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# PHENOTYPES OF BRONCHIAL ASTHMA

**Annotation**

The article examines the phenotypes of bronchial asthma (BA) taking into account gender differences. Allergic phenotype of BA was found in 69.4% and significantly more often among women - 74.1%. The non-allergic phenotype was found in 30.6%, as well as the BA + COPD phenotype was more common in men. The BA phenotype with obesity was observed in 34.8%, significantly more often in women - 43.7%, compared with men - 14.3%. Among atopic comorbidity, allergic rhinitis was found in 55.5%, conjunctivitis in 38.9%, and dermatitis in 27.8%.

**Key words:** bronchial asthma, asthma phenotypes, atopic comorbidity.

Аннотация

В статье рассмотрены фенотипы бронхиальной астмы (БА) с учетом гендерных различий. Аллергический фенотип БА встречался у 69,4% и достоверно чаще у женщин - 74,1%. Неаллергический фенотип выявлен у 30,6%, а также фенотип БА + ХОБЛ чаще встречался у мужчин. Фенотип БА с ожирением наблюдался у 34,8%, достоверно чаще у женщин - 43,7%, по сравнению с мужчинами - 14,3%. Среди атопической сопутствующей патологии аллергический ринит встречался у 55,5%, конъюнктивит у 38,9%, дерматит у 27,8%.

Ключевые слова: бронхиальная астма, фенотипы астмы, атопическая коморбидность.

The last 20-30 years are characterized by an increase in the incidence and severity of bronchial asthma (BA). In terms of social significance, asthma is one of the first places among respiratory diseases.

Currently, according to the recommendations of the Global Initiative for Asthma (GINA), 2017[4], the following phenotypes of asthma are distinguished: - Allergic asthma (cause sensitization and work on the mechanism of a reagin IgE response), is associated with atopy. - Non-allergic asthma (associated with nasal polyps, sensitivity to aspirin; manifestation is preceded by a respiratory viral infection. - Asthma with a late onset. - Asthma with a fixed airflow limitation (due to remodeling of the bronchial walls); - Asthma on the background of obesity. - BA + chronic obstructive pulmonary disease (COPD) overlap.

Atopic asthma is caused by allergens of animal and plant origin, as well as simple chemicals that sensitize the airways, usually by inhalation.

Non-allergic asthma includes all cases of asthma associated with infection. Infectious triggers leading to exacerbations of BA are bacterial and especially often viral infections of the respiratory apparatus. Non-immunological mechanisms of pathogenesis include dyshormonal and neuropsychic variant of BA. There is an opinion that some endocrine disorders and dysfunction of the pituitary-adrenal cortex system contribute to the development of AD.

**Purpose of the study:** study the phenotypes of asthma and determine atopic comorbidity, taking into account gender differences.

**Materials and methods of research:** BA patients who were on outpatient and inpatient treatment in the therapeutic departments of the clinic of the medical institute were examined by random sampling. General clinical, laboratory (general blood count, sputum analysis with determination of the level of eosinophils), instrumental (spirometry, fluoroscopy/graphy, ECG) studies were performed. A special study to determine atopy is the level of allergic

immunoglobulin E antibodies - lgE. Assessment of body mass index (BMI) and diagnosis of obesity were based on the determination of BMI in accordance with the WHO recommendations, 2000.

**Research results:** 72 patients with BA were analyzed, of which 25% were men (18 people), 75% were women (54 people).

Allergic and non-allergic phenotypes of asthma were determined by the level of blood eosinophils (more than 300 cells/ml or ≥2%) and the level of IgE.

The results of the study showed the predominance of allergic phenopitis among all examined patients - 69.4% (50 people), and significantly more among women - 74.1% (40 people), compared with men - 55.5% (10 people). ), P<0.05. Non-allergic BA occurred in 30.6% (22 people), but significantly more often in men 45.5% (8 people), compared with women - 25.9% (14 people), P<0.05. When analyzing the level of IgE, we obtained the following results: the number of positive and negative results was equal and did not depend on gender differences. We are inclined to explain this fact, probably, by a small number of studies of the IgE level (18 people).

The phenotype of AD against the background of obesity among women, i.e. with BMI ≥30.0-34.9 (grade 1 obesity) occurred in 25%, with BMI 35.0-39.9 (grade 2 obesity) - in 6.3%, with BMI ≥ 40.0 (grade 3 obesity) - 12.5%. Overweight in women, i.e. BMI - 25.0-29.9 was noted in 18.7% and only 18.7% had a normal BMI. Among men, the phenotype with grade 1 obesity was found in 14.3%, 57.1% were overweight, and 28.6% had a normal BMI. Obesity of 2-3 degrees was not noted. The BA + COPD overlar phenotype occurred in 11.1% (2 people) of men and 3.7% (2 people) of women.

When studying atopic comorbidity, we found that allergic rhinitis and conjunctivitis occurred in 55.5% and 38.9% of all BA patients, and were significantly more common in women - 66.7% and 48.1%, respectively, compared with men - 22.3% and 11.1% (P<0.005). Allergic dermatitis was noted in 27.8% of patients, including 33.3% of men and 25.9% of women, P>0.05. Atopic

comorbidity was absent in 33.3% of men and 18.5% of women. The combination of allergic rhinitis and conjunctivitis occurred in 33.3% of individuals, the combination of allergic conjunctivitis and dermatitis was noted in 8.3% of patients with asthma.

**Discussion and conclusions:** the study showed that the allergic phenotype of BA occurred in 69.4% of the examined, and significantly more often among women. The non-allergic phenotype, as well as the AD+COPD phenotype, were more common in men, suggesting the role of smoking and other pollutants involved in the development of non-allergic bronchial inflammation.

The BA phenotype with obesity occurred in 34.8% of patients, significantly more often in women - 43.7%, compared with men - 14.3%. It is possible that this phenotype influenced the significant frequency of BA among women in our population, on the one hand, and on the other hand, the influence of adipose tissue on the formation of allergic inflammation in BA was confirmed, due to leukotrienes, which are formed during visceral obesity.

Among atopic comorbidity, allergic rhinitis took the leading place - 55.5%, especially in women - 66.7%. This confirmed the hypothesis that BA and rhinitis are a single disease of the united airways ("united airways disease", WHO, 2003), which is due to the common mechanisms of development of inflammation of the upper and lower airways.

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