ON THE QUESTION OF INITIAL MANIFESTATIONS OF BRONCHIAL ASTHMA IN CHILDREN

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ABSTRACT

It is the initial manifestations of the disease that attract special attention in modern pediatric pulmonology, since it is at an early age that key pathogenetic mechanisms are formed that determine the further course of the disease, its severity and the risk of chronicity.

Despite the achievements of modern medicine, early diagnosis of asthma in children presents significant difficulties due to the nonspecificity of the first symptoms, the similarity of the clinical picture with virus-induced obstructive episodes and the peculiarities of the anatomical and functional structure of the respiratory tract in young children..

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In the preschool period, the child's respiratory system is characterized by high physiological reactivity, which is due to the morphological immaturity of the bronchial tree, a smaller diameter of the airways, a high tendency to swelling of the mucous membrane and pronounced activity of smooth muscle cells.

These features create favorable conditions for the formation of bronchial hyperreactivity - the leading mechanism of early asthmatic manifestations. Even short-term exposure to allergens, respiratory viruses, cold air or physical activity can cause episodes of wheezing, difficulty exhaling and night cough, which, however, are not always perceived by parents and doctors as signs of incipient asthma.

Hereditary predisposition plays a significant role in the development of early asthmatic manifestations. In children from families with a history of allergies, the risk of developing the disease increases two to three times.

However, the presence of a family predisposition is not the only factor; modern research emphasizes the influence of early sensitization, the state of the microbiota, nutritional characteristics, ecology, and the frequency of respiratory infections in the first years of life.

The combination of these factors leads to the formation of persistent allergic inflammation in the bronchial wall, which triggers the process of airway remodeling already in the initial stages of the disease. Clinical manifestations at an early stage are episodic in nature.

In some children, symptoms occur only during respiratory infections, while in others, symptoms occur during contact with household allergens, physical activity, or changes in air temperature. Often the first manifestations are limited to a night cough, repeated episodes of wheezing, episodes of difficulty breathing, or coughing after laughing or playing vigorously. These symptoms are often interpreted as manifestations of ARVI, which leads to late detection of the true asthmatic process.

Purpose of the work: to analyze the initial clinical signs of bronchial asthma in children, identify the main risk factors and propose effective preventive measures.

Materials and methods of research: Literary sources were processed, and the initial clinical signs of bronchial asthma in children were analyzed.

Results of the study: The initial manifestations of bronchial asthma in children represent a complex stage in the formation of a chronic inflammatory process in the respiratory tract, which initially has few symptoms and is often disguised as respiratory infections.

At an early stage, the disease rarely demonstrates a classic clinical picture, which greatly complicates diagnosis for pediatricians and leads to a late start of treatment.

Given the high plasticity of the immune system in the first years of life, any unfavorable factors can quickly transform functional disorders of the respiratory tract into a persistent asthmatic process.

However, recurrent wheezing, especially repeating three or more times a year, is an important criterion for a high risk of developing asthma and requires careful assessment by a specialist.

Unlike a regular infection, this symptom is often accompanied by difficulty breathing, nighttime episodes of coughing and an increase in the duration of recovery from the disease.

Night cough is considered one of the key early manifestations of asthma. It occurs due to increased receptor activity and changes in bronchial tone at night, when the natural protective mechanisms of breathing are weakened. Coughing is especially common when moving from a vertical to a horizontal position.

Children may wake up with a nonproductive cough that is not relieved by conventional cough medications because the mechanism is not due to throat irritation, but to bronchial hyperreactivity.

In some children, the initial signs of bronchial asthma appear only during physical activity.

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Coughing after running, active play, laughing or crying is an important diagnostic signal, since physical activity causes cooling and drying of the bronchial mucosa, which, in the presence of hyperreactivity, leads to its spasm.

Parents often attribute these symptoms to “fatigue” or “lack of exercise,” but the recurrence of such episodes should raise suspicion. The state of the child’s allergic background is of great importance.

