IJACT, Volume 3, Issue 1, 2025 ISSN: 2995-5378
http://medicaljournals.eu/index.php/IJACT

INTERNATIONAL JOURNAL OF ALTERNATIVE AND CONTEMPORARY THERAPY

Bronchial Asthma Modern Approaches to Treatment

Nasirova Aziza Akbarovna
PhD, Associate Professor, Samarkand State Medical University, Uzbekistan

Tuyinova Gulzora Uktam kizi
Student, Samarkand State Medical University, Uzbekistan

Abstract: Asthma (BA) is a chronic inflammatory disease of the airways characterized by reversible bronchial obstruction and airway hyperreactivity. This article reviews current approaches to the treatment of BA, including the use of inhaled glucocorticosteroids (ICS), biological drugs, bronchodilators, and personalized therapy strategies. Particular attention is paid to the role of phenotyping and endotyping of the disease for optimal treatment selection. Non-pharmacological methods, including patient education, reduction of the influence of triggers, and pulmonary rehabilitation programs are also discussed. The work emphasizes the need for further research in the field of targeted therapy and educational initiatives to increase awareness among patients and physicians.

Keywords: Asthma, ICS, biological therapy, personalized medicine, symptom control, exacerbations, pulmonary rehabilitation, GINA recommendations.

INTRODUCTION

Bronchial asthma affects 1 to 18% of the population in various countries of the world. The disease significantly reduces the quality of life of patients and their family members, has a high cost of treatment, and is the cause of death of 250 thousand patients worldwide [1].

In recent years, regularly updated provisions of international guidelines for the diagnosis and treatment of asthma have been actively developed and implemented in practice in many countries. The first joint report of WHO and the National Heart, Lung, and Blood Institute (USA) "Bronchial Asthma. Global Strategy (GINA)" was published in 1993 and was based on expert opinion. It recommended treating asthma depending on the severity of the disease. In the late 1990s, evidence-based medicine data replaced expert opinion as the basis for treatment principles.

The use of international recommendations by practicing physicians leads to clinical improvement of patients' condition, more effective use of medications, reduction of severe exacerbations of the disease and mortality from asthma, both in adults and children in different countries of the world, including Uzbekistan. This article is devoted to the treatment of stable asthma.

Bronchial asthma (BA) is a chronic inflammatory disease of the airways [1] that manifests itself as:

- complete or partial reversible airway obstruction resulting from spasm of the bronchial smooth muscles, mucosal edema, submucosal infiltration by inflammatory cells, mucus hypersecretion, and thickening of the basement membrane;
- episodes of coughing, wheezing, shortness of breath, and a feeling of tightness in the chest, which are usually associated with exposure to specific trigger factors and occur mainly at night or in the early morning;
- airway hyperreactivity.

ICD: J45 Asthma; J46 Status asthmaticus. Abbreviations: BA – bronchial asthma; PEF – peak expiratory flow rate; FEV1 – forced expiratory volume in 1 s; IGC – inhaled GC; FVC – forced vital capacity; MDI – metered-dose inhaler; DPI – metered-dose powder inhaler; DS – medicinal products.

EPIDEMIOLOGY

As is the most common childhood disease, with an incidence of 5–12% in the United States [2]. Boys are more often affected than girls (6% versus 3.7%), but with the onset of puberty, the incidence of the disease becomes equal in both sexes [2]. Asthma is more often observed in urban residents than in rural ones (7.1 and 5.7%, respectively) [3]. The disease is more severe in children from families with low social status [4].

Methods and Materials

The work is based on the analysis of scientific literature, clinical guidelines GINA 2023, as well as data from systematic reviews and meta-analyses over the past five years. The main strategies for treating bronchial asthma were studied, including pharmacological and non-pharmacological methods, as well as personalized approaches to therapy.

Management of patients with bronchial asthma

The program for the treatment of patients with asthma includes the following sections:

1. Establishing a partnership between the patient and the doctor, patient education.

2. Identifying and eliminating risk factors for exacerbations.

3. Assessing and achieving control over asthma

4. Treating asthma exacerbations.

5. Therapy for special cases of asthma (pregnancy, aspirin asthma, etc.).

Education is the most important condition for establishing a partnership between the doctor and the patient.

Principles of patient education:

1. Education should begin immediately after diagnosis and continue at each stage of providing medical care to the patient.

2. All health care workers involved in the treatment process should participate in the training process.

3. The patient should learn self-monitoring skills, which should be maximally adapted to his individual characteristics (cultural level, practical skills, etc.) and keep a diary of observations.

4. Patient education should include the following sections: basic knowledge of asthma and other allergic diseases, the role of drug therapy, self-monitoring methods and inhalation therapy techniques, measures to adhere to a hypoallergenic regimen, time and method of using agents to relieve exacerbations.

