

A STUDY OF HOME CHARACTERISTICS IN CHILDREN WITH ALLERGIC RHINITIS AND ASTHMA

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SUMMARY – The prevalence of allergic diseases, especially asthma and allergic rhinitis, has dramatically increased during the last decades. Mite and cockroach, which are the most common allergens in house dust, are the major indoor allergens in asthmatic and allergic rhinitis patients. The aim of this study was to compare the association between age of dwelling and some other home characteristics in asthmatic and allergic rhinitis children, who had positive skin prick test to mite and cockroaches, with allergic patient with negative skin test. Thirty-six asthmatic and allergic rhinitis children with positive skin prick test to mite and cockroach allergens, and 34 allergic rhinitis and asthmatic children with negative skin prick test to these allergens were enrolled in this study. Data on home characteristics, including age of homes, kind of carpeting, floor of home and number of rooms in the building, were collected by telephone questionnaire. The mean age of buildings was higher in the group of children sensitive to mite and cockroach (22.4 ± 12.9 vs. 16.3 ± 13.9 years), but the difference was not significant. However, when patients sensitive to mite only were compared to control patients, the difference was significant ($P=0.025$). There was no significant difference in the number of floor, rooms, kind of carpet and other features of building between the case and control group. There was a significant relationship between mite allergy and building age, which could be important for the policy of allergy control in the society. However, further studies are needed to clarify the association between more specific home characteristics and allergy diseases.

Key words: *Asthma; Allergy; Rhinitis, allergic; Mites, Cockroaches*

Introduction

There is a dramatic increase in the prevalence of allergic diseases, especially asthma and allergic rhinitis, during the last decades¹⁻³. The prevalence of asthma in children has been estimated to 10 percent in our region⁴. Changes in the environment and lifestyle are the most important factors contributing to the high incidence of allergic diseases¹⁻³.

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Mite and cockroach, which are the most common allergens in house dust, are the major indoor allergens in asthmatic and allergic rhinitis patients¹⁻³. A number of studies investigated the association between mite density of home and some other characteristics of buildings such as age of dwelling, type of carpet, humidity of home, etc., however, with controversial results⁵⁻¹¹. Determination of association between characteristics of home and sensitivity to various allergens could be useful for planning avoidance methods in the control of allergy diseases.

The aim of the study was to investigate home features of patients allergic to mite and cockroach and compare these with other patients not sensitive to these allergens.

Patients and Methods

This study was designed in two steps: first, all children with allergic rhinitis and asthma, aged 4-14 years, referred to Mofid Children Hospital, a referral center in Tehran, Iran, for skin prick test from April 2006 to March 2008, were enrolled. During this period, 140 patients were referred to this center, 96 with asthma, 36 with allergic rhinitis and 8 patients suffering from both diseases. These patients were categorized into two groups according to the results of their skin prick test to mite and cockroach. Positive skin test is defined as indurations of more than 3 mm or erythema more than 10 mm.

In the second step, 36 selected asthmatic or allergic rhinitis children with positive skin prick test to mite and cockroach were classified in group 1, and 34 selected patients with negative skin prick test to these allergens in group 2.

Information on home characteristics of the subjects was completed by a questionnaire *via* telephone interview with their parents. Age of homes, kind of carpeting, floor of home, and number of rooms in a building were some factors considered in this study.

Results

Demographic characteristics of both groups of patients are presented in Figure 1. The mean age of building was higher in group 1 (patients with positive skin test to mite and cockroach) as compared with group 2 (22.38 ± 12.96 vs. 16.3 ± 13.9 years), but the difference was not significant ($P=0.09$) (Fig. 2). However, when only group 1 patients with allergy to

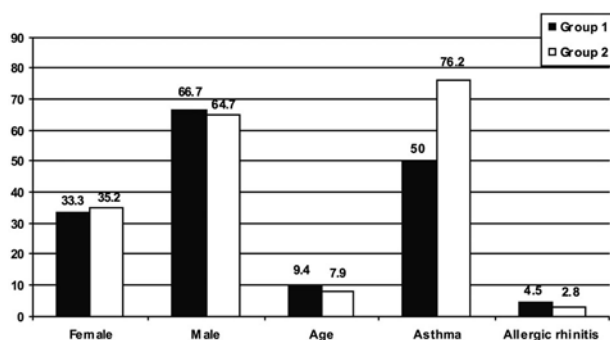


Fig. 1. Demographic characteristics of children with positive skin test to mite and cockroach (group 1) and children with negative skin test to mite and cockroach (group 2).

mite were compared with group 2, the difference was significant ($P=0.025$).

