

“BRONCHIAL ASTHMA”

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Annotatsiya: Ushbu maqola bronxial astma kasalligiga xos belgilar, kelib chiqish sabalari, kechish jarayoni hamda davolash va profilaktika choralari haqida ma'lumot berilgan. Bronxial astma nafas yo'llarining surunkali yallig'lanish kasalligi bo'lib, u asosan allergik omillar, irsiyat va atrof-muhit ta'siri natijasida rivojlanadi. Maqolda kasalikni erta aniqlash va to'g'ri davolashning ahamiyati ham yoritilgan.

Kalit so'zlar: Bronxial astma, Allergiya, bronxospazm, nasaf qisilishi, yallig'lanish, immune tizim, profilaktika.

Annotation: This article provides information about the symptoms, causes, progression, treatment, and prevention of bronchial asthma. Bronchial asthma is a chronic inflammatory disease of the respiratory tract that mainly develops due to allergic factors, heredity, and environmental influences. The importance of early diagnosis and proper treatment of the disease is also highlighted in the article.

Keywords: Bronchial asthma, Allergy, Bronchospasm, Shortness of breath, Inflammation, Immune system, Prevention.

Аннотация

В данной статье представлена информация о характерных признаках, причинах возникновения, течении, лечении и профилактических мерах бронхиальной астмы. Бронхиальная астма — это хроническое воспалительное заболевание дыхательных путей, которое развивается в основном под воздействием аллергических факторов, наследственности и окружающей среды. В статье также подчеркнута важность ранней диагностики и правильного лечения заболевания.

Ключевые слова: Бронхиальная астма, Аллергия, Бронхоспазм, Одышка, Воспаление, Иммунная система, Профилактика.

Introduction

Asthma (from Greek *asthma* – shortness of breath, suffocation) is a sudden narrowing of the bronchial openings (Bronchial asthma) or a suffocating attack resulting from heart diseases (see Cardiac asthma). During an asthma attack, immediate medical assistance is necessary. Regardless of the cause of asthma, it is essential to seat the patient with their legs lowered and ventilate the room. Medications are administered only with a doctor's prescription. Bronchial asthma, which causes narrowing of the bronchial channels and reduces airflow, is classified as a chronic respiratory disease.

The most common symptoms of asthma include bronchospasm, cough, and wheezing, which lead to difficulty in breathing. These attacks often occur at night or early in the morning. If a patient is treated for asthma, the symptoms may disappear completely or partially. Asthma attacks can be triggered by allergens (dust, pollen, animal dander, feathers, certain foods), physical exertion, inhalation of cold air, or respiratory infections.

People prone to asthma usually complain of chest tightness, excessive salivation, disturbed sleep, or rapid breathing. It is important to avoid asthma triggers (allergens and cold air exposure). Treatment generally includes anti-inflammatory medications along with bronchodilators (e.g., steroids). Physiotherapy and breathing exercises should also be considered.

Symptoms

Asthma is characterized by recurrent wheezing, difficulty in breathing, chest tightness, and episodes of shortness of breath. Sputum may result from lung infection, but it is often difficult to expel. During recovery from an asthma attack (exacerbation), sputum may appear frothy due to elevated levels of eosinophils (a type of white blood cell). Symptoms often worsen at night, in the early morning, or in response to physical activity or cold air. Some individuals experience mild symptoms, while others may have frequent and severe symptoms requiring constant management.

Causes

Asthma results from a complex interplay of environmental and genetic factors, which affect the severity and response to treatment. The recent increase in asthma cases may be due to epigenetic changes (heritable factors not linked to DNA sequences) and changes in living conditions. Asthma onset before age 12 is more likely influenced by genetics, while onset after age 12 is often associated with environmental factors.

Etiology of Bronchial Asthma

The most significant triggers are exogenous allergens. Laboratory studies show high sensitivity to allergens in asthmatic patients and at-risk individuals. Common allergens include household allergens (dust, book dust, fish food in aquariums, pet dander), plant-derived allergens, and food allergens (nutritional allergens). Among asthmatic patients, 20–40% show drug sensitivity, and 2% may develop occupational allergies (e.g., in perfumery workplaces).

Infections play a crucial role in asthma pathogenesis, as microorganisms and their metabolic products may act as allergens, leading to sensitization. Continuous exposure to infection maintains inflammation in the bronchial pathways. Proteins and non-protein allergens entering the body can also trigger allergic reactions, increasing asthma risk. Cold exposure, hereditary factors, and stress are also important contributors to bronchial asthma.

