

The Evaluation of Skin Prick Test Results in Sırnak City

Şırnak İlinde Yapılan Prik Test Sonuçlarının Değerlendirilmesi

Suat Konuk¹ ve Hikmet Çoban^{2*}

¹Private Clinic, Rose Business Center in Duzce, Turkey

²Sakarya Training And Research Hospital Chest Diseases, Sakarya, Turkey

ABSTRACT

Objective: Skin prick test is an easy, cheap, safe, fast, and frequently used test to identify allergic diseases. Several factors such as genetic tendency, climate, humidity, vegetation, and altitude effect development of allergies.

Our goal was to determine the allergic susceptibility of allergic patients in Sırnak City.

Material and Methods: Medical files of 240 patients who referred to our Chest Disease policlinics in Sırnak State Hospital between February 2011 and June 2011 with respiratory complaints suggestive of allergic diseases such as asthma and allergic rhinitis, were retrospectively reviewed. Skin prick test results were evaluated according to age and gender.

Results: 240 patients were included in the study, 127 (52.9%) were male and 113 (47.1%) were female. The most common allergic reaction was against grasses, observed in 41 patients (17.1%). The other common allergic reactions were against grains, in 28 patients (11.6%); D. Farinea in 17 patients (7.1%); D Pteronyssinus in 11 patients (4.6%); grass mix in 9 patients (3.7%).

Conclusions: Reactions were most commonly observed in the age group of 10-19 years. Asthma and allergic rhinitis patients in Sırnak City should particularly be careful against grasses, grains, and house dust mites.

Keywords: Allergy, asthma, allergic rhinitis, skin prick test, Sırnak

ÖZET

Amaç: Deri prik testi, alerjik hastalıkların belirlenmesinde kullanılan kolay, ucuz, güvenli, çabuk sonuç veren ve sık kullanılan bir testtir. Alerji gelişmesini etkileyen genetik yatkınlık, iklim, nem, bitki örtüsü, rakım gibi faktörler vardır.

Şırnak ilindeki alerjik hastaların alerji duyarlılığının belirlenmesidir.

Gereç ve Yöntem: Şubat 2011 ile Haziran 2011 arasında Şırnak Devlet Hastanesi'nde Göğüs Hastalıkları polikliniklerine astım ve alerjik rinit gibi solunumsal alerjik hastalık şikayeti ile başvuran 240 hastanın dosyaları retrospektif olarak incelendi. Deri prik test sonuçları yaşa ve cinsiyete göre değerlendirildi.

Bulgular: Çalışmaya dahil edilen 240 hastanın 127'si (%52.9) erkek, 113'ü (%47.1) ise kadındı. En sık reaksiyon 41 hasta (17.1) ile çimenlere karşı saptanmıştır. Diğer sık görülen reaksiyonlar ise 28 hasta ile (%11.6) tahıllara, 17 hasta ile (%7.1) D. Farinea'ya, 11 hasta ile (%4.6) D. Pteronyssinus'e ve 9 hasta ile (%3.7) ot karışımına karşı saptanmıştır. Reaksiyonlar en sık 10-19 yaş grubunda saptandı.

Sonuç: Şırnak'da astım ve alerjik rinit hastaları özellikle çimen, tahıl ve ev tozu akarları alerjenlerine karşı dikkatli olmalıdır.

Anahtar Kelimeler: Alerji, astım, alerjik rinit deri prik test, Şırnak

Introduction

Immunoglobulin E (IgE) is the most relevant factor in allergies induced by environmental, nutritional or drug-related agents. The skin prick test is the fastest, the most sensitive and cost-effective method to identify IgE-related allergies (1). Sudden hypersensitivity reactions against

allergens are relatively common among children with asthma or rhinitis, and among young adults. Susceptibility to major household allergens (such as dust mites, cats, dogs or cockroaches) is considered to be the most significant risk factor for the development of asthma (2,3). Allergies are a series of pathological conditions that develop in genetically susceptible individuals due to

Çalışma daha önce bilimsel toplantı ve kongrede sunulmamıştır.

*Sorumlu Yazar: Uzm Dr. Hikmet ÇOBAN, Sakarya Eğitim ve Araştırma Hastanesi Göğüs Hastalıkları Kliniği, Adapazarı/SAKARYA, TEL: 0 (536) 652 06 94, E-mail: hikmetcoban04@gmail.com

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sensitization after exposure to different allergens. Contrary to the previous use of the Latin term “atopy”, this term is now used to define the group of patients having one or more of the conditions such as asthma, allergic rhinoconjunctivitis and contact dermatitis, accompanied by an increase in inherited IgE antibodies and a medical or family history of atopy (4).

