

## Skin Test Reactivity to Fungal Aeroallergens in Asthmatic Children in Southern Iran

**Mozhgan Moghtaderi\*<sup>1</sup>, MD; Soheila Aleyasin<sup>2</sup>,  
MD; Reza Amin<sup>2</sup>, MD, and Sara Kashef<sup>2</sup>, MD**

1. Allergy Research Center, Shiraz University of Medical Sciences, Shiraz, Iran
2. Department of Pediatric Immunology and Allergy, Shiraz University of Medical Sciences, Shiraz, Iran

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The development of asthma appears to involve interplay between host factors and environmental exposures. The most important environmental factors are viral respiratory infections and airborne allergens in consist of sensitization to fungal aeroallergens<sup>[1]</sup>. Exposure to fungal aeroallergens was reported to be a cause of asthma in many parts of the world.

There are few data on the prevalence of allergy to molds in Iran. This study was performed to determine the positive skin prick test to molds and their related risk factors in asthmatic children in Shiraz, southern Iran (Table 1).

Skin prick test was done in two hundred and thirty asthmatic children with five types of common fungal aeroallergens (Aspergillus fumigatus, Cladosporium herbarum, Penicillium, Alternaria and Rhizopus).

Out of 230 asthmatic children (175 boys, 55 girls) with mean age 6.34±3 years, 25 (10.9%) had positive skin test to molds. In other studies this rate was reported to be different between 2% to 80%<sup>[2]</sup>.

Of 25 children with positive skin test to molds, the common fungal aeroallergen was Aspergillus followed by Cladosporium, Alternaria, Penicillium and Rhizopus. Amin R et al studied airborne fungal spores in Shiraz. The most

important fungi, in order of numbers, had been Alternaria, Aspergillus, Rhizopus and Penicillium<sup>[3]</sup>. With regard to results of skin prick test in our study, it seems that Alternaria is the most common outdoor fungus, but Aspergillus could be the most important indoor fungus.

Another study showed in asthmatic patients that main skin test reactivity to fungi was for Aspergillus but most frequent cultured fungus was Cladosporium<sup>[4]</sup>.

Of 25 subjects with positive skin test to molds, 5 (20%) were females, 20 (80%) were residents of urban areas and 4 (56%) lived in homes older than ten years. There was no significant correlation between the prevalence of mold skin test positivity in males and females, rural and urban habitats and age of homes.

**Table 1:** Risk factors of 25 patients with positive skin test to fungal aeroallergens

Variables	Patients Number (%)	P value
<b>Age</b>		
≤ 2 y/o	8 (32)	NS
> 2 y/o	17 (68)	
<b>Gender</b>		
Boy	20 (80)	NS
Girl	5 (20)	
<b>Site</b>		
Urban	20 (80)	NS
Rural	5 (20)	
<b>Type of home</b>		
Apartment	1 (4)	0.04
House	24 (96)	
<b>Age of homes</b>		
≤ 10 y/o	11 (44)	NS
> 10 y/o	14 (56)	
<b>Father's education</b>		
Primary school	8 (32)	NS
High school	12 (48)	
College degrees	5 (20)	
<b>Mother's education</b>		
Primary school	10 (40)	NS
High school	12 (48)	
College degrees	3 (12)	
<b>Damp homes</b>	7 (28)	NS

NS: Not significant

\* **Corresponding Author; Address:** Allergy Research Center Shiraz University of Medical Sciences, Shiraz, Iran  
**E-mail:** Moghtadery@sums.ac.ir

There was no difference in the frequency of positive skin test response to fungi in infants ( $\leq 2$  years of age) and older children in our study. This finding demonstrates that fungi allergy can start very early in life.

Fifty-nine (25.7%) fathers had college degrees of whom five (8.5%) children had positive skin test to molds. Thirty-nine (17%) mothers had college degrees and three (7.7%) of their children had positive skin test to molds. We found no significant relationship between parents' education level and results of the mold skin prick test. In other study, authors analyzed 57,000 children aged 6-12 yrs from 13 diverse countries. Multiple logistic regressions showed that low parental educational level was associated with an increased prevalence of wheeze and nocturnal dry cough<sup>[5]</sup>. There was no reason for our finding; only small sizes of parents with college degree were available.

One child lived in apartment and 24 (96%) in houses. There was significant differences in the frequency of positive skin test response to mold and living in apartment or house. Ginger et al examined home characteristics and level of indoor allergens in 499 homes of asthmatic children. Increased temperature in apartment could be related to warming of surface and resultant decreased micro environmental relative humidity<sup>[6]</sup>. We think that decreased entrance of fungal aeroallergens and low humidity in apartments are causes of these differences.

The site's weather of our study is hot and dry; there were no significant differences between positive skin test to mold with dampness of home in this study. Other studies have shown that home dampness increases indoor mold burden and is associated with increased allergic symptoms among young children<sup>[7]</sup>.

The results of this study showed that sensitivity to fungal aeroallergens may occur in asthmatic children. A positive reaction may even be observed during infancy. It seems that type of home is a significant factor to increase the presence of molds in residential areas. It is reasonable to consider fungal aeroallergens in the routine battery of inhalant skin tests in this geographic location.

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**Key words:** Asthma; Fungi; Skin prick test; Children; Iran

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