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M.H. Mirrahimova

Tashkent Medical Academy, Tashkent, 100109, Uzbekistan, mmh.20@mail.ru

B.T. Khalmatova

Tashkent Medical Academy, Tashkent, 100109, Uzbekistan, khalbar@mail.ru

T.A. Kuznetsova

Orel State University, Oryol, 302020, Russia, vradi@inbox.ru

G.A. Tashmatova

Tashkent Medical Academy, Tashkent, 100109, Uzbekistan, Tashmatovagulnoza@gmail.com

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Bronchial Asthma in Children: A Modern View of The Problem

Mirrahimova M.H.^a, Khalmatova B.T.^a, Kuznetsova T.A.^b, Tashmatova G.A.^a

^a *Tashkent Medical Academy, Uzbekistan*

^b *Orel State University, Russia*

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ABSTRACT

Bronchial asthma is one of the most common chronic diseases. Statistical indicators of the prevalence of asthma are based mainly on data obtained from the treatment of patients in medical institutions. Therefore, information on the prevalence of bronchial asthma does not correspond to reality, as many patients for various reasons do not go to medical institutions, the parents of the child have a negative attitude towards diagnosing a chronic disease, and doctors often do not diagnose bronchial asthma, especially in the early stages of development and in cases of mild diseases. Thus, according to the Healthcare data of the Tashkent region, a number of patients, especially those with mild bronchial asthma, did not establish the correct diagnosis at all in the childhood period, and in a significant proportion of patients with moderate and severe asthma, the correct diagnosis was made with a delay of 2-6 years from the onset of the disease.

Bronchial asthma (BA) is the most common chronic disease worldwide. Today in the world about 235 million people of different ages suffer from this disease. In September 2011, the UN General Assembly, dedicated to no communicable diseases, focused on increasing the impact of AD and other no communicable diseases on global health, social well-being and economic development. The increase in the prevalence of AD, allergic rhinitis (AR) and atopic dermatitis (AD) is confirmed by the results of a unique epidemiological study conducted in different countries of the world (International Study of Asthma and Allergy in Children International Study of Asthma and Allergies in Childhood (ISAAC)), which is based on lies the standardized methodology recommended and approved by WHO [16]. BA often starts at an early age and is characterized by various flow patterns (phenotypes), progressing over time or moving into a remission stage. Episodes of wheezing in preschool children can be the result of many different conditions; by the age of 7–8 years, about half of preschool children can have symptoms regardless of treatment. Nevertheless, asthma manifestations can persist throughout life, especially in the presence of atopy and in severe illness [1].

BA leads to a decrease in the quality of life, both of children and their family members can cause disability, and sometimes dramatic outcomes.

Based on long-term observations, children with transient obstructive syndrome were identified, who did not have relapses after 6 years, and patients with persistent symptoms of BA. An early onset is often accompanied by more significant impairment of pulmonary function and persistence of symptoms in adults. During lengthy studies, it was

found that BA symptoms disappear in 30-50% of children (especially males) in the puberty, but often reappear in adulthood. In-depth studies (methacholine and other bronchial provocation tests, determination of nitric oxide or eosinophilia, induced sputum) in most of these "recovered" patients show signs of persistent inflammation. It has been shown that BA, which began in childhood, continues in 60–80% of cases in patients who have reached adulthood [18].

In a number of epidemiological studies, it is proved that the age, profession, and social group of parents influence the frequency of BA in children at the time of birth, attendance at preschool institutions, and material and living conditions of the child [6]. An epidemiological analysis found that the incidence and prevalence of BA in children is not the same at different age periods and in its frequency corresponds to two waves, the first of which occurs in early childhood up to 4-5 years and is determined by the hereditary predisposition, and the second coincides with the prepubertal period the predominant completion of the formation of an allergic constitution under the influence of the genotype and the environment.

In relation to age differentiation, it was found that the frequency of BA in the age of 1-2 years is 0.12%, from 2 to 3 years old - 0.34%, from 3 to 7 years old - 0.5% and from 7 to 15 years old - 0.31%, that is, the peak incidence rate falls on preschool age [8, 11, 13,21].

