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ETIOLOGY OF ALLERGIC BRONCHITIS , TREATMENT AND PREVENTION METHODS

Oripov Shavkatjon Yuldashevich

Department of Phthisiology and Pulmonology,

Andijan State Medical Institute, Andijan, Uzbekistan

Annotation: Allergic bronchitis is an inflammation of the bronchial walls that occurs due to hyperergic immune reactions. The disease is provoked by various allergens: household, plant, infectious, chemical products. The disease is manifested by paroxysmal cough, difficulty breathing, and respiratory failure. The diagnostic plan includes chest radiography, spirometry, and laboratory tests of blood and sputum. Treatment involves the exclusion of contact with allergens, drug therapy with the use of bronchodilators, corticosteroids, antihistamines.

Key words: allergic bronchitis, difficulty breathing, bronchodilator.

Allergic bronchitis is a common problem in children. The disease usually becomes a component of the "allergic march" in children, and if timely treatment is not carried out, it often transforms into bronchial asthma. Damage to the bronchopulmonary system with a characteristic obstructive component is typical for preschoolers and schoolchildren; at an earlier age, pathology in children is rare. The frequency of the disease is constantly increasing against the background of increasing sensitization of the population, which explains the high relevance of the problem and its treatment.

For the formation of allergic bronchitis, a provoking factor is required — an endogenous or exogenous allergen, in response to which a characteristic immune hyperergic reaction is triggered in children. In early childhood, food allergens are a frequent trigger, and as the child grows up, house dust, plant factors, and intestinal helminth waste products come to the fore. All causes of bronchitis can be divided into the following groups::

- Inhaled. This category includes household triggers (dust, mites), epidermal antigens (pet hair and secretions, epidermal particles, human hair), and pollen allergens. The development of allergic bronchitis is possible when inhaling vapors of paint and varnish products, strongly smelling household chemicals.
- Enteral ones. Nutritional factors are typical for an early age, they cause the first manifestations of respiratory damage in children. Most often, the pathology is provoked by eggs, cow's milk, nuts, citrus fruits. Enteral triggers include some medications.
- Infectious diseases. This includes helminthiasis characteristic of children (roundworms, whipworms, pinworms), negative effects of protozoa, mold fungi. Allergic inflammation of the bronchi often occurs as a complication of staphylococcal, streptococcal infections, and some viral processes with incorrect treatment.
- Endo-allergens. This category includes all types of allergens that are formed in the body under the influence of physical harmful factors, during ischemia of organs and tissues, changes in the structure of macroorganism proteins during infectious diseases.

Risk factors

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In addition to the action of allergens as a direct cause of the disease, predisposing factors are required for the development of pathology. More than 50% of children have a hereditary predisposition to atopic diseases, often a detailed assessment of the medical history reveals a pathological course of pregnancy and childbirth.

In addition, in recent decades, there has been a tendency to increase the number of allergoses, which is associated with the antigenic load on the child when using vaccines, serums, drugs, the widespread influence of industrial factors, folk, rather than traditional methods of treatment.

Pathogenesis

The development of respiratory allergosis proceeds according to the first (reagin) type of allergic reaction, according to the classification of Jell and Coombs. It is manifested by increased production of Class E immunoglobulins, and the main components of the inflammatory reaction in the bronchial wall are basophils, mast cells, and eosinophils. A specific feature of this process is the rapid appearance of symptoms after contact exposure to allergens.

There are 3 consecutive phases in the mechanism of immune inflammation formation. The first stage is immunological. It begins with a non-specific interaction of the allergen with macrophages, as a result of which the production of specific antibodies is activated. B-lymphocytes begin to synthesize IgE, which circulate in the bloodstream, settle on mast cells and smooth muscle elements.

At the second stage, the pathochemical reaction begins. In its development, the main role is played by mast cells (basophils), in the cytoplasm of which there are granules of mediators. The process of degranulation begins: 20-30 minutes after interaction with the allergen, first-order mediators are released-histamine, tryptase, neutrophil chemotaxis factor, and 2-6 hours later, second-order mediators — leukotrienes, thromboxanes, prostaglandins.

