



SOME ASPECTS OF BRONCHIAL ASTHMA IN CHILDREN

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ABSTRACT

Despite the advances made in the diagnosis and treatment of bronchial asthma (BA), the disease remains one of the leading nosologies not only among chronic lung diseases, but also among chronic diseases in general in both children and adults. A global action plan for the prevention and control of noncommunicable diseases, including chronic respiratory diseases, has been proposed.

INTRODUCTION

In recent years, due to the high prevalence of asthma in children in many countries and significant differences in the manifestations of the disease in children and adults, as well as in different age groups, a number of international documents have been created that focus exclusively on pediatric asthma problems. These include the Consensus on Pediatric Asthma [2], supported by the European Academy of Allergy and Clinical Immunology (EAACI) and the American Academy of Allergy, Asthma and Immunology (AAAAI), and the international consensus on pediatric asthma ICON. [3]. In 2013, the European Academy of Allergy and Clinical Immunology (EAACI) prepared a global atlas of asthma (Global Atlas of Asthma), reflecting aspects of the prevention and control of asthma, including in children [4].

MATERIALS AND METHODS

The diagnosis of asthma causes great difficulties in children, especially early and preschool age. The frequency of recurrence of episodes of wheezing and obstructive syndrome is highest in children of the first years of life. Despite the fact that these symptoms are usually noted in preschool age, they are often temporary (transient) in nature, and in 60% of children they disappear by school age. Asthma in children is described as "recurrent episodes of bronchial obstruction" with symptoms of airway hyperresponsiveness to triggers such as exercise, allergen exposure and viral infections." Children with recurrent episodes of obstruction are at increased risk of developing persistent asthma in adolescence, and those with atopy are more likely to have persistent obstruction. The incidence of asthma is highest in children with a family history of atopy. Since the clinical diagnosis of AD is usually made at 5 years of age, early diagnosis, monitoring and treatment are of particular importance.

RESULTS AND DISCUSSION

Differing in diversity, the clinical manifestations of the disease are determined by the characteristics of sensitization to allergens in the living room or environment, with seasonal



fluctuations, and the specifics of the place of residence. Clinical manifestations of asthma in children are variable and dynamic. The concept of “atopic march” is used to characterize the sequential manifestation of allergies from atopic dermatitis to allergic rhinitis and asthma in one child. And if at an early age food allergy dominates in the development of skin, gastrointestinal and respiratory symptoms, then with age the symptoms are associated with inhalant allergens, in particular house dust, house dust mites, pets, and later with pollen and fungal allergens. There are no pathogenetic symptoms or additional markers that can be used to identify asthma in children in the first years of life. Often the diagnosis is made only during long-term follow-up observation and differential diagnosis.

Persistent obstruction is usually combined with clinical manifestations of atopy (eczema, allergic rhinitis, conjunctivitis, food allergies), eosinophilia, and increased levels of total IgE in the blood.

Age is one of the most significant criteria that determines the asthma phenotype in children. The clinical picture of asthma in different age groups differs in a number of features, and therefore the choice of diagnostic methods and treatment strategy should be based on the age of the child. Management tactics will differ for children in the first 2 years of life, preschoolers (from 3 to 5 years), school-age children (from 6 to 12 years) and adolescents. Severe asthma, both in children and adults, has a number of features and deserves to be identified as a special phenotype.

Exercise may produce symptoms in most children with asthma, and exercise-induced bronchospasm may be a manifestation of a unique asthma phenotype. Pathogenesis may be associated with changes in airway osmolarity due to fluid loss and/or changes in the temperature of the tissue lining the walls of the airways, causing the development of broncho-obstruction and bronchospasm.

Exacerbations of asthma in children, as well as in adults, are provoked by numerous triggers, including:

- viral infections,
- internal and external allergens,
- physical activity,
- tobacco smoke and air pollution

However, in childhood, the most common trigger of asthma is respiratory viral infections. Epidemiological, clinical and pathophysiological studies show that viral, bacterial and fungal infections, as well as commensal bacteria, are closely associated with the development of asthma and disease activity [1]. Viral bronchiolitis in children in the first 2 years of life is associated with the risk of recurrent bronchial obstruction and asthma, even regardless of the presence of asthma or allergies in the parents. But even after rhinovirus infection, the risk of developing bronchial obstruction and asthma is high. Rhinovirus is detected in 80% of exacerbations of asthma in children. In asthma, rhinovirus causes more severe symptoms than in non-asthmatic controls, possibly due to a decrease in the type 1 interferon response of the infected epithelium and as a result of decreased viral control. Infections of the newly discovered RV-C species can cause severe exacerbations. Other viruses associated with asthma include enteroviruses, RSV, coronavirus, metapneumovirus, and parainfluenza.

Complex therapy of BA in children



The program for the management of children with asthma provides an integrated approach with the prescription of a wide range of measures to achieve symptom control, stable remission and high quality of life in all patients, regardless of the severity of the disease.

Based on knowledge about the development of asthma, modern therapy is aimed at:

- elimination of allergic inflammation of the mucous membrane bronchial lobes,
- reduction of bronchial hyperreactivity,
- restoration of bronchial patency
- prevention of structural changes in the bronchial wall.

The choice of treatment is determined by the severity of the course, the period of bronchial asthma and the possibility of achieving disease control. However, in any case, an individual approach is required in the selection of means and methods of treatment. Treatment of asthma should include a detailed treatment plan.

All recommendations for the use of montelukast are based on numerous randomized clinical studies that have proven the effectiveness and good tolerability of the original drug. Emergency medications include, first of all, short-acting β_2 -agonists, combinations of short-acting β_2 -agonists with ipratropium bromide.

There is evidence that low doses of theophylline may have a beneficial effect in certain groups of sick children in whom ICS, ALT or β_2 -DD are not sufficiently effective. Aminophylline is used in the intensive care unit for severe and life-threatening bronchospasm that does not respond to maximum doses of bronchodilators and tablet steroids.

CONCLUSION

Today, the most important task can be considered to be the fight not only against asthma, but also other manifestations of allergies in the direction, first of all, of prevention and prevention of the occurrence of diseases. Primary prevention can be defined as the elimination of any risk factors before hypersensitivity to it develops, secondary prevention as making a diagnosis and starting treatment as early as possible in the development of the disease, and tertiary prevention as limiting the impact of the disease.

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