Epidemiological studies conducted regularly around the world have shown that timely diagnosis of asthma is delayed, and the duration between the first symptoms of the disease and the diagnosis is on average more than 4 years [20].

The current situation can be partially explained by the fact that the diagnosis of bronchial asthma in young children is based on clinical and anamnestic data, which, in fact, are subjective information and therefore practical doctors do not have clear diagnostic criteria, reluctance to register a disease due to fear of worsening reporting indicators, the negative attitude of the child's parents to this diagnosis [21].

As a result of this, bronchial asthma lurks for a long time under the guise of acute obstructive bronchitis (OB) and other diagnoses, patients do not receive timely basic therapy, which leads to a more severe course of the disease at school age, an increase in the sensitization spectrum, the development of airway remodeling processes, and increased costs relief of exacerbations, decreased quality of life, education, and can lead to increased disability from asthma in the age group of 8-14 years [3].

A group of Russian scientists listed the main risk factors for bronchial asthma in children [12]. The authors believe that asthma is an emerging disease in which the burdened heredity for allergic diseases on the part of the mother, the burdened heredity for asthma on the part of both parents and the burdened heredity for chronic respiratory diseases on the part of both parents play an important role. The role of frequent recurrent acute respiratory viral infections (3-4 or more times a year) in the formation of asthma has also been established. Adverse environmental microenvironment factors also contribute to the formation of AD. Significant differences between the groups were identified with respect to the following factors: the presence of upholstered furniture and carpets in the bedroom, the storage of books on open shelves (prolonged contact with home and library dust); the presence of flowering plants in the house (contact with pollen and fungi contained in the soil); dampness and mold in the apartment (contact with fungi); the presence of gas stoves in the kitchen and the absence of fume hoods (contact with nitrogen dioxide and other chemicals); accommodation near major highways, manufacturing enterprises and other environmentally unfavorable facilities. For the

primary prevention of BA, it is important to organize a hypoallergenic microenvironment and prevent the incidence of acute respiratory viral infections in a group of children with a hereditary predisposition to allergic diseases, bronchial asthma and chronic respiratory diseases.

The idea of BA phenotypes was first formulated in S.E. Wenzel (2012) in which 5 main phenotypes of BA were distinguished: allergic, non-allergic, with a late debut, with fixed obstruction of the bronchi, with obesity. The concept of "night asthma" was assigned to the category of asthma control, when symptoms that occur at night indicate a lack of constancy of the airway during sleep. In practice, this means that there is no special type (special phenotype) of asthma - "night asthma", and the presence of respiratory symptoms in asthmatic patients at night (during sleep) may indicate inadequate drug therapy or the presence of another comorbid disease [21].

Diagnosis of asthma in children, according to most scholars, presents certain difficulties [19] A particular difficulty in establishing a diagnosis of BA is that in its debut and throughout the course of the disease in a complex and insufficiently explained relationship there are 3 phenomena - atopy, bronchial hyperreactivity and the inflammatory process. Another difficulty associated with asthma research is the heterogeneity of the disease.

The diagnosis of asthma using a number of methods: assessment of medical history and clinical symptoms; functional research methods, such as spirometry and bodyplethysmography, to assess the degree of impaired respiratory function; as well as allergically methods for determining risk factors and triggers. The use of radiation research methods in the diagnosis of asthma is not common, and they mainly serve to exclude asthma complications and conduct differential diagnosis with other lung diseases.

BA is a disease with distinct clinical, physiological and morphological features of [6].

The main symptoms of the disease are episodic attacks of suffocation or shortness of breath, often at night, wheezing, a feeling of heaviness in the chest, and cough. An important clinical marker of BA is the disappearance of symptoms spontaneously or after treatment with bronchodilators and anti-inflammatory drugs [7].

The history of the disease, especially allergically (atopic dermatitis and allergic rhinitis increase the risk of asthma by 10-20%), the presence of provoking factors (cold air, physical activity, tobacco smoke, etc.) are assessed, burdened heredity is found out (the risk of asthma increases up to 50%, especially if the heredity is burdened by the mother), the presence of asthma in relatives, the health of the mother during pregnancy, environmental factors, recurrent respiratory infections, prolonged contact with sources of allergens, the nature of food, occupational hazards.

