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Food Hypersensitivity in Patients Suffering from Atopic Dermatitis and Sensitization to Soy

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Sir,

I would like to inform you about our results concerning the evaluation of food hypersensitivity in patients suffering from atopic dermatitis and sensitization to soy. Altogether, 175 persons suffering from atopic dermatitis were included in the study: 51 men and 124 women entered the study with the average age of 26.2 (standard deviation [SD] 9.5 years), minimum 14, maximum 63 years; with the median scoring index of atopic dermatitis (SCORAD) 31.6 points, SD 13.3 (maximum 79.5 points and minimum 12.5 points) at the beginning of the study. Specific IgE, skin prick tests, atopy patch tests, challenge tests with soy, and history of soy allergy were evaluated. The occurrence of pollen allergy was determined according to the history about the pollen allergy and according to the specific IgE level and the skin prick tests results for pollen (containing Bet v 1 and Bet v 2 allergens and for pollen containing homologous allergens). The soy allergy was confirmed in five patients from 175 (2.8%); the early allergic reactions to soy with the symptoms of oral allergy syndrome and maculopapulous rash were recorded in these patients. Sensitization to soy was recorded in another 47 patients (27%) with positive results to soy in sIgE or/and skin prick test and/or atopy patch test without clinical symptoms after soy ingestion. The detailed personal history was taken in all 47 patients with sensitization to soy to evaluate the possible crossreactions in these patients with the symptoms of food hypersensitivity or food allergy. The term food allergy is used to describe clinical symptoms that are mediated by the immune system while non-allergic food hypersensitivity describes those which are not.[1] The term food hypersensitivity represents the umbrella term for both reactions patterns.[1]

We evaluated especially, the early reactions, because the early symptoms after ingestion of food have a clear diagnostic connection with the ingested foods.

A total of 41 from these 47 patients sensitized to soy are allergic to pollen and all 47 patients described the early reactions after ingestion of different kinds of fruits, vegetables and nuts. The most common symptoms was oral allergy syndrome after ingestion of nuts in 38 patients from 47 sensitized to soy (80%). Other foods with recorded early reactions (oral allergy syndrome, pruritus, abdominal pain or urticaria) were: Apples in 18 patients (38%), spices in 12 patients (25%), oranges in 10 patients (21%), tangerines in 9 patients (19%), tomatoes in 8 patients (17%), celery in 7 patients (15%), kiwi in 4 patients (8%), honey in 1 patient (2%), and cherry in another 1 patient (2%). The patients eliminate these foods but they recorded that after a casual ingestion the reactions are reproducible.

As a control group, who match with sex and age, we have examined 55 healthy volunteers with no signs of atopy. Neither early nor late reactions to any food were recorded in volunteers examined as control group (the average age 26 years; 39 women and 16 men).

Fruits (in particular acidic fruits such as kiwi, oranges or lemons) and apples were frequently mentioned as causing symptoms of oral allergy syndrome, pruritus, and abdominal pain.

All these patients sensitised to soy at our study suffer from pollen allergy. The basis of these associations among vegetable foods and with pollens lies in the existence of IgE antibodies against “panallergens,” which determines cross-reactivity. Panallergens are proteins that are spread throughout the vegetable kingdom and are implicated in important biological functions (generally defense) and consequently their sequences and structures are highly conserved. The three best-known groups are allergens homologous to Bet v 1 profilins, and lipid transfer proteins. Allergens homologous to Bet v 1 (major birch pollen allergen) constitute a group of defense proteins (PRP-10 [pathogenesis related proteins]), with a molecular weight of 17 kDa, which behave as major allergens in patients from northern and central Europe with allergy to vegetables associated with birch pollen allergy. In these patients, the primary sensitization seems to be produced through the inhalation route on exposure to birch pollen.[2,3] The symptomatology characteristically associated with sensitization to this family of allergens is oral allergy syndrome. In Central Europe, soy is a clinically relevant birch pollen-related allergenic food. Cross-reaction is mediated by a Bet v 1 homologous protein, Gly m 4. Additionally, birch pollen allergic patients might acquire through Bet v 1 sensitization allergies to mungbean or peanut, in which Vig r 1 and Ara h 8 are the main cross-reactive allergens.[2,3,4] In a large Indian study,[5] 401 patients suffering from urticaria (180 male and 221 female patients, with a mean age of 35.7 years) were examined for the food reactions. Skin test reactivity showed that beans were the most predominant allergen in this study – 53.1% of the patients, followed by mustard (41.1%) and cardamom (40%). High risk of being allergic to beans is due to the presence of pan allergen called profilins. This is a homologous protein found in many plants, pollens, and fruits. An individual who is sensitive to beans is more likely to have allergies to peas, peanuts, and lentils as they all are members of leguminaceae family. In this study, majority of the patients were skin test positive to more than five food allergens. It has been reported that an array of foods may contain similar allergenic proteins, which might result in multiple skin test positives despite not having symptoms and allegenic conditions to all those food allergens.

We can conclude, that patients suffering from atopic dermatitis and pollen allergy are in 27% sensitised to soy without clinical symptoms of soy allergy, but they suffer from early reactions to nuts, apples, spices, and acidic fruits.

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