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# CLINICAL PHARMACOLOGICAL APPROACH TO THE RATIONAL USE OF IMMUNOCORRECTIVE DRUGS IN CHILDREN

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## ABSTRACT

The use of the drug Isoprinosine (Inosine pranobex) in the complex treatment of children with complicated allergic diseases helped reduce the frequency of their recurrence and prevented the development of infectious complications. The administration of Isoprinosine during the period of convalescence of the disease was accompanied not only by positive clinical dynamics, but also by an improvement in immunogram parameters. None of the patients experienced any adverse reactions, which indicates the safety of the drug.

**Keywords:** immunocorrective drugs, method, diagnosis, children.

## INTRODUCTION

In domestic medicine, the idea of identifying a dispensary group of preschool and school-age children with recurrent upper respiratory tract infections more than 4-6 times a year under the definition of “frequently ill children” (FIC) has received wide practical application [1]. At the same time, according to WHO, the frequency of acute respiratory viral infections (ARVI) up to 8 times a year in children attending child care institutions is the norm [2]. The main causes of frequent acute respiratory viral infections in young children, in addition to the anatomical and physiological characteristics of the respiratory tract, are age-related transient changes in the immune system [3]. As the results of a number of studies show, the presence of immunopathology is suggested not so much by the frequency as by the nature of recurrent upper respiratory tract infections, a combination of viral and bacterial infections, and severe prolonged bacterial infections [1, 2].

## MATERIALS AND METHODS

Increased infectious morbidity is typical not only for children with immunopathology, but also for the so-called immunocompromised children. This group is characterized by repeated uncomplicated local or chronic monofocal infections associated with external contacts and pathogenic flora. Laboratory immunological diagnostics are not informative for them, but can be used for research purposes. In this case, immunomodulatory therapy is most appropriate [3].

## RESULTS AND DISCUSSION

The immunological disorders that determine the complicated course or chronicity of the disease are based on three groups of causes [4]:

- weakening of natural selection;
- widespread, not always justified, use of antibiotics that weaken the specific stimulation of the immune system by microbial antigens;

- immunotoxic effect of environmentally unfavorable environmental factors.

It has been noted that children with allergic pathology are often susceptible to ARVI due to the peculiarity of their immune response, caused by the preferential activation of Th2 lymphocytes with a corresponding cytokine profile [2]. Among children with recurrent respiratory tract infections, the incidence of bronchial asthma (BA) is much higher than the average in the population [3]. The difficulty of timely diagnosis of the underlying disease is evidenced by the results of a survey of a dispensary group of children with children aged 1 to 15 years, when among 90 children observed with an isolated diagnosis of "recurrent viral infections", asthma was diagnosed in 40% of cases [2].

Modern advances in pharmacology make it possible to approach the problem of stimulating anti-infective defense in children with allergy pathology. In the treatment of "immune-dependent" viral infections, etiotropic drugs acting directly on the virus, immunocorrective and symptomatic drugs are used [5]. In children, pediatricians widely use Viferon for this purpose. Nevertheless, a number of authors, based on research, believe that treatment using Isoprinosine, which is produced by Teva Pharmaceutical Enterprises Ltd. (Israel), is more promising, and it is proposed to include it in the complex therapy program for PBD, since it has antiviral, immunocorrective and cytoprotective activity [3]. Isoprinosine is a purine derivative and has a wide range of effects on the immune system. It stimulates the phagocytic activity of macrophages and has a positive effect on antigen processing and presentation [4].

At the same time, in order to avoid unjustified prescription of immunocorrective drugs, a pre-laboratory and comprehensive clinical assessment of the immune status is necessary.

60 children aged 3 to 7 years (31 girls, 29 boys) suffering from allergic diseases of the skin, respiratory tract and combined forms were examined.

Inclusion criteria were various signs of impaired immune status in patients with allergy pathology:

- increased incidence of ARVI;
- combination of viral and bacterial infections;
- severe persistent bacterial infections.

Thirty (50%) children were diagnosed with atopic dermatitis (AD) combined with allergic rhinitis (AR), 12 (20%) patients had AD combined with AR and BA, 17 (30%) children had AD complicated concomitant bacterial infection of the skin or respiratory tract.

Among the concomitant diseases, the following were observed more often than 8 times a year: recurrent acute respiratory viral infections - in 15 (25.4%) children, repeated adenoiditis, nasopharyngitis - in 31 (52.5%) children, sinusitis - in 10 (16.9%) children, recurrent pyoderma and furunculosis - in 4 (6.6%) children.

When collecting anamnesis and analyzing documentation, the following aggravating factors were identified in the medical history of the observed children: 53 (90%) children were born to mothers with complicated pregnancies, and 50 (85%) mothers had toxicosis of pregnancy, 29 (49%) had a threat miscarriage, 5 (8.4%) women suffered from ARVI during pregnancy. Two people had exacerbation of chronic diseases (pyelonephritis, peptic ulcer). Twenty-nine children were passive smokers (27 fathers and 2 mothers smoked). The genealogical history was burdened mainly by allergic diseases, which were noted in 27 (45%) mothers, 12 (20%) fathers, and in 8% of cases in both parents.

An immunological examination of children in the main group revealed a decrease in the number of CD3 lymphocytes ($p = 0.01$) and CD4 lymphocytes ($p < 0.05$) only in relative values. According to the results of the NST test, an increase in spontaneous ($p = 0.01$) and a decrease in stimulated phagocytic activity of neutrophils ($p = 0.01$) was noted. A decrease in the number of cells expressing activation markers was detected in absolute values ($p = 0.01$), as well as an increase in the levels of IgM ($p < 0.01$), IgA ($p < 0.05$) and IgE ($p < 0.05$).

Absolute values of indicators were taken into account only in children with a normal number of leukocytes. There was a decrease in the number of T-lymphocytes ($p < 0.05$), an increase in the levels of IgM ($p = 0.01$) and IgE ($p < 0.05$). According to the results of the NST test, a decrease in the stimulated phagocytic activity of neutrophils was observed ($p < 0.05$).

An immunological examination of children in the control group outside of exacerbation revealed a decrease in the number of CD3 lymphocytes ($p < 0.05$), an increase in the number of CD8 cells ($p = 0.01$), as well as levels of IgM ($p = 0.01$) and IgE ($p <0.05$). There was a decrease in the number of cells expressing activation markers (HLA-DR) in absolute value ($p < 0.05$). According to the results of the NST test, an increase in spontaneous ($p = 0.01$) and a decrease in stimulated phagocytic activity of neutrophils ($p < 0.05$) was noted.

## CONCLUSION

1. The administration of etiopathogenetic therapy with the drug Isoprinosine (inosine pranobex) in the complex treatment of children with complicated allergic diseases helped reduce the incidence of infectious complications and recurrence of the underlying disease.
2. During the treatment period, none of the patients experienced any adverse reactions, which indicates the safety of the drug.
3. To determine the indications for prescribing Isoprinosine, a clinical assessment of the immune status is necessary, including genealogical history, dynamics of clinical manifestations, hemo- and immunograms.

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