One of the predisposing factors is metabolic syndrome, in which the function of external respiration is significantly affected [5].

Due to the variability of asthma manifestations, symptoms of a respiratory system disease during physical examination may not be present. Most often, wheezing is revealed in patients with auscultation, confirming the presence of bronchial obstruction. However, in some patients, wheezing can be absent or detected only during forced expiration even in the presence of severe bronchial obstruction [4].

Eliseeva T.I., Balabolkin I.I. report that despite the wide range of drugs for basic anti-inflammatory therapy and emergency drugs, the problem of uncontrolled or poorly controlled course of bronchial asthma remains, which necessitates the development of

additional diagnostic and therapeutic approaches. This regard, to optimize the pathogenic therapy of bronchial asthma, work is currently underway to improve the anti-inflammatory drugs of the existing classes and their combinations. In addition, a search is underway for fundamentally new approaches to asthma therapy; including taking into account the phenotypes and endotypes of the disease, including the creation and implementation of anticytokine and anti-mediator drugs in practice. It is hoped that, as knowledge on the molecular characteristics of asthma, endotypes is detailed and biomarkers are introduced into practice, which make it possible to diagnose phenotypes and endotypes of the disease, as well as monitor the level of control, a personalized approach will be implemented in prescribing individual therapy to each individual patient [2].

According to the official statement of the American Thoracic Society, in children from 2 years of age, these studies are feasible. This can be done with the help of such studies: forced pulsed oximetry, determination of airway resistance by interrupting airflow, airway resistance assessment using plethysmography, forced spirometer with special children's programs (chewing gum, cocktail, candles), "Whistle", etc.). Estimation of functional residual volume by gas dilution technique, measurement of gas dilution indices, maximum flow characterizing functional the residual volume, bronchus phonography [17].

Today, the "gold standard" in the diagnosis and monitoring of bronchial asthma is spirometric studies (spirometry, picrofluimetry, bodyplethysmography using various provocative tests); however, they do not fully reflect the versatile picture of the disease. To confirm the diagnosis, an assessment of the allergically status, determination of biological markers of the disease is necessary. A number of techniques was used to study regional ventilation disorders: radiosciintigraphy, radiation methods (primarily high-resolution multipara computed tomography with three-dimensional visualization). One of the promising areas in the diagnosis are genetic methods. The variability of bronchial asthma should be taken into account and an integrated approach in diagnosis.

The incidence rate of asthma in the dynamics (2004-2014) among the adult population of the Bukhara region increased by 24.4% and in the Tashkent region by 37.1% [14]. According to other authors, the diagnosis of BA before the examination was officially registered only in 0.6% of respondents [15]. The data obtained indicates the maximum prevalence of BA in the arid zones of the Bukhara region. An alarming trend is the smoothing of prevalence rates in various regions of Uzbekistan according to the Ministry of Health of the Republic. Apparently, this is due to the lack of literacy of doctors in the field of modern WHO recommendations for the diagnosis of asthma, the lack of the possibility of its functional diagnosis. As a result, a large number of patients with early forms of the disease are left without the qualified help of doctors as a result of asthma; it takes a severe course, leading to patient disability. An analysis of the prevalence of BA in various age groups indicates that in the children's age group, elderly people, and working age in rural areas, they significantly exceed the above figures by 2.6 and 3.1 times and practically do not differ in the group of elderly people [15]. Introduced at the end of the 20th century in the world, international projects and national programs to combat bronchial asthma can somewhat improve this situation, however, establishing the true prevalence of bronchial asthma is still a difficult epidemiological task [9].

In accordance with the decree of the President of the Republic of Uzbekistan Sh. Mirziyayev of May 11, 2018 No. 3715 "Improving the methods of diagnosis, treatment and prevention of allergic diseases", a one-time state action is planned from January

2019. The result of this action should be a determination of the true prevalence of allergic pathology among the child population.

Thus, the study of literature data in recent years once again indicates the relevance of bronchial asthma, both among adults and among children. Timely diagnosis and the correct tactics for administering children with bronchial asthma will help prevent disability from this pathology.

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