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ORIGINAL ARTICLE / ÖZGÜN ARAŞTIRMA

Skin prick test results of atopic asthmatic subjects in a chest disease clinic in Sanliurfa

Şanlıurfa'da bir göğüs hastalıkları kliniğinde atopik astımlı hastaların allerji deri testi sonuçları

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ABSTRACT

Objective: Skin prick test (SPT) is used widely to determine the allergens in atopic patients. In this study, we aimed to determine the spectrum of aeroallergen sensitivity of atopic asthmatic subjects in Şanlıurfa district.

Methods: We evaluated clinical, demographic findings and SPT results of 95 male and 162 female in a total 257 patients who had asthma and allergic symptoms.

Results: Most common allergens causing a sensitivity reaction detected in our clinic were as follows; cockroach (56.8%), wheat pollen (53.3%), corn pollen (47.4%), grass pollen (36.5%), poplar tree pollen (26%), house dust mite (19.4%), pepper (16.7%) and cat dander (15.1%).

Conclusion: High levels of sensitivity to wheat and corn pollens and relatively low sensitivity levels of cat dander results meet our expectations in the area of agricultural land and where pet ownership is not common.

Key words: Atopy, aeroallergens, skin prick test

ÖZET

Amaç: Allerji deri testi atopik hastaların değerlendirilmesinde sık kullanılmakta ve hızlı sonuç alınabilmektedir. Bu çalışmada amacımız Şanlıurfa'da atopik astımlı hastaların aeroallerjen duyarlılığını değerlendirmektir.

Yöntemler: Çalışmada 95 erkek, 162 kadın toplamda 257 atopik astımlı hastanın klinik, demografik verileri ile deri prick testi sonuçları geriye dönük olarak değerlendirildi.

Bulgular: Yapılan deri prick testinde en sık allerjiye yol açan allerjenler sırasıyla; hamam böceği (%56,8), buğday poleni (%53,3), mısır poleni (%47,4), çimen poleni(%36,5), kavak ağacı poleni (%26), ev tozu akarı (%19,4), biber tozu (%16,7) ve kedi tüyü (%15,1) olarak saptandı.

Sonuç: Buğday ve mısır polenine yüksek oranda duyarlılık, kedi tüyüne ise daha az oranda duyarlılık saptanması tarımla uğraşan ve kedi besleme alışkanlıkları sık olmayan bölgede beklentilerimizi karşılamaktadır.

Anahtar kelimeler: Atopi, aeroallerjenler, deri allerji testi

INTRODUCTION

Atopy is development of allergic response in individuals with a genetic predisposition against environmental allergens. Asthma is defined by the history of respiratory symptoms such as wheeze, shortness of breath, chest tightness and cough that vary over time and in intensity, together with variable expiratory airflow limitation [1]. Allergic asthma is the most easily recognised phenotype, which is seen generally in childhood and is associated with a past and or family history of allergic diseases such as eczema, allergic rhinitis, food or drug allergy. Immunoglobulin E production is increased in atopic patients against natural aeroallergens. It has been reported that approximately half of allergic subjects express symptoms, most commonly manifest in respiratory system which can be attributed

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to allergic sensitization [2]. Some allergens cause more widespread sensitivity whereas others may cause seasonal symptoms. Aeroallergen distribution differs with environmental factors such as heat, moisture and flora which may differ according to the region and climate. Aeroallergens are reported to be responsible for the development and severity of asthma [3,4].

Atopic status can be detected by skin prick testing (SPT) or immunoglobulin E. Skin tests are rapid, economic and sensitive tests that show the presence of allergen specific IgE in mast cells of the subject [5]. But even though they have high sensitivity a positive skin test does not mean the person will develop symptoms, thus correlation between symptoms and skin test positivity is important. In this study we aimed to define the profile of allergen sensitivity of asthmatic subjects in Sanliurfa district.

