IJCNP, Volume 3, Issue 5, 2025 ISSN: 2995-536X
https://medicaljournals.eu/index.php/IJCNP

INTERNATIONAL JOURNAL OF COGNITIVE NEUROSCIENCE AND PSYCHOLOGY

BRONCHIAL ASTHMA: CAUSES, MECHANISMS, SYMPTOMS AND TREATMENT METHODS

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Annotation: Bronchial asthma is a chronic inflammatory disease of the respiratory tract, which manifests itself in attacks of shortness of breath, wheezing, coughing and chest tightness. It is one of the most common diseases of the respiratory system, which has a significant impact on the patient's quality of life. The article discusses the etiology, pathogenesis, clinical manifestations, diagnostics and modern approaches to the treatment of bronchial asthma. Particular attention is paid to drug and non-drug treatment methods, as well as new advances in the field of diagnostics and prevention of this disease.

Key words: bronchial asthma, inflammation of the respiratory tract, allergy, diagnosis, treatment, prevention, pathogenesis.

In 1859, the physician Curti described the cure of a woman suffering from severe and prolonged asthma attacks by an injection of atropine. The most significant work of the nineteenth century on asthma was written byEnrico Salter(1823-1871), "Asthma: Pathology and Therapy" and was published in 1860.In the studies of E. Weiss and J. Halliday, it was suggested that an asthma attack may be suppressed crying, which was confirmed, on the one hand, by the fact that asthma patients repeatedly reported that it was difficult for them to cry, and on the other hand, by the fact that after releasing feelings through crying, the asthma attack stopped.

Stress can also lead to a decrease in the level of asthma controllability (which can subsequently lead to more frequent hospitalizations), possible depression, lower adherence to treatment/compliance, which in turn will lead to an increase in the number of asthma exacerbations and disease progression. Thus, a vicious circle arises that worsens the patient's condition. It is assumed that familiarization of patients with stress management techniques can potentially contribute to increased resistance to emotional triggers and prevention of asthma exacerbations, which in turn can improve asthma control and the quality of life of patients. Studying the characteristics and disorders of the emotional-personal sphere of asthma patients in Russia, the authors identified a certain level of affective disorders of the depressive and anxious series in these patients, which have both a situational-reactive and premorbid-personal nature.

Bronchial asthma is a chronic inflammation of the airways, characterized by episodic exacerbations and persistent changes in the structure of the bronchi. The disease impedes the normal flow of air into the lungs and causes deterioration in the patient's well-being. Despite significant advances in diagnosis and treatment, bronchial asthma remains one of the leading causes of disability and mortality in the world. According to statistics from the World Health Organization, bronchial asthma affects more than 300 million people worldwide, and the number of people affected continues to grow. It is important to note that bronchial asthma does not have a single cause, and its development depends on many factors, including genetic predisposition, environmental conditions, infectious diseases and allergens.

What happens in the patient's bronchi during an attack? Increased sensitivity of the bronchi manifests itself in contraction of the bronchial muscles, which leads to narrowing of the lumen of the bronchi and

prevents air movement - bronchospasm occurs. The cells of the bronchial mucosa secrete a large amount of thick viscous mucus. Under normal conditions, mucus serves to moisten the respiratory tract, but during an attack its amount increases many times over. Obstacles in the form of mucous plugs form on the path of free air movement. In this case, it is easier for air to enter the pulmonary alveoli than to exit back. Changes in the tone of the bronchial muscles lead to pressure losses in the bronchi - the air flow is disrupted, weakens. In addition, the mucous membrane of the bronchi becomes inflamed, edematous, which also reduces air permeability.

Unlike bronchospasm, which is usually short-lived, swelling of the airways persists for many hours and even days. With mild asthma, patients believe that the disease manifests itself only in attacks of suffocation and the release of a small amount of sputum. However, recent studies confirm that inflammation of the mucous membrane is characteristic of most asthmatics, including those with a mild form of the disease.These changes can lead to deterioration of lung function and progression of the disease. Clinical manifestations of bronchial asthma. The main symptoms of bronchial asthma include:

1. Dyspnea: Patients experience difficulty breathing, especially during exacerbations. This may be due to narrowing of the airways and increased air resistance.
2. Wheezing: Wheezing is a characteristic symptom of asthma that occurs due to narrowing of the bronchi. Wheezing is heard when exhaling and can be of varying intensity.
3. Cough: It can be dry or wet and is often worse at night or in the early morning.
4. Feeling of tightness in the chest: Patients may feel pressure in the chest, especially during periods of exacerbation of the disease. Asthma symptoms can be variable: sometimes they occur only in certain conditions (for example, in cold weather or during physical activity), and sometimes they occur constantly.
5. Household bronchial asthmais one of the most common types of non-infectious-allergic (atopic) bronchial asthma and occurs in 85% of cases. Most often, the disease is caused by house dust. House dust is one of the main allergens that affect people throughout the year. It is a bizarre mixture of various components: fibers of various fabrics, wool and dander of domestic animals, particles of soil, plants and insects. Allergists have long wondered why house dust in any part of the world, in any climate zone is the cause of allergies, until they discovered the presence of mites invisible to the eye. Dust mites are microscopic animals that feed on the remains of exfoliated particles of human skin and pillow feathers. These spider-like insects are very numerous: several thousand of them live in 1 g of house dust. The excrement of mites, as well as their decomposed remains, pose a particular danger to people. They are so weightless and volatile that when you walk on a carpet, toss and turn in bed or sit on upholstered furniture, they are carried through the air as an invisible cloud and enter the respiratory tract. If you have an allergic reaction to house dust, then most often it is caused by the excrement of this type of mite.
6. The most favorable temperature for dust mites is 18–20 °C and air humidity above 50%, so if you want to declare war on mites, you need to keep your home sufficiently dry.

The recurrence of asthmatic attacks was explained as the result of classical conditioning: the asthmatic attack served a useful purpose, since it was rewarded with the mother's attention, which the child could not obtain through crying or other means [10]. Thus, the focus of scientists shifted from an unconscious conflict with a significant adult to an acquired form of behavior that develops as a response of a certain innate predisposition to certain environmental stimuli. The psychosomatic approach is the problem of the relationship between the psyche and the body, at the center of which is the hypothesis of the biopsychosocial essence of man. The psychosomatic problem belongs to the circle of fundamental problems of science and is interdisciplinary.

The study found that 28% of asthma patients reported psychological triggers (such as anger, loneliness, tension, depressed mood, arguments with people, anxiety, strong feelings, weakness) as the most

frequent triggers of asthma attacks. Asthma triggers associated with psychosocial stress had a greater negative impact on asthma control, quality of life, and led to more frequent use of medical services than plant pollen, animal allergens, and other environmental triggers [19]. It was also found that allergic triggers explained up to 12.1% of the variance in asthma control, and psychological triggers explained up to 9.5% of the variance in asthma control of all other triggers.

Preventionbronchial asthma includes:

- Avoiding contact with allergens and other triggers.
- Regular intake of prescribed medications.
- Maintaining a healthy lifestyle, including physical activity and proper nutrition.

Purpose of the study: To assess the awareness of patients with bronchial asthma about the disease, treatment methods, prevention and factors influencing exacerbations.

Method: A survey among 100 patients suffering from bronchial asthma, aged 18 to 65 years. The survey was conducted in a city clinic for the period from January to March 2025.

Survey results:

1. Demographic data

- Floor:
- ✓ Male: 42%
- ✓ Female: 58%
- Age:
- ✓ 18-30 years: 16%
- ✓ 31-40 years: 25%
- ✓ 41-50 years: 28%
- ✓ 51-60 years: 22%
- ✓ Over 60 years old: 9%
- Place of residence:
- ✓ City: 78%
- ✓ Village: 22%

2. Knowledge about the disease

- When were you diagnosed with asthma?
- ✓ Up to 1 year ago: 14%
- ✓ 1-3 years ago: 32%
- ✓ More than 3 years ago: 44%
- ✓ Not sure: 10%
- What symptoms did you observe in yourself?
- ✓ Shortness of breath: 80%
- ✓ Wheezing: 70%
- ✓ Cough: 65%
- ✓ Feeling of tightness in the chest: 50%

- ✓ Fatigue or weakness: 40%
- ➢ Do you know what is causing your illness?
- ✓ Yes, I know (allergies, air pollution, viral infections): 60%
- ✓ No, I don't know the reason: 40%
- ➢ Do you use inhalers or other medications to control your asthma symptoms?
- ✓ Yes, constantly: 75%
- ✓ Sometimes: 15%
- ✓ No: 10%
- ➢ How often do you see your doctor to control your asthma?
- ✓ At each exacerbation: 50%
- ✓ If symptoms worsen: 30%
- ✓ Only in very severe attacks: 10%
- ✓ I don’t seek help, I treat myself: 10%

