory processes. However, in high concentrations, on can lead to hyperactivation of cytokines and loss of control over the body for inflammation and immune responses. TNF- $\alpha$  is capable of interfering with the processes of fat and carbohydrate metabolism and causing cachexia in the patient [32, 80, 105].

Thus, with the consideration of the development of chirrup and the fuel-Russian, such as megacycle, megarectum and other embarrassing anatomical changes in the TNF- $\beta$  and TNF- $\alpha$ , the children's extensions are used.

**Conclusion:** Taking into account the above data and the results obtained in scientific research with functional constipation in children, it is recommended to optimize preventive measures to prevent chronic constipation, especially in children at risk. At the same time, for successful prevention of chronic constipation in children, from an early age, it is important to start preventive measures already in maternity complexes with active promotion of breastfeeding.

The conditions for the effectiveness of managing the patient with functional constipation and improving the quality of life of the patient is continuity in the interaction between the doctor and parents, which leads to a decrease in the complications of functional constipation, as well as the choice of medium to conduct surgical correction in case of inability.

Therefore, we can note the following:

1. Installed 2-fold increase in the concentration of IL-6 in the blood serum of patients with functional constipation, which shows the importance of taking into account inflammation during functional constipation in children.
2. The state of the synthesis of IL-8 in the children studied, received the result, poindicates an increase in its level in both groups of patients. All received evidence of o the presence of inflammation of the viral-bacterial nature and confirms the importance of normobiocenoza in the mechanism of development of constipation in children.

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