METHODS

Asthmatic subjects with sensitivity reaction to at least one allergen in the pulmonary medicine allergy laboratory of Viransehir State Hospital from June 2013 to March 2015 were retrospectively enrolled. The study was approved by local ethics committee (2014/400 Date:12.15.2014). The subjects over 16 years of age, defined asthma according to Global Initiative for Asthma (GINA) [1] and suspicious of allergic sensitization included in the study. SPT was not performed in patients, especially those taking antihistamines, corticoids, bronchodilators, mast cell stabilizers and immunosuppressive drugs, their medications discontinued two or three weeks before the procedure depending on the medication [5]. Patients with urticaria, allergic rhinitis, dermographism and a known drug allergy were excluded from the study. After review of their medication history, specific allergen solutions were applied with multi-tipped skin prick test applicators on the volar surface of the forearm and reactions were evaluated after 20 minutes [6]. The process has been evaluated by a chest disease specialist. If the edema was 3 mm larger than negative control, SPT result was recorded as positive.

The allergen panel consisted of the followings: histamine (positive control), negative control (0.9% saline), Dermatophagoides pteronyssinus (house dust mite), cokroach, corn pollen, weat pollen, cat dander, pepper, grass pollen, and poplar tree polen. Ninety-five male and hundred and sixty- two female in a total 257 subjects included in the study. The mean age of patients who had positive allergic skin test was 32.9 ± 13.5 (16-50). The data were analyzed by GraphPad Prism 5.0 version Software (California, USA). Kolmogorov-Smirnov test used to examine cumulative distributions of the data. All data are presented as mean ± standard deviation. Charts were produced using Microsoft Excel.

RESULTS

Two hundred and fifty seven asthmatic subjects had positive reaction to at least one of eight allergens. The mean age of subjects with positive SPT was 32.9 ± 13.5 (16-50). 162 of them were female (63.1%) and 95 were male (36.9%). The number of patients with polysensitization was 201 (78.2%), and monosensitization was 56 (21.7%). Demographic characteristics of the skin prick test positive asthmatic subjects are shown on Table 1. In this study population we found most common allergens causing a sensitivity reaction are as follows; cockroach (56.8%), wheat pollen (53.3%), corn pollen (47.4%), grass pollen (36.5%), poplar tree pollen (26%), house dust mite (19.4%), pepper (16.7%) and cat dander (15.1%) (Figure 1).

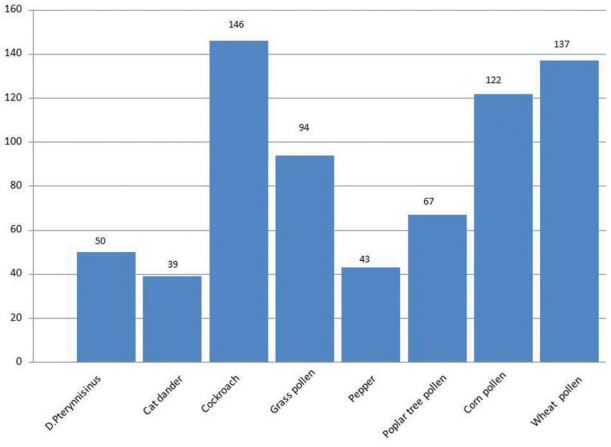

Figure 1. The distribution of allergen sensitivity in asthmatic subjects with positive skin test

Table 1. Demographic characteristics of the skin prick test positive asthmatic subjects

Allergen	Age	Female (n=162)	Male (n=95)
D.pterynnisinus	34 ± 13	32	18
Cat dander	34 ± 14	27	12
Corn pollen	35.4 ± 15	86	35
Wheat pollen	34.5 ± 15	101	36
Grass	33.8 ± 14	66	28
Pepper	36.7 ± 14	33	10
Cockroach	34 ± 14	103	42
Poplar tree	34.8 ± 14	43	24