Initial asthmatic manifestations are much more common in children with atopic dermatitis, food allergies or allergic rhinitis. Such children have high levels of IgE, increased

activity of mast cells and a tendency to chronic inflammatory reactions of the mucous membranes.

The presence of allergic rhinitis especially increases the likelihood of developing asthma, since the inflammatory process in the upper respiratory tract easily spreads to the lower sections.

The clinical picture is often complicated by the influence of environmental factors - polluted air, tobacco smoke, strong odors of household chemicals, high concentrations of dust.

In preschoolers, swelling of the mucous membrane develops much faster than in older children, which explains the severity of respiratory disorders even with minor exposure to the irritant.

Modern research emphasizes that exposure to dry air or poor ventilation increases the frequency of obstructive episodes. Microbiota disturbances represent another significant risk factor. Children who have undergone an early or repeated course of antibiotics are more likely to develop signs of bronchial hyperreactivity.

Microbial imbalance affects the maturation of the immune system, reduces the resistance of the airway epithelium and contributes to the development of chronic inflammation. The presence of frequent colds at an early age is often not the cause, but a consequence of latent bronchial hyperreactivity.

The initial manifestations of the disease are often combined with the so-called virus-induced wheezing. However, the difference between asthma is that symptoms can occur not only due to infection, but also under the influence of allergens.

Contact with dust mites, animal dander, pollen or molds results in typical episodes of difficulty breathing in children with early sensitization. This mechanism confirms the allergic nature of the process and requires immediate examination.

Diagnostic difficulties are aggravated by the fact that a small child is not able to describe his feelings. Therefore, the doctor focuses on behavioral signs - refusal to eat, anxiety, fatigue, decreased activity, difficulty speaking and laughing.

These signs often become more informative than the stated complaints. Behavioral analysis is of high importance precisely in the early stages of the disease. During auscultation at the initial stages, classical dry rales are not always recorded.

Sometimes only prolonged exhalation is detected, which requires the doctor to be highly alert. Obstructive signs can be detected using spirometry, however, this study is difficult in preschoolers. In such cases, alternative methods are used - peak flowmetry, episode frequency indexing, allergy diagnostics.

Particular attention is paid to the genetic component. Modern research has identified dozens of genes associated with the regulation of the IgE response, bronchial remodeling and airway inflammation. In children with a family history of asthma, the initial manifestations develop much earlier, and the course of the disease is more complicated.

The genetic factor determines not only the likelihood of disease, but also the body's response to external stimuli. Equally important is the influence of respiratory viruses. Rhinoviruses, adenoviruses, and respiratory syncytial virus can damage the epithelium of the respiratory tract, which facilitates the penetration of allergens and increases inflammation.

Children whose initial signs of asthma appear during respiratory infections are prone to more severe disease in the future. An important element of the early asthmatic process is the remodeling of the bronchial wall, which begins even before the onset of persistent symptoms.

Thickening of the epithelium, an increase in the number of goblet cells, hypertrophy of bronchial smooth muscle - all this can develop against the background of multiple episodes of inflammation at an early age. These changes increase the severity of hyperresponsiveness and determine the severity of subsequent attacks.

Early therapy can significantly improve the prognosis. Clinical studies show that children who receive timely treatment and are not exposed to allergens are less likely to experience severe attacks and a chronic course of the disease at school age.

Formation of correct patient management tactics in preschool age can significantly reduce the risk of disability and severe complications in adolescence.

Thus, the initial manifestations of bronchial asthma in children represent a complex set of functional, immunological and clinical changes that require careful monitoring and timely correction.

Their early detection is a key condition for successful disease control and prevention of severe forms, which makes this problem one of the most pressing in modern pediatrics and pediatric allergology.

Conclusion: Thus, understanding the initial manifestations of asthma is key to creating effective preventive and therapeutic strategies aimed at improving the long-term prognosis and quality of life of children with a predisposition to asthmatic reactions

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