The mean floor of buildings did not differ significantly between the two groups (2.83 ± 1.72 in group 1 vs. 2.18 ± 1.34 in group 2; $P=0.11$). There was no major difference in the number of rooms in the building between the two groups (2.44 ± 0.62 in group 1 vs. 2.23 ± 0.83 in group 2; $P=0.46$).

Twenty-two group 1 (61.1%) patients and 26 (76.5%) group 2 patients lived in houses carpeted with fitted carpet ($P=0.5$). Other comparisons between the two groups on handy craft ($P=0.9$), machine made rug ($P=0.4$) and tile ($P=0.5$) were not significant (Fig. 2).

Discussion

This study showed significant association between age of building and allergy to mite. This finding could suggest that age of building should be considered as a factor in the control of allergy to mite. This fact is in agreement with other studies that showed relation between allergy and age of dwellings⁵⁻⁸. Luczynska *et al.* showed relationship between the high density of mite in home and age of building, age of rugs, water temperature for washing blankets, and some other features of homes⁵. Rauh *et al.* in New York implicated that density of cockroach allergens had increased in old buildings⁶. However, Boquete *et al.* in Spain showed no significant relationship between the type of carpet and allergy to mite, similar to our study⁷, while they did not consider age of buildings in their study. In contrast to our study, Norback *et al.* in Sweden showed no relationship between age of building and allergy to mite⁸.

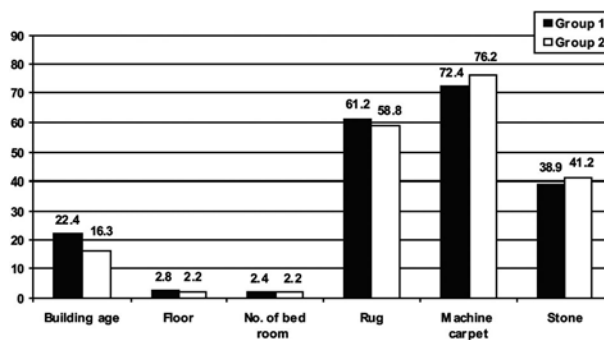


Fig. 2. Characteristics of buildings in children with positive skin test to mite and cockroach (group 1) and children with negative skin test to mite and cockroach (group 2).

Although in agreement with some previous studies showing relation between age of buildings and allergy to mite, our study was limited by the small sample size. However, considering special home architecture in different geographical regions of the world, such a study design appears to be quite important to encourage scientists to undertake greater research into the topic, to the benefit of allergy patients worldwide.

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Sažetak

ISPITIVANJE ZNAČAJKA DOMOVA DJECE S ALERGIJSKIM RINITISOM I ASTMOM

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Učestalost alergijskih bolesti, poglavito astme i alergijskog rinitisa, bilježi znatan porast posljednjih desetljeća. Grinje i žohari kao najčešći alergeni u kućnoj prašini glavni su alergeni na koje nailaze osobe s alergijom i alergijskim rinitisom u zatvorenom prostoru. Cilj ovoga istraživanja bio je usporediti povezanost starosti objekta i neke druge značajke doma kod djece s astmom i alergijskim rinitisom te s pozitivnim kožnim testom na grinje i žohare s vrijednostima istih kod djece s astmom i alergijskim rinitisom, ali s negativnim kožnim testom na grinje i žohare. U studiju je bilo uključeno 36 djece s astmom i alergijskim rinitisom te s pozitivnim kožnim testom na grinje i žohare i 34 djece s astmom i alergijskim rinitisom, ali s negativnim kožnim testom na grinje i žohare. Podatci o značajkama doma uključujući starost zgrade, vrst zidne obloge, kat i broj soba u zgradi prikupljeni su telefonskim anketiranjem roditelja. Srednja starost zgrade u kojoj žive bila je veća kod djece osjetljive na grinje i žohare nego u djece koja nisu pokazala osjetljivost na ove alergene (22,4±12,9 prema 16,3±13,9 years), ali razlika nije bila značajna. Međutim, kad su s kontrolnom skupinom uspoređena djeca osjetljiva samo na grinje, tada je razlika bila značajna ($P=0,025$). Nije bilo nikakve razlike između dviju skupina u odnosu na kat, broj soba, vrst zidne obloge i druge značajke zgrade. Dakle, utvrđena je značajna povezanost alergije na grinje i starosti zgrada, što bi moglo biti važno u planiranju aktivnosti za suzbijanje alergije u društvu. Potrebna su daljnja ispitivanja kako bi se pojasnila udruženost nekih specifičnih značajka zgrada i alergijskih bolesti.

Ključne riječi: *Astma; Alergija; Rinitis, alergijski; Grinje; Žohari*

