



## STRUCTURE OF SENSITIZATION TO AEROALLERGENS WITH ATOPIC BRONCHIAL ASTHMA IN THE BUKHARA REGION

**Ikramova Shakhnoza Abdurasulovna**

Doctoral student at the Department of Propaedeutics of Internal  
Diseases, Bukhara State Medical Institute  
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### ABSTRACT

*Pathogenetic characteristic of atopic bronchial asthma (BA) is chronic allergic inflammation of the respiratory tract, initiated by contact with causative allergens. Identification of sensitization is a necessary condition for successful therapy of BA, while the structure of sensitization may have regional features. Objective of the study: to study the structure of sensitization to aeroallergens with atopic BA, living in Bukhara.*

### INTRODUCTION

Asthma is the most common chronic respiratory disease in children. Despite the diversity of clinical manifestations, an invariable feature of the pathogenesis of asthma is chronic allergic inflammation of the respiratory tract, in the occurrence and progression of which contact with causative allergens is of exceptional importance [1–4]. In this regard, accurate identification of causative allergens in a particular patient is a prerequisite for the treatment of asthma and other allergic diseases. The spectrum of sensitization to certain allergens has regional features, which is due to both the climatic and geographical characteristics, as well as the environmental and ethno-domestic characteristics of the region in which patients with asthma live [2]. These aspects continue to be actively studied at present by both domestic and foreign authors. Thus, in the study by Bardei F. et al., based on the assessment of the results of skin testing, the prevalence of sensitization to house dust mites and olive pollen was found to be dominant in the Moroccan population among patients with asthma [3].

### MATERIALS AND METHODS

A retrospective study of the results of skin tests in patients with bronchial asthma was performed based on the analysis of case histories. A total of 98 case histories of patients with atopic bronchial asthma aged from 3 to 17 years (mean age  $9.1 \pm 4.6$ ) were analyzed, including 69 boys and 29 girls who received treatment and examination at the Children's City Clinical Hospital in Bukhara.

Verification of bronchial asthma was carried out in accordance with the available domestic and international consensus documents. All children had a symptom complex characteristic of bronchial asthma. At the time of examination, children did not have symptoms of exacerbation of the disease and did not receive antihistamines. The main criteria



for exclusion from the study were the presence of fever and/or symptoms of bacterial infection of the upper respiratory tract, including the presence of mucopurulent secretions in the nasal cavity.

## RESULTS AND DISCUSSION

Sensitization to household allergens (house dust allergens, library dust, house dust mite) was detected in 71% (70/98) of patients, to epidermal allergens (cat hair, dog hair, horse dander, pillow feathers) - in 38% (37/98) of patients, to pollen allergens (trees, cereals, weeds) in 72% (71/98) of the child. The proportion of patients with household sensitization and patients with pollen sensitization was statistically significantly higher than the proportion of patients with epidermal sensitization  $Z = 31.98$ ;  $p = 0.01$ , respectively. At the same time, the proportions of patients with household sensitization and pollen sensitization were comparable. A combination of household (1), epidermal (2) and pollen (3) sensitization was detected in 24% (24/98) of children, a combination of sensitization to two groups of allergens in 35% (34/98) of patients, and sensitization to one of the groups of allergens in 41% (40/98) of patients. Thus, in 59% (58/98) of patients with bronchial asthma, sensitization was of a combined nature.

Skin tests to household allergens were positive in 71% (70/98) of the examined patients, of which 56% (55/98) of the children had positive reactions to house dust allergens (HDA). In 78% (43/55) of the patients, the reaction was assessed as weakly positive, in 15% (8/55) of the patients as positive, in 3.6% (2/55) of the patients as strongly positive, and in 3.6% (2/55) of the patients, the skin test results were assessed as hyperthermic. The proportion of patients with strongly positive and hyperergic reactions was 4% (4/98) of the number of examined patients. Thus, sensitization to ADP in general is typical for children with BA, however, a predominance of weakly positive reactions is noted in skin testing of these children.

When conducting skin tests with library dust (LD) allergens, a positive reaction was detected in 24% (24/98) of patients. Of these, in 71% (17/24) they were assessed as weakly positive, in 29% (7/24) of patients - as positive reactions.

Positive reactions with house dust mite allergens occurred in 42% (41/98) of patients, of which in 90% (37/41) of children the reactions were assessed as weakly positive, in 7% (3/41) as positive and in 2% (1/41) of patients as strongly positive.

In total, sensitization to household allergens was detected in 71% (70/98) of patients, in 50% (35/70) of children skin tests were positive with one, in 30% (21/70) of patients with two and in 20% (14/70) patients with all three studied household allergens. Moreover, sensitization to house dust allergens was more widespread and more pronounced compared to sensitization to library dust and house dust mite allergens, which may be due to the composition of house dust allergen extracts, which are multicomponent.

When analyzing the results of skin tests with epidermal allergens (pillow feather, horse feather, cat hair and dog hair), sensitization to one or more of the listed allergens was detected in 38% (37/98) of patients with atopic BA. Moreover, in 46% (17/37) of these patients, skin tests were positive with one, in 38% (14/37) patients with two, in 13% (5/37) patients with three and in 3% (1/37) patients with all four of the listed epidermal allergens. The most common sensitization was to cat hair allergens, which was detected in 30% (29/98)



of patients. Of these, 83% (24/29) of children had reactions that were assessed as weakly positive, 10% (3/29) of patients had positive reactions, and 6% (2/29) of patients had sharply positive and/or hyperergic reactions. Skin tests with pillow feather allergens revealed sensitization to these allergens in 15% (15/98) of patients, of which 73% (11/15) had reactions that were assessed as weakly positive and 26% (4/15) of patients had reactions that were positive and/or hyperergic.

The prevalence and severity of sensitization to allergens of cat hair, horse dander, pillow feathers were comparable. The proportion of patients with sensitization to dog hair and the severity of this sensitization were significantly lower than other epidermal allergens. Considering that the above-mentioned epidermal allergens are a combination of domestic allergens, complementing the spectrum of domestic allergens, it becomes obvious that the combined accounting of sensitization to domestic and epidermal allergens contributes to a more complete understanding of the impact of the home environment on the body of a patient with asthma. Allergy to domestic or epidermal allergens or their combination was detected in 74% (73/98) of those examined. At the same time, a combination of domestic and epidermal allergies occurred in 35% (34/98) of children. The high prevalence of household and epidermal sensitization among patients with atopic bronchial asthma living in Bukhara indicates the need for a careful approach to the development and implementation of measures to improve the ecology of housing in order to reduce the trigger load in patients with asthma.

## CONCLUSION

The presented results demonstrate that atopic bronchial asthma in the conditions of Bukhara is characterized by a wide range of sensitization to aeroallergens. This indicates a potentially large range of triggers capable of both provoking an exacerbation of the atopic process and maintaining allergic inflammation in the shock organ. The results of the study confirm, on the one hand, the need to improve the work on the formation of a hypoallergenic environment in those rooms where children often visit. These measures are relevant not only for residential premises, but also for kindergartens, schools, since the prevalence of bronchial asthma in the child population is quite high [2]. On the other hand, the obtained data indicate the potential feasibility of widespread use of ASIT in the treatment of patients with atopic bronchial asthma, taking into account the sensitization identified in these patients.

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