The type of sensitization to allergens in allergic patients in Ankara, Turkey

Türkiye'de Ankara ilinde alerji hastalarında allerjen duyularlığının tipi

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Abstract

Objective: To present our prick test results that would reflect allergens prevalent in the Central Anatolia.

Methods: Prick tests of the 1618 patients diagnosed with allergic rhinitis, atopic dermatitis, allergic conjunctivitis between January 2003 and May 2005 were included in the study. In epidermal skin prick test, sensitization to 21 allergens including trees, grasses, weeds, fungus, epithelium-hair, house dust and mites, latex, and food were evaluated.

Results: Positive prick test results were obtained in 565 (34.9%) of 1618 patient. Sensitivity to prick tests were as follows: 372 (66%) were positive for grass pollens, 242 (43%) were positive for house dust and mites, 265 (47%) were positive for tree pollens, 71 (12.6%) were positive for epithelium-hair allergens, 37 (6.7%) were positive for foods, 19 (3%) were positive for fungus, 24 (4.3%) were positive for fungi, 26 (4.7%) were positive for latex allergens.

Conclusion: The most common allergens in Ankara are grass pollens, tree pollens and house dust and mites.

Keywords: Prick test, atopy, allergic rhinitis, allergic conjunctivitis.

In our study, we applied prick test in patients consulted to our allergy polyclinics in order to evaluate the allergens we have searched for. Prick test is applied using antigens which might cause allergic reactions in atopic individuals with allergic rhinitis, conjunctivitis, atopic dermatitis, food allergies and urticaria.¹ ²

Herein, we aimed to present our prick test results that would reflect allergens prevalent in the Central Anatolia in
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Materials and Methods

Study group consisted of patients who consulted our allergy polyclinics with complaints of watery eyes, eye redness, running nose, nasal stuffiness, sneezing, itching, coughing, and asthmatic episodes. In the study, prick test results of 1618 patients were evaluated. Twenty-one kinds of allergens including wood, grass, weed pollens, epithelium and hairs, house dust and mites, latex and food allergens were used in the prick test. Besides, physiological saline and histamine were used as positive and negative controls, respectively. Allergens were epidermally applied on the inner side of the forearm. Evaluations were made 20 minutes later. Allergens were determined as positive or negative in comparison with erythema and induration induced by positive and negative controls on the skin.

Results

Ages of the patients ranged between 12 and 77 (median: 35) years. Study population (n=1618) consisted of 1132 (70%) female and 485 (30%) male patients. According to prick test results, positive reaction was detected in 565 (34.9%) patients.

When results were evaluated, sensitivities to allergens including grass pollen (n=372; 66%), meadow grass, rye, wheat, barley, house dust and mites (n=242; 43%), tree pollens (n=265; 47%) [allergies against poplar tree (10%), olive tree (19%), mixture of tree pollens (9%) and hazel wood (9%) in indicated percentages of patients], epithelium-hair (n=71; 12.6%), weed (Artemisia vulgaris) (n=96; 17%), food (n=37; 6.7%), fungus (n=24; 4.3%) and latex (n=26; 4.7%) were detected (Table 1).

Majority of the patients (n=377; 67.5%) demonstrated sensitivities to a single group of allergens, while 121 (21.5%) patients were allergic to two different groups of allergens at the same time. Finally 64 (11%) patients were simultaneously sensitive to ≥3 different groups of allergens.

Among animal epithelium allergens, sensitivities of the patients to cockroach (n=35; 6.3%), dog (n=50; 9%), cat (n=26; 4.7%) and poultry animals (n=9; 1.7%) were observed.

Among food allergens, sensitivities of the patients to peach (n=12; 2.3%), egg white (n=4; 0.7%), banana (n=5; 1%), cocoa (n=2; 0.3%), egg yolk (4; 0.7%), fish (n=2; 0.3%), cow’s milk (n=4; 0.7%) and orange (n=4; 0.7%) were observed.

Discussion

Allergic diseases genetically manifest themselves in atopic individuals. The impact of environmental allergens taken in through skin, mouth and inhalation from the environment trigger development of allergic diseases in atopic patients. One of the reasons of epidemiological differences among regions might be environmental factors. Detection of potential allergens with prick test, can provide the individual, information about protection from allergens and the nature of the allergic disease.

Table 1. Active allergens found in prick test and their rates.

