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Modern possibilities of immunoprophylaxis of prolonged course of community-acquired pneumonia in children

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ABSTRACT: The aim of the study was to develop methods for the prevention of prolonged community-acquired pneumonia in children. 180 children aged 6 months to 15 years with community-acquired pneumonia of a prolonged course, who are being treated in the department of pulmonology, were examined. Analysis of anamnestic data showed that all children, regardless of the development of the disease, had repeatedly suffered acute respiratory infections, pneumonia, intestinal infections, purulent-septic diseases, characterized by a long, recurrent course and difficult to respond to antimicrobial therapy.

KEYWORDS: children, community-acquired pneumonia of prolonged course, clinic, immunology.

The issues of prevention and treatment of community-acquired pneumonia of prolonged course in children remain particularly relevant. In recent years, data have been accumulated that allow for the correct approach to the prevention, diagnosis and treatment of VP. At the same time, every day a practitioner has to solve problems related to the diagnosis, treatment and prevention of VP in children, which determines the need for their careful study [1, 2, 3, 4].

In this regard, special attention is currently being paid to the prevention of community-acquired pneumonia of a prolonged course, especially among children who are often ill with low mass-growth indicators at birth who have repeatedly suffered community-acquired pneumonia. Nonspecific prevention of VP in children is formed from a set of measures that prevent the occurrence of acute respiratory viral infections: compliance with the principles of a healthy lifestyle (natural feeding until at least 6 months of age, timely introduction of complementary foods, sufficient outdoor exposure, restriction of contacts during the period of increased morbidity, the use of barrier agents. In a group of children with recurrent infections, it is advisable to use medications on a planned basis (release active drugs based on antibodies to interferon gamma or other drugs with an immunomodulatory effect) [5, 6, 7]. In the vast majority of cases, these deaths can be prevented both through preventive measures aimed at immunization, adequate nutrition and elimination of environmental factors, and by providing rational care and treatment to all pneumonia patients. Selective interferon inducers affect the virus-induced production of interferons alpha and gamma, and also restore the binding capacity of the receptors [8, 9, 10]. During the convalescence period, these drugs restore the ability of cells to produce interferons when encountering viral pathogens and thus protect the body from repeated infections.

The purpose of the study. Development of methods for the prevention of community-acquired pneumonia of prolonged course in children.

MATERIAL AND METHODS

180 children aged 6 months to 15 years with bronchopulmonary pathology who are being treated in the Department of Pulmonology of the RSNPMC Pediatrics of the Ministry of

Health of the Republic of Uzbekistan were examined. The diagnosis was made on the basis of the classification of the main clinical forms of bronchopulmonary diseases in children, approved at a special meeting of the XVIII National Congress on Respiratory Diseases (2009). Group I included 80 children who received only basic therapy (BT) and group II 100 children who received basic therapy + the drug "Bronchomunal P" according to the scheme. The drug is taken in the morning on an empty stomach, 1 capsule 1 time a day. The drug enhances both cellular and humoral local immune response in the mucous membrane of the respiratory tract and in other immunocompetent organs. It also stimulates the body's nonspecific immune response. For the diagnosis, anamnestic data, the results of clinical, laboratory, functional research methods and the results of etiological verification were taken into account. Immunological parameters were determined by the enzyme immunoassay and a detailed analysis of the data obtained was carried out.

RESULTS AND DISCUSSION

Analysis of anamnestic data showed that all children, regardless of the development of the disease, had repeatedly suffered acute respiratory infections, pneumonia, intestinal infections, purulent-septic diseases, characterized by a long, recurrent course and difficult to respond to antimicrobial therapy. Modifying factors are severe encephalopathy, prematurity, morphofunctional immaturity, intrauterine infection, intrauterine development delay, in children of the first year of life, congenital malformations, chronic lung disease, bronchial asthma, cardiovascular kidney system, onco-hematological diseases. The risk factors for the development of diseases were the following:130 (53%)children were born with low mass - growth indicators; 150 (68%) revealed such opportunistic diseases as mycoplasma infection in 56 (31.2%) and chlamydia infection in 40 (23.4%). Such background diseases as rickets, anemia, eating disorders in children. The first place in the number of cases in children was occupied by chronic diseases of the ENT organs in 68.6% of children, chronic gastroduodenitis in 12.7%, chronic enterocolitis in 10.0, chronic cholecystitis in 15.0%, cardiovascular system, in particular, carditis in 21.1%, MMD in 16.0.

The results of the study of the immune system in children with bronchopulmonary pathology indicate a deficiency on the part of the T-immune system: however, with community-acquired pneumonia of prolonged course in children, there was a significant decrease in the relative number of CD3+ lymphocytes 45.4 ± 0.9% and CD4 + lymphocytes to 29.1± 0.8% c (indicators of healthy children – 57.5 ± 1.3%) (P<0.001),there was also a significant decrease in CD8+ lymphocytes to 16.4±0.6% in healthy -18.5±1.1% (P<0.01) with a significant increase in the relative number of CD20+ lymphocytes, which was 29.7 ±0.6% (in healthy -17.4±1.2% P<0.01). There was a change in the humoral link of immunity, which was expressed by a decrease in serum levels of lgA and lgM, which amounted to 46.2 ± 2.6 mg%; 91.3 ± 3.2 mg%, respectively, compared with the indicators of practically healthy children (76.5 ± 3.1 mg%; 112.5 ± 3.7 mg%, P <0.01).

After preventive treatment, activation of cellular immunity indicators was observed in children who received traditional therapy with Bronchomunal P according to the scheme (group II), as evidenced by an increase in the relative number of CD3+ lymphocytes, amounting to 52.2± 1.9%, reliable relative to the indicators of group I patients (P<0.001). Subpopulations of lymphocytes carrying CD8+ markers also showed positive dynamics under the influence of complex therapy, while no significant changes in indicators were observed in group I. Accordingly, the immunoregulatory index in the group of patients receiving differentiated treatment approached the normative indicators. The immunoregulatory index in group I remained consistently low. Thus, timely preventive measures can reduce the incidence of community-acquired pneumonia of a prolonged course. Alveolar macrophages are stimulated, which secrete cytokines that protect the body from infections, the number of T-lymphocytes increases, the number of protective antibodies of class IgA increases both on the mucous membrane of the respiratory tract, the production of protective adhesion molecules is stimulated, the number of class IdE antibodies

in the bloodstream decreases, which can suppress the mechanisms of hypersensitivity accompanying not only the infectious process.

CONCLUSION

Community-acquired pneumonia of prolonged course in children is characterized by tension of cellular and humoral links of immunity. In this regard, it is advisable to conduct targeted immunocorrective therapy.

Timely treatment of foci of chronic infection (diseases of ENT organs, bronchopulmonary system, cardiovascular and genitourinary system) rickets, anemia and correction of eating disorders, preventive measures along with the use of lyophilized bacterial lysate reduces the incidence of community-acquired pneumonia of prolonged course in children.

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