5. Familiarizing patients with the main goals of treatment.

6. Partnership between the doctor and the patient, developing an individual written action plan: daily and during exacerbations of the disease.

7. Encouraging the patient to follow treatment recommendations, analyzing and clarifying the treatment plan at each meeting with him. Active involvement of the family in the educational process.

DIAGNOSIS

History and physical examination

When collecting the history, it is necessary to clarify the following details.

- The presence of atopic dermatitis, allergic rhinoconjunctivitis, or a burdened family history of asthma or other atopic diseases.
- The presence of at least one of the following symptoms:

cough, worsening mainly at night;

recurrent wheezing;

repeated episodes of difficulty breathing;

recurrent feeling of tightness in the chest.

- The appearance or worsening of symptoms:

at night;

upon contact with:

- ✓ animals;
- ✓ chemical aerosols;
- ✓ house dust mites;
- ✓ pollen;
- ✓ tobacco smoke;

with changes in ambient temperature;

when taking drugs (acetylsalicylic acid, β: adrenergic blockers);

during physical exertion;

during ARI;

during strong emotional stress;

During physical examination, it is necessary to pay attention to the following signs characteristic of bronchial asthma.

- Hyperexpansion of the chest.
- Prolonged exhalation or wheezing during auscultation.
- Dry cough.
- Rhinitis.
- Periorbital cyanosis - the so-called allergic shadows (dark circles under the eyes due to venous congestion arising against the background of nasal obstruction).
- Transverse fold on the bridge of the nose.
- Atopic dermatitis.

It should be taken into account that in the remission stage, pathological symptoms may be absent (a normal physical picture does not exclude the diagnosis of bronchial asthma).

In children under 5 years of age, the diagnosis of bronchial asthma is based mainly on the results of a clinical examination. In infants with 3 or more episodes of wheezing associated with triggers, asthma should be suspected, examinations and differential diagnostics should be performed.

Laboratory and instrumental studies

Spirometry

In children over 5 years of age, FEV1, FVC and the FEV1/FVC ratio should be determined. Spirometry allows one to assess the degree of obstruction, its reversibility and variability, as well as

the severity of the disease. When assessing FEV1 and FVC, it is important to take into account ethnic characteristics and age gradations. With normal lung function, the FEV1/FVC ratio is more than 80%, and in children, possibly more than 90%. Any values below these may suggest bronchial obstruction. An increase in FEV1 by at least 12% after inhalation of a bronchodilator or in response to a trial of GC therapy also supports the diagnosis of asthma [13].

Results

1. Main treatment goals

Treatment of bronchial asthma is aimed at achieving the following goals:

Control over disease symptoms.

Prevention of exacerbations.

Minimization of the risk of side effects of therapy.

Improving the quality of life of patients.

2. Modern pharmacological approaches

2.1. Basic anti-inflammatory therapy

Inhaled glucocorticosteroids (ICS): remain the basis of therapy. Their use reduces inflammation in the bronchi, improves lung function and reduces the frequency of exacerbations.

Examples: budesonide, fluticasone.

2.2. Long-acting bronchodilators (LAB)

Long-acting beta2-agonists (LAB): used in combination with ICS to improve symptom control.

Examples: salmeterol, formoterol.

2.3. Biological therapy

Used in severe, uncontrolled asthma. Drugs target key inflammatory molecules such as Ige or interleukins (IL-4, IL-5, IL-13).

Examples: omalizumab, mepolizumab, dupilumab.

2.4. Leukotriene receptor antagonists

Drugs such as montelukast are prescribed to reduce inflammation and control symptoms in mild to moderate asthma.

3. Non-pharmacological methods

Patient education: educational programs on disease management, proper use of inhalers.

Reducing the impact of triggers: avoiding allergens, monitoring air quality, preventing infections.

Physical activity and rehabilitation: pulmonary rehabilitation programs to improve exercise tolerance.

4. Personalized medicine

Modern approaches to the treatment of bronchial asthma are based on the personalization of therapy. This includes determining the phenotype and endotype of the disease (e.g. eosinophilic asthma, late-onset asthma), which allows for more accurate selection of drugs and avoidance of undesirable effects.

Discussion

Modern asthma therapy demonstrates high efficiency in controlling symptoms and reducing the number of exacerbations. However, there are still unresolved issues, such as resistance to therapy, insufficient patient awareness, and lack of availability of biological drugs in some countries.

Further research is needed to develop new targeted drugs and improve the quality of life of patients. Particular attention should be paid to educating doctors and patients on early diagnosis and effective treatment.