DISCUSSION

Detection of allergen susceptibilities is important for the management of allergic diseases. Cockroach sensitivity is generally detected in warm, moist areas and in communities with lower socioeconomic status. We detected the most common sensitivity in 146 patients (56.8%) to cockroach in our study population. Exposure to cockroach has been identified as one of the most important allergen sources for the development of asthma and allergic rhinitis and one of the important causes of indoor allergens [7]. We used Blatella germanica in the SPT, since it is one of the most frequently found cockroach species in Turkey. It has been reported that sensitivity to Blatella germanica in asthmatic subjects is 25.7% among all the cases, 41% among patients with atopy [8]. Perfura et al. reported that Blatella Germanica sensitivity was 25.5% in asthmatics in Cameroon [9]. Even though it has been reported that sensitivity to mites and cockroach are commonly found together [10] the difference in our study might be due to climate of the region and genetical characteristics of atopic asthmatics.

We found wheat pollen (53.3%) and corn pollen (47.4%) allergies second and third most common allergies, respectively. Even though the area is an agricultural area and men are mostly engaged in agriculture, female predominance was observed in wheat and corn pollen sensitivity in bronchial asthmatics. In the dry and warm climate of the southeast part of Turkey the pollens of nonflowering green plants, wheat and corn pollen are carried widely by the wind, which might explain partly how women are affected. In a study Colgecen et al. reported wheat pollen sensitivity 18.4% in Yozgat district which is also an agricultural area [11]. Even though study populations and climate are different in the light of both studies wheat pollen seems to be a potential allergen, especially for asthmatics. To the best of our knowledge there are few studies about corn pollen allergy in asthmatics, which has been found an important allergen in this study. Colgecen et al. found corn pollen sensitivity 11.6% in their study population.

Grass pollen is a major cause of allergy throughout the World in patients with asthma and allergic rhinitis as well as in Turkey. We have found grass pollen (Phleum pratense) sensitivity in 94 (36.5%) asthmatic subjects. In the neighboring city of Gaziantep Bayram et al. have reported the most common sensitivity to Phleum pretense (41.8%) and second most common allergy to Cockroach [12]. The difference between two studies might be due to study population and patient characteristics in which our study included only atopic asthmatics.

Poplar tree grows far too quickly than the indigenous varieties, also pollutes the air with allergens from late spring and early summer each year. Towards the end of spring season and by the onset of summers, the poplar trees shed cotton like material carrying pollens and seeds, which are highly allergic. In the warm and dry climate of Sanliurfa this process is accelerated. We have found 67 (26%) patients had poplar tree pollen sensitivity in our study population.

It has been known for a long time that house dust may contain allergens. Most important single source of house dust allergen is mites of the genus Dermatophagoides. In this study we have found 50 patients (19.4%) had SPT positivity for D. Pteronyssinus. Uzel et al. reported a high cockroach sensitivity (35%) alone or with mite (37%) sensitivity [10]. Farrokhi et al. have demonstrated that among 176 patients with asthma, the prevalence of aeroallergens were house dust mites (90.5 %), molds (80.7%), animal dander (77.5%), and grass pollen (67.9%) [13]. The differences between studies might be due to the prevalence of aeroallergens which vary in different regions, depending on the type of climate.

Pepper pollen allergy is rare but sometimes might be potentially severe allergen in asthmatic subjects. Pepper is used for production of paste and herb in food industry in Sanliurfa and most workers are women. Ceylan has reported that the most important asthma provoking factor is the inhalation of isot extract in asthmatic female patients [14]. In our study we have found 43 patients (16.7%) had pepper pollen allergy and 33 of them were women.

Cat allergens can be carried with air as small particles and are widely distributed through owners clothing. Even though pet ownership is not common in Turkey as it is in the west we found the rate of cat allergen sensitivity 15.1% in our study population. Unfortunately not owning a cat doesn't mean the person will not develop allergic symptoms. It has been reported that 30% of houses without a cat have cat allergens [15].

In conclusion, skin test positivity with compatible clinical history is necessary and knowledge of atopic pattern may influence management and prevention of the disease.

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