Damage to the bronchi occurs at the third stage - during the pathophysiological phase of the immune response. Under the influence of inflammatory mediators, capillaropathy develops, cell infiltrates form, and edematous syndrome occurs. At this stage, children have noticeable clinical symptoms. there is hyperreactivity of the bronchi, narrowness of the airways, so the obstructive component quickly increases.

Symptoms of allergic bronchitis

The main sign of the disease is a painful paroxysmal cough. Seizures occur with the same frequency day and night, and may increase with repeated interaction with the trigger. When coughing, a small amount of viscous mucosa or cloudy sputum is released. Often, 2-3 days before the appearance of cough paroxysms, the child complains of a sore throat, watery discharge from the nose.

For bronchial damage that occurs with obstruction, wheezing is typical. These sounds are so pronounced that parents notice them even from a distance. "Whistling" in the airways increases with a cough attack. Also, children's breathing increases to 25-30 or more per minute, which indicates ineffective ventilation, shortness of breath, and progressive tissue hypoxia.

A distinctive feature of allergic bronchitis is a moderate intoxication syndrome. Most children have a normal or subfebrile body temperature, and additional symptoms include increased fatigue, headaches, and decreased appetite. Because of the frequent excruciating cough, patients become irritable, and nighttime coughing attacks disrupt sleep.

In addition to respiratory symptoms, other signs of allergies may occur. Often, skin rashes form: large blisters, small red nodules, puffiness and redness of the skin. The rash is accompanied by

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intense itching of the skin. In the case of allergen penetration through the gastrointestinal tract, digestive disorders are observed: abdominal pain and cramps, nausea, diarrhea.

Complications

With allergic bronchitis in children, respiratory failure (DN) may develop due to the phenomena of bronchial obstruction. First, there is a compensated variant, the treatment of which is not difficult, in the absence of timely help, DN passes into a decompensated phase, accompanied by arterial hypoxemia, hypercapnia. This condition is one of the causes of multiple organ failure.

With a prolonged course of allergic bronchitis, there is a negative effect of cough on the body as a whole. Due to a decrease in the suction effect of the chest, blood flow to the heart is disrupted, and blood pressure increases. In combination with increased venous pressure, small hemorrhages appear in the conjunctiva of the eyes. Prolonged dry cough leads to neurosis, reduces the quality of life.

Allergic bronchitis in children can occur as the first attack of bronchial asthma, which at the initial stage, as a rule, has an erased clinical picture, resembles a typical cold. Alarming symptoms include bouts of unproductive coughing, which are accompanied by difficulty exhaling. After the end of the paroxysm, lethargy, drowsiness, apathy are disturbed.

Diagnostics

During a physical examination of the child by a pediatrician, dry wheezing wheezes, bronchovesicular breathing with an extended exhalation (expiratory screeching), and a box sound during percussion over the lungs are determined. Detection of shortness of breath, wheezing and painful cough attacks makes it possible to suspect allergies as the etiology of bronchitis. To confirm the diagnosis and choose treatment, the following diagnostic methods are prescribed::

- Radiography of the OGK. In acute allergic bronchitis, changes are represented by bilateral strengthening of the pulmonary pattern, expansion and destructurization of the lung roots. With frequent recurrent bronchial inflammation, there is an increase in the transparency of the pulmonary fields, expansion of intercostal spaces, flattening of the dome of the diaphragm.
- Functional diagnostics. In children over 5 years of age, a spirometry technique is used, which evaluates the volume expiratory velocity, the Tiffno index, and the functional vital capacity of the lungs. Peak flowmetry is performed to quickly assess the peak expiratory velocity. According to the diagnostic results, obstructive and restrictive disorders are differentiated.
- Sputum tests. Microscopic examination of sputum reveals an increased number of eosinophils, the appearance of characteristic spirals and crystals indicates the development of bronchial asthma. To exclude the infectious nature of bronchitis, a bacteriological sputum analysis and a study for tuberculosis are used.
- Blood tests. In a general clinical study, eosinophilia and an increase in ESR are determined, and in a biochemical analysis, an increase in acute phase indicators is determined. A specific manifestation of allergic bronchitis is an increase in the level of immunoglobulin E (from 1.5 IU / ml at the age of one year, up to 200 IU / ml for 10-16-year-old patients and 100 IU / ml for adults). In most patients, the total IgE does not increase, but only the content of specific IDEs for individual allergens increases.