<table>
<thead>
<tr>
<th>Allergen</th>
<th>Number of sensitive patients (%)</th>
<th>Allergen</th>
<th>Number of sensitive patients (%)</th>
</tr>
</thead>
<tbody>
<tr>
<td>Poplar tree</td>
<td>56 (10%)</td>
<td>Cockroach</td>
<td>35 (6.3%)</td>
</tr>
<tr>
<td>Olive tree</td>
<td>109 (19%)</td>
<td>House dust and mite</td>
<td>242 (43%)</td>
</tr>
<tr>
<td>Hazel tree</td>
<td>50 (9%)</td>
<td>Latex</td>
<td>26 (4.7%)</td>
</tr>
<tr>
<td>Mixture of various tree pollens</td>
<td>50 (9%)</td>
<td>Peach</td>
<td>12 (2.3%)</td>
</tr>
<tr>
<td>Meadow grass</td>
<td>372 (66%)</td>
<td>Egg white</td>
<td>4 (0.7%)</td>
</tr>
<tr>
<td>Rye</td>
<td>372 (66%)</td>
<td>Egg yolk</td>
<td>4 (0.7%)</td>
</tr>
<tr>
<td>Wheat</td>
<td>372 (66%)</td>
<td>Banana</td>
<td>5 (1%)</td>
</tr>
<tr>
<td>Barley</td>
<td>372 (66%)</td>
<td>Cocoa</td>
<td>2 (0.3%)</td>
</tr>
<tr>
<td>Weed</td>
<td>96 (17%)</td>
<td>Fish</td>
<td>2 (0.3%)</td>
</tr>
<tr>
<td>Poultry</td>
<td>9 (1.7%)</td>
<td>Cow’s milk</td>
<td>4 (0.7%)</td>
</tr>
<tr>
<td>Cat hair</td>
<td>26 (4.7%)</td>
<td>Orange</td>
<td>4 (0.7%)</td>
</tr>
<tr>
<td>Dog hair</td>
<td>50 (9%)</td>
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</tbody>
</table>
In our study, the incidence of prick test positivity was 34.9 percent. In studies performed in our country, Çalışkaner et al. and Öğretmen et al. detected prick test positivity in 27.4 and 44.3% of their patients, respectively.[2,4]

Allergic diseases related to pollens develop as a result of mucosal contact with wind-borne grass, weed and tree pollens. Geographic characteristics effect the type of allergens. In a study performed in İzmir and Eskişehir, sensitivities to olive tree pollens were detected in 30 and 7% of the patients, respectively.[5,6] In our study, in the population with prick test positivity, sensitivities to pollens of poplar tree (10%), olive tree (19%) and mixture of trees (9%) and hazel tree (9%) were detected as indicated in parentheses.

Generally speaking, allergens of grass and cereal grass are the most frequent causes of allergies. Grass is probably the most prevalent plant in the world and grass pollen allergy is the most frequently encountered allergy with a single allergen. In macro-planning, climate and in micro-planning local differences determine types of grass allergens. In Anatolia where agriculture is the means of livelihood, cereal grass gains importance. In our study, in 66% of the prick test positive population, sensitivities to cereal grass including the meadow grass, rye, wheat, barley grass was detected, while in 17% of the patients sensitivity to weeds was observed.

House dust and mites cause allergic symptoms all year long and are present at an average temperature of 20-30°C and 50-70% humidity. These pathogens fed on human skin debris and become allergenic with their feces and body proteins. They survive within carpets, beds, quilts and cushions which can be get in contact all day long. These allergens are frequently encountered in warm and humid climates.[7] In our study, in 43% of the prick test positive population, house dust and mites were detected.

Allergens of the animal origin are formed with dander, saliva and feces of cats, dogs, cockroach, and poultry animals. In our study, in 12.6% of the prick test positive population sensitivity to animal dander (cockroach 6.3%, poultry animals 1.7%, cats, 9% and dogs 9%) were detected. In higher socioeconomic conditions, the habit of keeping pet animals at home, raising poultry in the country side and in poor socioeconomic and living conditions the incidence of cockroach and animal allergy might increase.[8] In our study, 6.3% of the prick test positive population was sensitive to cockroach allergens. These perennial allergens can survive especially in kitchens and bathrooms at an ambient temperature of 20-25°C and 50-70% humidity, and trigger asthmatic symptoms.[7,9]

In our study, in the 4.7% of the prick test positive population, sensitivity to latex was detected. Şenel et al. reported latex sensitivity in 9.2% of the operating room personnel.[9] Some factors such as as working environment, as is seen in latex allergy, may effect allergen profile.

A study performed in Ankara found the incidence of food allergy as 14 percent.[10] In our study, in the population with prick test positivity, the incidence of food allergy was found to be 6.7% (sensitivities to different foods were as follows: banana 1%, egg white 0.7%, egg yolk 0.7%, fish 0.3%, orange 0.7%, cocoa 0.3%, peach 2.3% and cow’s milk 0.7%). Lower degree of sensitivities to food allergens may be correlated with the study group consisting wholly of adults. As reported in the literature, with age, incidence of inhalant allergy decreases, contrary to decrease in food allergies.[11]

In conclusion, most frequently encountered allergens in Ankara were grass and house dust mites. In this study, the most frequently encountered allergens in the Central Anatolia were trees, grass and house dust mites in order to contribute to the allergy map of our country.

Conflict of Interest: No conflicts declared.

References
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