EFFICIENCY OF IMMUNOMODULATING THERAPY IN ACUTE OBSTRUCTIVE BRONCHITIS IN CHILDREN

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ABSTRACT: A corrective method for the treatment of acute obstructive bronchitis is proposed, including T-activin in the complex therapy of children with acute obstructive bronchitis. In order to correct the immunological parameters, patients with ARD were prescribed T-activin subcutaneously at the rate of 2 μg / kg of body weight daily for 5 days and the sixth injection a week after injections. Clinically, all children who received T-activin showed positive dynamics with an increase in the effectiveness of treatment, which contributed to the normalization of indicators of the immune status of patients and prevented the development of relapses of the disease.

KEYWORDS: acute obstructive bronchitis, patients, relapse, immune status, T-activin, immunomodulatory therapy.

INTRODUCTION

Among respiratory diseases, acute obstructive bronchitis (AOB) is widespread, leading to frequent relapses and severe complications. Obstructive forms of bronchitis occupy one of the leading places in the structure of childhood morbidity and mortality [1,2,5,8]. Analysis of risk factors in predicting the likelihood of AHB formation in children is essential for modern pulmonology. Among patients with ARD, acute pneumonia occurs 4 times more often and almost always has a complicated course.

Under the influence of an infectious factor and other agents, various immunological changes are observed in children, and the ability to develop full-fledged post-infectious immunity is also sharply reduced. With AHB, the indicator of the T-link of the immune status changes, which contributes to frequent intercurrent diseases and allergic manifestations [3,4,6,7]. It is known that a decrease in cellular immunity is mediated through a violation of the production of biologically active hormone-like substances produced by the thymus. Therefore, a promising area of research is the search and implementation of methods that have a corrective effect on the immune system in children with acute obstructive bronchitis.

PURPOSE OF THE STUDY

Evaluation of the effectiveness of immunomodulatory therapy in children with acute obstructive bronchitis.

MATERIALS AND RESEARCH METHODS

65 children with ARD, 35 patients with acute simple bronchitis and 20 healthy children were examined. Children with acute obstructive bronchitis were at the age of 6 months. up to 3 years old, of which 39 (60%) were boys, 26 (40%) were girls. The diagnosis of AR was established according to the classification adopted in 1996 at the Russian Symposium of Pediatricians - Pulmonologists. The diagnosis was based on the identification of the main clinical signs of the disease with the exclusion of diseases occurring with a similar clinical picture.

The immunological study was carried out in the clinical laboratory of the SamMI clinic. The number of T-lymphocytes (CD3), T-helpers (CD4), T-suppressors (CD8), as well as B-lymphocytes (CD19) was determined by a modified method (Yu.F. Garib, 1995). The concentration of serum immunoglobulins A, M, G in peripheral blood was determined by the method of Mancini et al (1965). Phagocytic activity of neutrophils was studied using latex particles (Petrov R.V., 1988).

Immunological examination was carried out taking into account the nature of the therapy: the 1st group of patients was on traditional treatment with the inclusion of T-activin, and the 2nd group of children was only on traditional treatment.

RESULTS AND DISCUSSION

It has been established that in most children the disease occurs at the age from 3 months to 1 year. In the history of patients, the presence of respiratory diseases was often noted, which were complicated by acute obstructive bronchitis for 2-3 days. An analysis of the family - hereditary history showed that 32% of sick children were born from consanguineous marriages, 46.5% of children had relatives suffering from allergic diseases. Analysis of the initial premorbid background showed that in children with ARD, allergic diathesis was observed in 54.9%, anemia - in 81.9%, rickets - in 51.0%, paratrophy - in 12.5% and hypotrophy of I-II degrees - at 48.7%. It was revealed that the average body weight at birth in children with ARD significantly exceeds (more than 3.5 kg) those in children with acute simple bronchitis and the control group.

The carried out immunological studies revealed a decrease in the factors of natural resistance of cellular immunity and the developing transient insufficiency of humoral immunity with an increase in the duration of the disease. The main changes in cellular immunity were expressed in a decrease in the number of T-lymphocytes (CD3) 45.2 ± 0.8 compared with children in the control group $57.3 \pm 0.9\%$ ($p < 0.01$). More often, there was an increase in the content of B-lymphocytes (CD19) in patients with ARD 18.1 ± 0.3 ($p < 0.01$), which is significantly higher than the data with acute bronchitis $16.1 \pm 0.7\%$ ($p < 0.01$) and the control group ($p < 0.01$). There was a tendency towards a decrease in T-suppressors (DM8) in relative and absolute terms in AHR in children (Table 1).

