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BRONCHIAL ASTHMA: EPIDEMIOLOGY, ETIOLOGY, PATHOGENESIS, DIAGNOSIS, TREATMENT, COMPLICATIONS, ASTHMATIC STATUS AND ITS TREATMENT

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Abstract: This article extensively covers the current relevance of bronchial asthma, epidemiological distribution, etiology, pathogenesis, diagnostics, treatment principles and complications. Bronchial asthma is a chronic inflammatory disease, which is widespread among children and adults, characterized by its multifactorial development mechanisms and bronchial hyperreactivity. The article describes the main provoking and aggravating factors of the disease, IgE-mediated allergic mechanisms, stages of bronchial obstruction development on a scientific basis. It also shows the importance of modern diagnostic methods, complex treatment approaches and disease control in diagnosing bronchial asthma. The clinical course, stages and role of asthmatic status as a life-threatening condition are emphasized.

Keywords: bronchial asthma, relevance, epidemiological distribution, etiology, pathogenesis, diagnostics, principles of treatment, chronic inflammation.

INTRODUCTION

Currently, bronchial asthma is epidemiologically widespread, and many people around the world suffer from this disease. The disease occurs in both children and adults, and in recent years its prevalence has been increasing day by day. The pathogenesis of the disease is inflammation, swelling, and increased mucus secretion of the bronchial mucosa. These conditions lead to narrowing of the bronchi, which makes it difficult to breathe easily. The etiology of bronchial asthma is multifactorial, including hereditary predisposition, allergens such as house dust, pollen, and animal hair. Under the influence of these factors, pathological changes occur in the walls of the bronchi. Diagnostics is of great importance in the diagnosis of bronchial asthma, and is based on clinical signs, allergological tests, and laboratory tests. Treatment of the disease requires an integrated approach. Broncholytics, anti-inflammatory drugs, and antihistamines are used in the treatment. The main goal of treatment is to ensure disease control and prevent attacks.

Epidemiology - In recent years, asthma has become one of the most common diseases and has taken a prominent place among common diseases. It is said that the number of this disease is increasing steadily every year all over the world. The prevalence of asthma in different countries of the world ranges from 1% to 18%, and currently about 300 million people in the world are affected by this disease. The annual number of registered deaths is 250 thousand. Today, despite sufficient progress in modern treatment and diagnostics of asthma, the increase in the incidence of the disease, the transition of the disease to severe clinical variants, the lack of radical treatment methods, and the lack of sufficient primary prevention are one of the pressing problems in the modern healthcare system. The main reasons for the increase in the incidence of this disease are the increase in the prevalence of allergic conditions, environmental pollution, and the excessive use of chemicals in agriculture. Asthma mainly begins in childhood. Prevalence in children: 8-15%, in adults: 5-7%. In childhood: more common in boys, in adults: more common in women

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Etiology- The etiology of bronchial asthma is a complex of factors that cause and contribute to the development of the disease.
BA (bronchial asthma) is a multifactorial disease, the basis of which is the hyperreactivity of the bronchi to many factors (immunological, infectious, physical), which is formed as a result of the addition of external pathogenic factors and internal defects of the organism.
Factors for the development of BA are divided into several groups.
1. Predisposing factors - those that predispose to the occurrence of the disease.
2. Causative factors - cause the disease and sensitize the respiratory tract.
3. Exacerbating factors - develop the disease and increase the tendency to develop it (smoking, air pollution, ARVI, food habits).
4. Triggers - lead to the development of an existing disease, but do not cause the disease itself (physical stress, cold air, irritating aerosols, odors, emotions).
Pathogenesis-According to the BA tariff, the disease is based on chronic inflammation and bronchial hyperreactivity, leading to bronchial obstruction.
The first link in the pathogenesis is inflammation, which is considered the main one, and chronic recurrent serous-desquamative persistent inflammation of the bronchi occurs. Inflammation of the respiratory tract is a complex process that begins with damage to the epithelium, impaired microcirculation, and then primary and secondary effector cells and their mediators interact. Primary cells play an important role in the formation of a rapid allergic reaction when an allergen enters the body. Secondary effector cells cause a chronic inflammatory process associated with a long course of BA. The inflammatory process covers all layers of the bronchi (epithelial, blood vessels, basement membrane and smooth muscles). In addition, the influence of external factors is necessary for the development of the inflammatory process, which can be divided into two groups. The first group of external factors involves the allergic system, while the second group does not involve the immune system. In most patients, asthma develops mediated by IgE. When an allergen enters the body: IgE antibodies bind to mast cells, mast cells are activated. These mediators: Contract bronchial muscles, increase mucosal swelling, increase mucus secretion. As a result: shortness of breath, recurrent asthmatic attacks, and in severe cases, asthmatic status may develop. Prevention of pathogenesis - is carried out by controlling bronchial inflammation, limiting bronchospasm and eliminating provoking factors. This approach reduces asthma attacks and improves quality of life.
Diagnostics - Examination of external respiratory function. Various lung diseases, mainly BA, are accompanied by impaired external respiratory function. Special tests are performed to characterize this disorder and assess its severity. Clinical tests of sputum and blood are performed as additional methods to confirm the diagnosis of BA.
Assessment of arterial blood gas levels. In severe bronchial obstruction, hypercapnia is detected, and in moderate bronchial obstruction, hypoxemia and hypocapnia. To diagnose and treat asthma, a pulmonologist prescribes the following tests and examinations: initial general examination, spirometry, peak flowmetry, analysis for allergen identification, physical activity tests. X-ray. Chest X-ray is performed during the initial examination of patients with BA. During an attack of BA, signs characteristic of pulmonary emphysema are detected, such as increased lung transparency, horizontal position of the ribs, expansion of the intercostal spaces, and low position of the diaphragm.
Treatment - The main tasks of treating BA are:
-Maintaining and establishing control over the symptoms of the disease.
-Preventing exacerbations of the disease.
-Maintaining respiratory function at a maximum level close to normal.

