O. N. Ivanova, O.N. Berezkina

Chronic Pancreatitis at Children of the Republic of Sakha (Yakutia)

ABSTRACT

This article is devoted to the study of the immune status in children with pathology of the pancreas. In the analysis of changes of immune status in children with chronic pancreatitis we revealed the greatest decline in T-cell level and components of complement, a decrease level of immunoglobulin A. In patients there is a reduced content of IFN-γ and FNO-ά.

Keywords: immune system, pancreatitis, lymphocyte subpopulations, interferons, tumor necrosis factor, cytokines, interleukins.

INTRODUCTION

The relevance of the problem of pathology of the gastrointestinal tract in children is determined by a number of circumstances. In structure of the general morbidity in children one of the first places belongs to digestive tract pathology [2,3].

Chronic pancreatitis in the structure of diseases of the digestive system in children is, due to the opinion of various scholars, from 5% to 25% of patients with gastroenterological diseases and 0.1 to 0.5% of the total number of children admitted to the children's surgical Department [1- 5].

The study of patterns and risk factors for the formation, diagnosis and tactics of treatment of pancreatic diseases in children in the Far North appears to be relevant because of the high prevalence of this disease, as well as the dietary habits of children in the Far North. [1-5].

The purpose of the study to investigate the immune and cytokine system states in children with chronic pancreatitis, living in different regions of the Republic Sakha (Yakutia).

MATERIALS AND METHODS: the study included 100 children with reactive pancreatitis aged 7 to 14 years (Table), and 2000 healthy children control group. The standards are developed by the staff of Immunological laboratory Diagnostic center of the Ministry of Health of the RS (Y) together with the Institute of Health of the RS (Y). All studies were conducted in the period of low temperatures (winter).

Determination of subpopulations of T - and B-lymphocytes was performed by ELISA using monoclonal antibodies.

Determination of immunoglobulins was carried out turbodimetrical method by measuring the rate of light scattering in the formation of immune complexes in the kinetic measurement at multiscale.

Level FNO, IFN in serum were determined using ELISA method, according to the instructions supplied with the kits antibodies. Kits for the determination of interleukins by ELISA kits reagents "Pro Con IL-1", "Pro Con IF gamma" (LLC "Protein contour" St. Petersburg). Principles of solid-phase ELISA based on the fact that the enzyme horseradish peroxidase, covalently attached to antibodies, while maintaining the biological activity (the ability to interact with the substrate by binding with immobilized immune complex formed on "sensitized" wells, which were incubated your samples and standard reagents.

Statistical calculations made on the basis of applied programs "SAS" and "SPSS" In the analysis of contingency tables (estimates of the correlation of the characteristic and evaluation of significance of differences between groups) used the criterion ^{2} (Pearson and likelihood ratio) and Fisher's exact test. Comparison of mean values was performed univariate analysis of variance using T-student criterion for assessing the equality of mean F-Fisher test to assess equality of variance.

The results of the study: due to the results of the analysis for the last 5 years there has been an increase in pathology of the gastrointestinal tract. Gastrointestinal diseases take the second place in the structure of infant pathology.

In children of school age there has been an increase of diseases of the pancreas, diseases of gallbladder, biliary tract, and functional disorders of the stomach, gastritis and gastroduodenitis. A high prevalence of diseases of the gastrointestinal tract in children of the Republic of Sakha (Yakutia) was revealed In the analysis of changes of immune status in children with chronic pancreatitis in comparison with the group of healthy children we revealed the greatest decline in T-cell-mediated (CD3+, CD4+, CD16+), components of complement C3 and C4, the decline In-cell link CD22+. These changes show antigenic stimulation and decreased immune resistance in children with chronic pancreatitis. According to the literature, during exacerbation of chronic pancreatitis, the content of T-lymphocytes decreases (table), in remission of their value increases [1]. Currently there is no consensus about the pathogenetic role of b lymphocytes in chronic pancreatitis. Thus, some researchers point to the increase in the number of b-lymphocytes [2], some researchers indicated the decrease in the content of b-lymphocytes in reactive pancreatitis [1], which coincides with the results of this study. The complementary reduction of activity a number of authors consider due to the presence of antipancreas antibodies [1, 2] and their involvement in immune responses to consumption of complement.