There is a complex interaction between allergic diseases and genetic factors. The high probability of observing allergic compatibility between maternal twins and the increased frequency of atopy among individuals having at least one parent with atopy demonstrate the impact of genetic factors (5). Allergic diseases may develop due to a different spectrum of allergens at different regions, based on regional differences in the climate, vegetation, humidity and altitude (6). The skin prick test is a safe method; no death has been reported previously, although systemic reactions can occur (7). While allergy tests are important for the evaluation of allergic diseases, they are not sufficient alone to make a diagnosis and should be further supported by an anamnesis of clinical exacerbation or allergen provocation resulting in allergic complaints. Avoiding the allergen is advisable in symptomatic patients with allergies as demonstrated by a positive skin prick test and specific IgE antibodies in serum. Type and number of environmental pollens vary according to the region, temperature and climate, and the total pollen concentration in the atmosphere can significantly differ based on the vegetation of the geographical region in question, amount of precipitation, and the direction or speed of the wind (8,9). This study was performed to identify the major allergens affecting the patients referring with allergic complaints in Sırnak province and ultimately to contribute to the protection of Sırnak residents from exposure to these allergens.

Material and Methods

Medical files of 240 patients who referred to Chest Disease polyclinics of Sırnak State Hospital between February 2011 and June 2011 with allergic respiratory complaints suggestive of asthma and allergic rhinitis, were retrospectively reviewed and their data were analyzed. Patients' age range was 7-65 years old. Asthma diagnosis was based on detailed medical history, physical exam, patients' symptoms, and overall health and test results. Diagnose of allergic rhinitis was based on patients' symptoms and medical history.

Exclusion criteria: The test was not performed or was postponed for an appropriate time period in the presence of a secondary disease such as an active infection or an active allergic skin disorder, during active treatment with antihistaminic, corticosteroid, anti-inflammatory or immunosuppressive agents that could impair the skin test results, and during pregnancy.

Prick Test: Extracts of 28 common allergens and extracts for positive and negative controls were used for the prick test (Allergopharma produced by Merck KGaA, Darmstadt/Germany). Allergen extracts included household mites *Dermatophagoides farinae* (*D. farinae*), and *Dermatophagoides pteronyssinus* (*D. pteronyssinus*), grass pollen mixtures (*Cynodon dactylon*, *Fescue*, *Lolium perenne*, *Phleum pratense*, *Poa annua*), tree pollen mixtures (*Betula pendula*, *Populus*, *Pomaderris apetala*, Oak Tree, Elm Tree, Ash Tree, Redwood, Willow, common beech, Maple, Juniper, Elderberry, Pine), herb-pollen mixture (*Absinthe*, *Pigweed*, *Parietaria judaica*), cockroach, *Aspergillus fumigatus* and a mixture of grain allergens (Oak, Barley, Wheat, Rye). Allergen extracts were administered epicutaneously by using separate prick-test applicators. Evaluations were performed after waiting for 20 minutes. Histamine hydrochloride was used as positive control and isotonic was used as negative control. Validity criteria for the test were considered as > 3 mm positive control and < 3 mm negative control. Skin reaction against an allergen associated with an induration diameter of at least 3 mm was considered as a positive response (10).

Statistical Analysis: SPSS 15.0 Windows package software was used for analysis. Independent-samples t test was used to analyze the differences between mean ages. Gender differences were analyzed by χ^2 test. P values < 0.05 were considered statistically significant.

Results

240 patients included into the study, 127 (52.9%) were male and 113 (47.1%) were female. All patients' age range was 7-65 years old. Mean age of women and men was 35.8 ± 12.1 years and 31.7 ± 13.4 years, respectively. Skin prick test result was positive in 106 (44.16%) of tested individuals. Table 1 showed the distribution and frequency of allergens according to gender.

All tested patients were listed based on age and allergic reactions were found to be most common

Table 1. Comparison of allergic reactions between genders

	Males (n:127)	%	Females (n:113)	%	p
Positivity for any allergen	70	55.1	36	31.85	p>0.05
Grass	29	22.8	12	10.6	p>0.05
Grains	19	15	9	7.96	p>0.05
D. Farinea	11	8.6	6	5.3	p>0.05
D. Pteronyssinus	6	4.7	5	4.4	p>0.05
Herbs	5	3.9	4	3.5	p>0.05

Table 2. Skin prick test results according to age groups

Age (years)	Individuals (n)	Positive test (n)	Positive test %
0-9	39	22	56.4
10-19	40	30	75
20-29	37	23	62.1
30-39	34	17	50
40-49	27	11	40.7
50-59	30	2	6.6
60≤	33	1	3

among individuals aged between 10-19 years (Table 2). Allergen frequency according to diseases (asthma, allergic rhinitis, and coexistence of asthma and allergic rhinitis) was shown in table 3.

