

The significance of hypersensitivity to nuts in patients with birch pollen allergy

M. Foglé-Hansson, M. Bende. The significance of hypersensitivity to nuts in patients with birch pollen allergy.

Allergy 1993; 48: 282-284. © Munksgaard 1993.

This study was performed in patients with allergic rhinitis/conjunctivitis to birch pollen to determine whether patients with additional hypersensitivity to nuts and apples differed from patients without such hypersensitivity; the determination was in terms of results of skin prick test (SPT), specific IgE antibodies (RAST), and symptoms during the pollen season. Forty-seven patients with birch pollen allergy were investigated by RAST against birch and hazel pollen and by SPT. They were treated in a randomized, double-blind, placebo-controlled study with fluticasone propionate aqueous nasal spray or placebo. The area of the SPTs was larger and the specific IgE values higher in patients with hypersensitivity to nuts and apples. These patients also had more symptoms during the pollen season. We conclude that hypersensitivity to nuts is an indication of a more severe allergy in patients with birch pollen allergic rhinitis.

Clinical aspects

Patients with birch or hazel pollen allergy should be asked about food hypersensitivity. The history of food hypersensitivity is of clinical value, and patients with hypersensitivity to nuts and apples are more allergic and need more effective treatment than others.

M. Foglé-Hansson, M. Bende

Department of Otorhinolaryngology, Central Hospital, Skövde, Sweden

Key words: birch pollen; food hypersensitivity; seasonal allergy; skin prick test; specific IgE.

Dr Mats Bende

Department of Otorhinolaryngology
Central Hospital
S-541 85 Skövde
Sweden

Accepted for publication 28 September 1992

Patients with allergic rhinitis/conjunctivitis to birch pollen are frequently also hypersensitive to nuts, apples, carrots, and potatoes, which induce itching in the mouth and throat. Allergy to other tree pollen, e.g. hazel, might also be associated with this type of food hypersensitivity. Within a two-center, double-blind, randomized, placebo-controlled study of the effect of fluticasone propionate aqueous nasal spray (FPANS) against allergic rhinitis to birch pollen (Irander et al., in preparation), we also decided to determine whether patients with food hypersensitivity to nuts differed from those without food hypersensitivity, regarding specific IgE, skin prick test, and allergic symptoms.

Material and methods

Forty-seven patients with verified allergy to birch pollen, 23 women (mean age 34 years, range 17-58 years) and 24 men (mean age 34 years, range 18-51 years), participated in this part of the study (all patients from one of the centers). They had suffered from birch pollen allergy during at least two other

seasons. The total material of 96 patients is presented elsewhere (Irander et al., in preparation).

The patients were questioned about hypersensitivity to nuts, or apples, peaches, pears, etc. Specific IgE (Phadebas, RAST) in PRU/ml was measured for birch and hazel pollen. The level of RAST was expressed in 5 classes 0-4. The limit for class 0 was 0.35 PRU/ml; for class 1, 0.7 PRU/ml; for class 2, 3.5 PRU/ml; for class 3, 17.5 ml; and for class 4, 52.5 PRU/ml. The skin prick test (SPT) was performed for birch and hazel (3 HEP, Soluprick, ALK), and the area of the wheal reaction was expressed in mm². A criterion of inclusion in the main study was a positive SPT to birch pollen. This was defined as a wheal size at least half the positive control (histamine 10 mg/ml). The negative control, the diluent, was always 0 mm².

The SPT and specific IgE tests were performed between the hazel pollen season and the birch pollen season. During the birch pollen season, 24 patients received FPANS, and 23 received placebo in a randomized, double-blind controlled manner. The patients were asked to complete a symptom score

Hypersensitivity to nuts and birch pollen

card daily, recording nasal congestion, secretions, sneezing, and itching in the nose and eyes, on a four-point scale where 0 = none, 1 = mild, 2 = moderate, and 3 = severe symptoms. All symptom scores were pooled during a 2-week period when the birch pollen season was most intensive. At that time the patients had used their medication for at least 1 week.

Statistically significant differences in specific IgE, SPT, and symptom score were calculated with the nonparametric Mann-Whitney U-test. Differences in age were calculated with the t-test. *P* values less than 0.05 were considered to be statistically significant. When calculating correlations between specific IgE and SPT, we used the value of specific IgE in PRU/ml. In the other comparisons, the RAST class value was used in the calculations.