3. Prevention and treatment

- ➢ Which of these asthma prevention methods do you use?
- ✓ Avoid allergens: 58%
- ✓ I take medications as prescribed by my doctor: 82%
- ✓ I regularly engage in physical activity: 40%
- ✓ I use humidifiers or air conditioners: 35%
- ✓ I use breathing exercises: 20%
- ➢ How many times a year do you have to be hospitalized due to asthma attacks?
- ✓ 1-2 times a year: 45%
- ✓ More than 3 times a year: 10%
- ✓ Not hospitalized: 45%
- ➢ How often do you have asthma flare-ups?
- ✓ Once a month or more often: 20%
- ✓ Several times a year: 55%
- ✓ Rare: 20%
- ✓ Almost never: 5%
- ➢ How important is it for you to follow your doctor's recommendations for treating asthma?
- ✓ Very important: 85%
- ✓ Important, but I don't always adhere to it: 10%
- ✓ I don't think it's important: 5%
- ➢ Which of these factors influence your asthma flare-ups?
- ➢ Plant pollen: 45%
- ✓ Poor air quality: 60%
- ✓ Cold air: 50%

- ✓ Infectious diseases: 40%
- ✓ Stress and emotional tension: 30%
- ✓ Physical activity: 35%

4. Social and psychological aspects

- ➢ Do you feel like your asthma is limiting your daily activities?
- ✓ Yes, it limits a lot: 15%
- ✓ Sometimes limits: 45%
- ✓ No, it does not limit: 40%
- ➢ Do you have difficulty communicating with other people because of your asthma?
- ✓ Yes, often: 10%
- ✓ Sometimes: 25%
- ✓ No: 65%
- ➢ How do you rate the level of stress in your life?
- ✓ High: 25%
- ✓ Average: 50%
- ✓ Low: 20%
- ✓ No stress: 5%
- ➢ How confident are you that you can control your asthma symptoms?
- ✓ Completely confident: 60%
- ✓ Mostly confident: 30%
- ✓ Not sure: 10%
- ✓ Not at all sure: 0%

5. Wishes and recommendations

- ➢ What aspects of asthma treatment do you think need improvement?
- ✓ Improved diagnostics: 20%
- ✓ More information about the disease: 40%
- ✓ Availability of medicines and inhalers: 35%
- ✓ Improvement in preventive measures: 25%
- ➢ What advice would you give to other people with asthma?
- ✓ Follow your doctor's orders and get checked regularly.
- ✓ Avoid stressful situations and allergens.
- ✓ Be physically active, but take into account your health condition.
- ✓ Do not delay contacting a doctor if your condition worsens.

Analysis of results

1. Awareness: Most patients are aware of their condition and can name the main symptoms of asthma, such as shortness of breath, wheezing and cough. However, 40% do not know the exact cause of their asthma, which may indicate a lack of awareness or difficulty in diagnosis.
2. Prevention methods: Approximately 80% of patients actively use medication and regularly consult a doctor when symptoms worsen. However, only 40% regularly engage in physical activity, which may indicate a lack of motivation for exercise among patients with asthma.
3. Risk factors: The main triggers for exacerbations are air pollution, cold air and pollen. This is important for developing more effective prevention methods, such as improving the environmental situation and individualizing treatment depending on seasonal factors.
4. Psychological aspect: Asthma limits daily activities in only 15% of patients, but 45% report that it sometimes affects their actions. Stress is also a factor in exacerbations, highlighting the need to work with the psychological state of patients.
5. Wishes: Patients express a need for improved accessibility of information about the disease, as well as improved accessibility of medications and inhalers.

Conclusion

The results of the conducted analytical review of the literature allowed us to formulate a number of theses and conclusions. Along with medical, biological and environmental factors, psychological factors, including emotional and personal characteristics, can act as risk factors for the development and exacerbation of bronchial asthma, which have both direct and indirect (patient's lifestyle, health behavior, perception of the disease, adherence to treatment and bronchial asthma control) influence on the development and exacerbation of the disease. The connection between psychological factors and bronchial asthma was noticed in ancient times and is confirmed to this day by scientific research, literature and culture. However, over time, certain changes have occurred in the understanding of the significance of these factors. From the conflict of unresolved dependence on the mother and the desire to be protected and surrounded by her care, the emphasis has shifted over time to suppressed crying and "suffocation" by overprotective parents.

Thus, an integrative approach combining medical and psychological intervention is the most optimal in the treatment of bronchial asthma.

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