Phagocytic activity of neutrophils in the acute period of the disease is significantly inhibited in children with AHR 45.1 ± 0, ($p < 0.01$). A particularly pronounced decrease in FAN was observed in children with relapses (3-4 times a year) of acute obstructive bronchitis. There was also a significant decrease in the phagocytosis index and the completed phagocytosis index. Changes in the humoral link of immunity were accompanied by a decrease in the concentration of IgA ($p < 0.01$) and IgG ($p < 0.01$). An increase in the concentration of IgM ($p < 0.01$) in children with ARD indicates that during the height of the disease, the immune response is provided mainly due to antibodies of the IgM class.

Consequently, the humoral link of immunity in the midst of clinical manifestations of AHB is characterized mainly by an imbalance in the concentration of immunoglobulins in response to antigenic

stimulation. The obtained results of immunological studies served as the basis for the inclusion of immunocorrective drugs in the complex of treatment of ARD in young children and subsequent dynamic control of the immune response indicators in order to prevent relapses of the disease. The indications for their appointment were the presence of clinical signs of immune deficiency, a sluggish inflammatory process, a tendency to recurrence of ARD, and a short-term effectiveness of antibiotic therapy.

Table 1. Immunity indices of young children with acute obstructive bronchitis

Indicators	Healthy children	Children with simple bronchitis n = 35	Children with acute obstructive bronchitis n = 65
T-lymphocytes,% (СД3)	57,3±0,9	45,2±0,8 $p<0,01$	40,1±0,3 $p<0,01$
Т-хелперы, % (СД4)	45,8±0,8	39,9±0,2 $p<0,01$	33,8±0,6 $p<0,01$
T- suppressors, % (СД8)	8,4±0,3	6,9±0,29 $p<0,01$	6,1±0,1 $p<0,01$
B-lymphocytes, % (СД19)	12,3±0,89	16,1±0,76 $p<0,01$	18,1±0,3 $p<0,01$
IgA, г/л	2,18±0,06	1,65±0,08 $p<0,01$	1,53±0,07 $p<0,01$
IgM, г/л	1,02±0,1	1,39±0,3 $p<0,01$	1,43±0,7 $p<0.01$
IgG, г/л	9,03±0,55	7,89±0,87 $p<0.01$	7,01±0,4 $p<0,01$
FAN, %	59,5±1,24	47,2±0,86 $p<0,01$	45,1±0,9 $p<0,01$

The improvement in clinical symptoms and immunological parameters was less pronounced in children with ARD who were on the traditional method of treatment. Thus, the level of T-lymphocytes ($p < 0.01$) remained low, the indices of B-lymphocytes ($p < 0.01$) were high. The content of immunoglobulins did not reach those of healthy children.

In order to correct the immunological parameters, patients with ARD were prescribed T-activin subcutaneously at the rate of 2 µg / kg of body weight daily for 5 days and the sixth injection a week after injections. Clinically, all children who received T-activin showed positive dynamics. T-activin promotes a significant increase in the relative and absolute number of T-lymphocytes and T-lymphocyte subpopulations (CD4 and CD8). T-activin improves the state of the T-link of the immune system and helps prevent frequent intercurrent diseases, especially with repeated courses of its use.

The use of T-activin against the background of traditional therapy has a pronounced positive effect, contributes to a more rapid reduction in symptoms of intoxication, as well as relief of various complications of the disease. Comparative analysis of immune response indicators against the background of traditional treatment and with the addition of T-activin revealed a significant increase in B-lymphocytes (DM19) 12.9 ± 0.76%, an increase in FAN 57.9 ± 1.34% and normalization of all immunoglobulins A,M,G.

The studies carried out have shown a significant role of disorders of individual links of the immune response in the pathogenesis of AR in children, which was the rationale for the use of immunocorrective therapy. An analysis of the results of the inclusion of T-activin in the complex therapy confirmed the effectiveness of treatment, especially in frequently ill children.

In young children, risk factors for the development of acute obstructive bronchitis are: hereditary burden of allergic diseases, early transfer to artificial and mixed feeding, frequent repeated respiratory infections, inappropriate antibiotic therapy and aggravated premorbid background.

CONCLUSIONS

The inclusion of T-activin in the complex therapy of children with acute obstructive bronchitis increases the effectiveness of treatment, contributes to the normalization of immune status indicators and prevents the development of relapses of the disease.

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