The results of our study coincide with the literature data [1,2], these changes are explained by the formation of immune complexes with identified antibodies to trypsin, insulin.

Table

Indicators of immune status in children with pancreatitis of Sakha (Yakutia) Republic

Indicators	The performance standards indicators of Sakha (Yakutia) for children(n = 300), M ± M	Children with pancreatitis (n = 100), M ± M
CD3+	52,6 ± 1,7	20,1 ± 1,02*
CD4+	26,3 ± 0,7	11,2 ± 0,7*
CD8+	22,5 ± 0,23	16,2 ± 1,0
CD16+	23,2 ± 0,54	4,6 ± 1,1*
IRI	1,18 ± 0,64	0,7 ± 0,02
IgA	2,34 ± 0,69	1,3 ± 0,3*
IgG	13,3 ± 0,16	9,2 ± 0,7
IgM	1,6 ± 0,03	0,9 ± 0,09
CD22+	19,8 ± 0,16	9,9 ± 1,9
C3	0,67 ± 0,12	0,20 ± 0,02*
C4	0,34 ± 0,05	0,11 ± 0,02*
ЦИК	96,8 ± 0,132	194,2 ± 1,5*

*p< 0.05 between the standards and indicators obtained in each group.

In children with chronic pancreatitis significantly elevated level of the CEC and reduced content of IFN-γ, FNO-α in comparison with the group of healthy children are noted. The changes indicate a decrease in antiviral defense in children with chronic pancreatitis.

The results of the study indicate a need for further study with the aim of developing effective schemes of immunomodulation.

CONCLUSIONS:

1. The high incidence of gastrointestinal tract in children of the Far North associated with living in an extreme climate and geographical conditions, the changing nature of supply and the reduction of socio-economic standard of living of the population, which requires the introduction of programs of disease prevention and health improvement of the children's population of the Northern districts.

2. In children with chronic pancreatitis there are reduced cellular immunity (BG3+, CD4+, CD8+, CD+, DM 22+), the decrease in T-cell level and components of complement.

REFERENCES

1. Danilov M. V. Fedorov V. D. Hirurgija podzheludochnoj zhelezy. Rukovodstvo dlja vrachej [Surgery of the pancreas: a Guide for physicians.]. Moscow, 1995.
2. Detskaja gastrojenterologija [A Pediatric gastroenterology]. Edited by Baranov A. A., Klimanskaya E. V., Rimarčuk G. V. Moscow, 2000.
3. Kalinin A.V. Novoe v diagnostike I lechenii nejrojendokrinnyh neoplazij zheludochno-kishechnogo trakta I podzheludochnoj zhelezy [The new in the diagnosis and treatment of neuroendocrine neoplasias of the gastrointestinal tract and pancreas] Ross. zhurn. Gastrojenterologii, Gepatologii, Koloproktologii [Russ. Zournal of Gastroenterology, Hepatology, Coloproctology]. 1997, No. 5, pp. 72-77.
4. Hronicheskij pankreatit. Pod redakciej Hazanova A.I. [Chronic pancreatitis. Edited by A. Khazanov. Moscow, 2000.
5. Statisticheskij godovoj otchet za 2002 g. po gastrojenterologicheskomu otdeleniju PC RB № 1-NCM [Statistical annual report for 2002 of the Gastroenterology Department in the PCRH № 1-NCM].

Information about the authors

Ivanova Olga Nikolaevna, professor of the Department of Pediatrics and children's surgery, Medical institute of North-East Federal University, Yakutsk, RS (Yakutia), olgadoctor@list.ruж

Berezkina Olga Nikolaevna, postgraduate Department of Pediatrics and pediatric surgery of MI NEFU, Yakutsk, RS (Yakutia), berezkinaolga@mail.ru.