Conclusion

Asthma treatment is a dynamically developing area of medicine. Modern approaches, including the use of ICS, biological therapy, and personalized strategies, significantly improve the prognosis of the disease. However, to achieve optimal results, it is important to continue to implement new treatment methods and educational programs.

Literature

1. Клинические рекомендации. Педиатрия / под ред. А.А. Баранова. — М.: ГЭОТАР:Медиа, 2005. — 272 с.
2. Global Initiative for Asthma. — NHLB/WHO Workshop Report. – National Heart Lung Blood Institute, Publication number 02–3659, revised 2006//Пер. с англ.: М, Атмосфера, 2007. — 103 С.
3. Аллергология. Клинические рекомендации/Под ред. Хаитова Р.М., Ильиной Н.И. — М.: «ГЭОТАР3Медиа», 2009. — С. 204–221.
4. Bateman E.D., Boushley H.A., Bousquet J. et al. Can guideline3defined asthma control be achieved? The Gaining Optimal Asthma Control Study// Am J Respir Crit Care Med. — 2004. — Vol. 170. —P. 836–844.
5. Barnes P.J. Scientific rationale for using single inhaler for asthma control// Eur Respir J. — 2007. — Vol. 29, № 3. — P. 587–595
6. Irwin R.S., Richardson N.D. Side effects with inhaled corticosteroids// Chest 2006. —Vol. 130, № 1, suppl. — P. 41S–53S.
7. Bousquet J., van Cauwenberge P., Khaltaev N. et al. Allergic rhinitis and its impact on asthma (ARIA)//ARIA. At a glance pocket reference, 1st Edition, 2007. — 6 P.
8. Емельянов А.В. Специфическая иммунотерапия. // Общая аллергология. Т. 1 под ред. Г.Б.Федосеева. СПб., Нормед3Издат, 2001. — С. 682–693.
9. Bousquet, J., Anto, J. M., & Braido, F. (2021). Global Initiative for Asthma (GINA) Guidelines: 2021 Update. Allergy, Asthma & Immunology Research, 13(5), 564–578.
10. Chung, K. F., Wenzel, S. E., & Brozek, J. L. (2022). Severe asthma: A targeted approach to treatment. Lancet Respiratory Medicine, 10(3), 203–215.
11. Global Initiative for Asthma (GINA). (2023). Global Strategy for Asthma Management and Prevention. Доступно по адресу: www.ginasthma.org.
12. Pavord, I. D., Beasley, R., & Agusti, A. (2022). Biologic therapies for severe asthma: Advances and unmet needs. Journal of Allergy and Clinical Immunology, 149(2), 476–487.
13. Насирова А. А., Бабамурадова З. Б., Базарова С. А. Особенности иммунологических показателей у больных хронической обструктивной болезнью легких и бронхиальной астмой //Журнал кардиореспираторных исследований. – 2020. – Т. 1. – №. 3.
14. Насирова А. А., Садикова Ш. Н., Курбанова З. П. Современные представления о роли поверхностного фенотипа лимфоцитов при хронической обструктивной болезни легких и бронхиальной астме и их лечение //Вестник науки и образования. – 2020. – №. 13-2 (91). – С. 49-53.

15. Насирова, А. А. (2024). ОСОБЕННОСТИ СИМПТОМАТИЧЕСКИХ КРИТЕРИЕВ СИНДРОМА ПЕРЕКРЕСТА ПРИ БРОНХИАЛЬНОЙ АСТМЕ И ХРОНИЧЕСКОЙ ОБСТРУКТИВНОЙ БОЛЕЗНИ ЛЕГКИХ. Research Focus, 3(10), 217-222.
16. Насирова, А. А. (2023). ХАРАКТЕРИСТИКА ИММУННОЙ РЕАКЦИИ ПРИ ФЕНОТИПАХ ХРОНИЧЕСКОЙ ОБСТРУКТИВНОЙ БОЛЕЗНИ ЛЕГКИХ. Journal of cardiorespiratory research, 1(1), 60-64.
17. Бабамурадова, З. Б., Насирова, А. А., & Искандарова, Ф. И. (2021). ЭНДОТЕЛИАЛЬНАЯ ДИСФУНКЦИЯ ПРИ ХРОНИЧЕСКОЙ СЕРДЕЧНОЙ НЕДОСТАТОЧНОСТИ В СОЧЕТАНИИ С САХАРНЫМ ДИАБЕТОМ. Journal of cardiorespiratory research, 2(3), 49-52.
18. Шодикулова, Г. З., Элламонов, С. Н., & Насирова, А. А. (2020). Частота встречаемости дилатационной кардиомиопатии в узбекской популяции. Вестник науки и образования, (13-2 (91)), 44-48.