Skin prick test results of patients referring with allergic complaints indicated that the majority of reactions were against grass pollens, followed by grain allergens mixture and D. Farinea, respectively.

Table 3. Allergen frequency according to diseases

	Asthma(n)	Allergic Rhinitis(n)	Asthma+ Allergic Rhinitis(n)	Total(n)
Grass	11	13	17	41
Grains	6	9	13	28
D. Farinea	3	4	10	17
D. Pteronyssinus	3	3	5	11
Herbs	2	3	4	9

Discussion

Epidemiological studies indicate that allergies are associated with the lifestyle, diet and environmental conditions of the individuals. The prevalence of atopy in developed countries increased by 10-folds over the last 20 years, which highlights the impact of environmental factors on the development of allergies (11-13). Patient age can be a factor affecting the results of skin prick test. Allergic susceptibility increases with age during childhood and reaches to a plateau during adult ages. In general, susceptibility gradually decreases after the age of 50 or 60 years, and the results of skin prick tests performed on individuals at these ages are reliable (14). In the United States, the incidence of atopy was found to be around 40% among children, while it varied between 10 to 20% of the adult population (11). In the present study performed on atopic patients living in Sirnak province, skin prick results

indicated that 44.16% of the study population was positive for at least one allergen. The possible reasons underlying such a difference between the figures may be the variations between allergen spectrums of different regions and the severity of allergies among patients referring to a physician.

Previous studies performed in Turkey reported different rates of allergic reactions in patients with atopy. Among those, Cicek et al. (15) reported allergen positivity in 29.3%, Ceylan et al. (16) in 35%, Karabulut et al. (8) in 56.4% and Ozturk et al. (17) in 56.7% of their patients. When we reviewed the test results reported by the studies performed in Eastern and Southeast Turkey, we found that Mirici et al. (18) detected allergies against pollen mixtures (grass and trees) in 70.3% of the patients in Erzurum; in their study performed in Kayseri, Bayram et al. (19) found that allergies were most commonly against pollens by 69.2% (53.3% against tree pollens, 45.8%

against herbs and grass, 24.2% against grain pollens), followed by household mites by 56.7%; in Sanliurfa, Ceylan et al. (16) reported that 87.5% of the allergies were against grass pollens, 2.3% against herb pollens and 2.3% against tree pollens; and in another study performed in Elazığ, Cicek et al. (15) found that 18.1% of the allergies were against household dust and 13.8% were against grass pollen. In another province with high humidity at low altitude, Edirne, Edis et al. (6) reported that 39.8% of the allergies were against household mites, 26% were against trees and 23.5% were against grass; while in Antalya, Yalçın et al. (20), susceptibilities were reported against household mites in 51.9% and against pollen mixture in 42.3% of the cases.

In Sırnak province, we found that 41 patients (17.1%) were susceptible to grass, 28 (11.6%) to grains, 17 (7.1%) to D. Farinea, 11 (4.6%) to D. Pteronyssinus and 9 (3.7%) to herb mixture. Tree pollens are the predominant allergens in Kayseri, while grass pollens are apparently more relevant in Sanliurfa (16,18,19). In provinces with high humidity and at low altitude, such as Edirne, Antalya and Duzce, susceptibility to household mites appear to be more predominant (6,18). Nevertheless, there are regions that represent an exception to such a generalization. For instance, susceptibility to household mites is more pronounced in Sakarya province while susceptibility to grass pollens is more common in Mersin province (21,22). Rather than the plants inseminated by insects, those inseminated by the wind are considered to be responsible for pollen allergies and such plants vary depending on regional characteristics (23). Skin prick tests of patients with allergic complaints in Sırnak province showed that the most common allergic susceptibility was against grass pollens, followed by grain pollens and household mites, respectively. Allergic rhinitis and asthma frequently coexist, and 70% of asthmatic patients are also accompanied with allergic rhinitis (24). The frequency of skin prick test positivity in these patients varies between 29-78% in Turkey (15,24). In our study skin prick test positivity was 44.16%, and we think that this difference is due to altitude and environmental factors.

In conclusion, protecting atopic patients from the allergens they are susceptible to is the most significant and easiest mode of therapy. Since the present study provided information on the results of allergen susceptibilities in Sırnak province, we believe that our findings can contribute to the

protective treatment of atopic patients living in this region.

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