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-Preventing side effects of drug treatment.
-Preventing death from the disease.
The main goal of treating BA is to maintain control over the clinical manifestations of the disease and achieve it completely. To achieve this goal, treatment should include a program in three interrelated areas: treating the disease at the time of exacerbation, treating some of them, identifying risk factors for the disease, reducing and eliminating their impact, and educating patients about the disease in order to develop mutual understanding between the doctor and the patient during the treatment of BA.
Complications are conditions that occur when the disease is prolonged, uncontrolled, or severe. They are divided into acute and chronic complications.
1. Status asthmaticus - A severe attack that lasts a long time and is poorly responsive to medications, accompanied by severe respiratory failure. A life-threatening condition.
2. Acute respiratory failure - Due to a sharp narrowing of the bronchi, gas exchange is impaired, and the blood is not sufficiently saturated with oxygen.
3. Pulmonary emphysema - As a result of difficulty exhaling, air is trapped in the lungs. The chest cavity expands.
4. Bronchial remodeling - Thickening of the bronchial wall, smooth muscle hyperplasia,
5. Pulmonary heart - Due to increased pressure in the pulmonary vessels, the right side of the heart is strained, heart failure may develop.
During the course of BA, various pathological conditions and complications can occur. Depending on the nature of the pathological process, acute and chronic complications are distinguished. Acute complications. Acute complications of BA include asthmatic status, lung rupture - pneumothorax and pneumomediastinum - against the background of severe attacks of BA, lung collapse - atelectasis - as a result of bronchial obstruction with sputum, as well as short-term unconsciousness - bettlepsies.
Status asthmaticus is a severe, life-threatening complication of bronchial asthma, in which: unlike a simple asthma attack, there is not only bronchospasm, but also a large amount of thick, insufferable sputum, which sharply impairs the patency of the respiratory tract against the background of inflammatory edema.
Stages of development of asthmatic status:
I-compensation stage
Prolonged asthma attacks, repeated suffocation, decreased response to broncholytics
II-Decompensation
Severe general condition, orthopnea, sharply reduced breath sounds, almost no wheezing is heard on auscultation, decreased blood pressure, tachycardia
III-Hypoxemic, hypercapnic coma
Impairment or loss of consciousness, diffuse sweating, risk of paralysis of the respiratory center, immediate danger to life. Asthmatic status is a severe, life-threatening complication of bronchial asthma, severe respiratory failure develops as a result of inflammation, edema of the bronchi and obstruction of thick sputum. It occurs in metabolic, anaphylactic and anaphylactoid forms and develops in three stages.
Treatment of asthmatic status - The effectiveness of treatment directly depends on how early, correctly and comprehensively the treatment is started. The treatment process should be aimed not only at eliminating bronchospasm, but also at restoring airway patency, suppressing inflammation, and correcting metabolic and hemodynamic disorders. In severe cases, especially with the development of decompensated respiratory failure, hypoxemic or hypercapnic coma, tracheal and artificial lung ventilation become important life-saving measures. Such patients

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must be treated under strict monitoring in intensive care and intensive care units. Failure to timely and completely treat asthmatic status can result in death. Therefore, early detection of this condition, provision of emergency care, and strict adherence to the principles of modern intensive care are important.

CONCLUSION

In conclusion, bronchial asthma remains an important and urgent problem for the healthcare system today. The widespread prevalence of the disease, its onset in childhood and the course with severe complications require its early detection and constant control. Hereditary predisposition, allergens, environmental pollution and various trigger factors play an important role in the development of bronchial asthma. Chronic inflammation and bronchial hyperreactivity lead to respiratory failure and recurrent attacks. For effective management of the disease, complex treatment, anti-inflammatory therapy, the use of broncholytics and the elimination of provoking factors are important. In particular, early detection of asthmatic status and timely application of intensive therapy measures are crucial in saving the patient's life. Therefore, prevention, patient education and constant control of the disease are among the main tasks in the fight against bronchial asthma.

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