Bronchial changes are based on sensitization. Rapid allergic reactions (anaphylaxis) trigger antibody production, and repeated allergen exposure releases histamine, causing swelling of the bronchial mucosa and hypersecretion. Immune complex reactions and delayed hypersensitivity reactions develop similarly but with milder symptoms. Excess calcium in the blood may also predispose to bronchial muscle spasms. Pathological examinations of deceased individuals with asthma reveal bronchi obstructed by thick mucus and emphysematous lung expansion due to difficulty in exhalation. Microscopic examination shows thickened muscle layers, hypertrophied bronchial glands, and infiltrative or desquamated bronchial walls.

Classification of Bronchial Asthma

By onset:

- Allergic bronchial asthma
- Non-allergic bronchial asthma
- Mixed bronchial asthma
- Unspecified bronchial asthma

By severity:

- Intermittent
- Mild persistent

- Moderate persistent
- Severe persistent

By condition:

- Exacerbation
- Remission
- Unstable remission
- Stable remission

By control level:

- Controlled
- Partially controlled
- Uncontrolled

Thus, a patient's diagnosis may include these characteristics, e.g., "Non-allergic bronchial asthma, intermittent, controlled, stable remission stage."

Symptoms and Signs

Asthma attacks are divided into three phases:

1. Trigger phase
2. Peak phase
3. Recovery phase

The trigger phase is more evident in infection-allergic bronchial asthma patients, causing vasomotor reactions in the nasal and pharyngeal areas (runny nose, persistent sneezing).

The peak phase, which may start suddenly, is marked by chest tightness and difficulty in free breathing. Breathing is rapid and short, exhalation is prolonged and noisy. Wheezing and sticky sputum produce respiratory rhythm disturbances. During attacks, patients often sit leaning forward, supporting elbows on knees, with facial swelling and jugular vein distension.

During the recovery phase, sputum is gradually expelled, wheezing decreases, and breathing difficulty subsides.

Suspicious Symptoms of Bronchial Asthma

- High-pitched wheezing during exhalation, especially in children
- Recurrent wheezing episodes, shortness of breath, chest pain, and nighttime cough
- Seasonal worsening of respiratory health
- Presence of eczema, history of allergic diseases
- Symptom onset or worsening after allergen exposure, medications, smoke exposure, sudden temperature changes, respiratory infections, physical activity, or emotional stress
- Frequent lower respiratory infections
- Improvement after antihistamines or antiasthmatic medications

Complications

Depending on the duration and severity, bronchial asthma may lead to pulmonary emphysema and secondary cardiorespiratory failure. Overdose of beta-agonists, abrupt steroid dose reduction, or massive allergen exposure may result in status asthmaticus, which can be fatal.

Diagnosis

Diagnosis is usually made by a pulmonologist based on complaints and symptoms. Additional investigations assess disease severity and etiology:

- **Spirometry:** evaluates bronchial obstruction and recovery. Bronchial asthma patients show a 12% (200 mL) increase in FEV1 after bronchodilator inhalation. Multiple tests may be required.
- **Peak flow measurement:** monitors patient status.
- **Allergy testing, blood gas analysis, ECG, bronchoscopy, X-ray**

- **Laboratory tests:** confirm allergic asthma and monitor treatment efficacy
 - Complete blood count: eosinophilia and slight ECHT increase
 - Sputum analysis: detects eosinophils, Charcot-Leyden crystals, Curschmann spirals
 - Biochemical blood tests and immune status evaluation

Treatment

Treatment focuses on limiting allergen exposure, following proper diet, and correct activity. Specific hyposensitization therapy can reduce the body's reaction to identified allergens. Beta-adrenergic inhalers (fenoterol hydrobromide, salbutamol, orciprenaline) quickly dilate bronchi and aid mucus clearance. M-cholinolytic drugs (ipratropium bromide) also help relieve attacks. Xanthine derivatives in tablet form prevent recurrent attacks. Mast cell stabilizers (ketotifen, sodium cromoglycate, calcium channel antagonists) show positive results. Hormonal therapy with glucocorticosteroids is needed in severe cases. Expectorants and mucolytics help mucus clearance. Treating associated conditions (chronic bronchitis, pneumonia) is important.

Prevention and Prognosis

Asthma consists of exacerbation and remission periods. Early diagnosis and appropriate treatment can achieve long-term remission. Prognosis depends on patient care and adherence to medical guidance. Avoiding smoking, allergens, and chronic bronchitis is crucial, especially for at-risk individuals or those with a family history.

Conclusion

Bronchial asthma is a serious chronic disease affecting health. Prevention requires clean environment, protection from allergens, and a healthy lifestyle. Early diagnosis and proper treatment improve patient quality of life.

References

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