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- Skin allergy tests. After achieving remission of allergic bronchitis, a comprehensive diagnosis is made to determine the cause-dependent factors. To detect clinically significant allergens and the degree of sensitization, scarification tests are recommended.

Treatment of allergic bronchitis

Non-drug therapy

To quickly stop an acute attack and prevent its recurrence, it is necessary to change the child's lifestyle, which allows you to limit contact with the provoking factors as much as possible. If possible, non-specific factors that irritate the bronchi are excluded: cold air, dusty rooms, pungent odors of plants and cosmetics. Parents are strictly forbidden to smoke in front of their child.

Given the high prevalence of food allergies in children, the treatment regimen must include a gentle diet. Substances that can trigger an attack are excluded. These include preservatives with metabisulfite and sulfur oxide, many food coloring agents, and monosodium glutamate. In order not to provoke pseudo-allergy, it is recommended to reduce the consumption of products containing histamine.

Adequate hydration is important during treatment: drinking plenty of water, fruit drinks, and unsweetened tea. To reduce the irritation of the bronchi, the room temperature is maintained at 20-22 degrees, humidity at 50-60%. To stimulate the discharge of sputum from the bronchial tree, drainage massage, breathing exercises, and physical therapy are prescribed.

Drug treatment

Treatment of allergic bronchitis is selected by a pediatrician together with a pediatric pulmonologist and an allergist-immunologist. Treatment includes local remedies to expand the lumen of the bronchi, reduce the intensity of coughing attacks, as well as systemic medications designed to stop specific inflammation in the tissues of the respiratory tract. For therapeutic purposes, the following are used::

- Bronchodilators. To eliminate the phenomena of bronchial obstruction, short-acting bronchodilators are indicated, which are administered using an inhaler or nebulizer. In rare cases, oral methylxanthine derivatives are used in the treatment.
- Mucolytics. To dilute the viscous sputum in children, ambroxol and acetylcysteine preparations are used. Possible appointment for the treatment of reflex agents, herbal remedies. A good effect is given by inhalations that moisturize the bronchial mucosa, promote effective expectoration of sputum.
- Antihistamines. Medications are indicated for the rapid elimination of hyperimmune reactions, reducing the release of allergy mediators. Treatment can be supplemented with cell membrane stabilizers and other modern anti-allergic agents.
- Anti-inflammatory drugs. To reduce the swelling of the bronchi and eliminate other symptoms of the disease, funds are selected from the group of nonsteroidal anti-inflammatory drugs. In severe cases, treatment is supplemented with inhaled or systemic corticosteroids.

In acute insufficiency, a standard complex of intensive treatment is carried out: restoration of airway patency, artificial oxygenation with the introduction of nasal catheters or applying a face mask, and in severe cases, artificial ventilation is performed. The treatment regimen also includes improving the drainage function of the bronchi: aspiration of secretions through an endobronchoscope, ultrasound inhalation, chest massage.

Prognosis and prevention

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A comprehensive approach to the treatment of allergic bronchitis with the exception of provoking factors allows you to quickly stop symptoms, restore the full function of the respiratory system. However, the pathology often has a chronic recurrent course, can transform and manifest itself in the form of bronchial asthma, so the prognosis for life is favorable, and for recovery — doubtful.

Prevention of bronchitis consists in avoiding allergizing effects as much as possible, and timely treatment of acute respiratory infections. To increase the non-specific resistance of the body, a balanced fortified diet, strengthening the immune system, and a rational mode of motor activity are required. To prevent the recurrence of allergic bronchitis, a dispensary observation is carried out.

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