Results

Thirty-two patients (68%) complained of typical mucosal problems immediately after eating nuts and apples, in the form of itching in the mouth and throat, and 15 patients (32%) lacked such problems. There was no difference in age between the groups (Table 1). The specific IgE concentration for birch and hazel pollen was significantly higher and the SPT was significantly larger among the patients with food hypersensitivity than among those without such problems (Table 1). The area of the SPT correlated to specific IgE for both birch and hazel ($r=0.51$, $P<0.001$). Thus, increasing area of the SPT corresponded to higher levels of specific IgE.

Among the patients who received FPANS, the symptom scores were not statistically higher in those who were sensitive to nuts and apples (median 49, first quartile 20, third quartile 64) than in those who were not (median 26, first quartile 21, third quartile 45). However, among patients who received placebo, there were, statistically significantly, more symptoms in those with nut hypersensitivity (median 79, first quartile 41, third quartile 98) than in those without

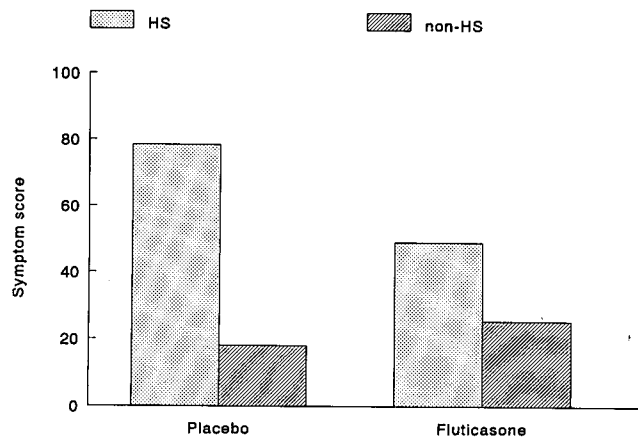


Fig. 1. Pooled symptoms of allergy during 2-week pollen season in birch pollen patients who received fluticasone propionate aqueous nasal spray (FPANS) or placebo. HS indicates patients with hypersensitivity to nuts and apples; non-HS, those without such symptoms. The difference between HS and non-HS within the placebo group was statistically significant ($P<0.05$), but there was no statistically significant difference within the FPANS group.

nut hypersensitivity (median 18, first quartile 14, third quartile 23, $P<0.05$; Fig. 1).

Discussion

In this study, 68% of the patients with birch pollen allergy suffered from hypersensitivity to nuts and apples. This finding agrees with other studies in which 55 and 65% have been found (5, 6). It must be emphasized that this is not the true prevalence since the material was collected among patients in our allergy clinic. This population might not be representative of all patients with birch pollen allergy because only severe symptoms induce general practitioners to refer patients to the allergy clinic. However, food hypersensitivity seems to be a common problem among people with allergy to tree pollen.

Patients with food hypersensitivity had larger SPT and higher levels of specific IgE for birch and hazel than those without such hypersensitivity. This confirms some previous studies (3, 5, 6) but contradicts other findings (7). There were correlations between the sizes of SPT and the concentrations of specific IgE for both birch and hazel. This relationship is well known (8), but the regression coefficient was as low as 0.51 in both cases, emphasizing that these methods do not supersede but complement each other. The combination of birch and hazel pollen allergy and hypersensitivity to certain food is supposedly due to a partial immunologic identity (1, 2, 4). The question of whether inhaled birch or hazel pollen could sensitize to nuts and apples, or whether oral intake of nuts and apples could cause allergy to birch and hazel pollen has not been determined.

Patients with food hypersensitivity had more nasal

Table 1. Forty-seven patients with birch pollen allergy were separated on the basis of hypersensitivity to nuts and apples or not. HS indicates patients who suffered from hypersensitivity to nuts and apples; non-HS, those without such symptoms. All values (except age) are expressed in medians.

	HS	Non-HS	
<i>n</i>	32	15	
Age (mean)	34	33	NS
RAST (class)			
birch	3	0	$P<0.001$
hazel	2	0	$P<0.001$
SPT (mm ²)			
birch	30	12.5	$P<0.001$
hazel	12	4	$P<0.01$

and eye symptoms during the pollen season than those without such hypersensitivity. This phenomenon seems to be an indicator of the severity of the allergic disease, an indicator which can be of value for all doctors treating patients with pollen allergy. When patients were treated with a topical corticosteroid, FPANS, there was no significant difference between those with food hypersensitivity and those without. This indicates that the treatment was successful. Patients without hypersensitivity to nuts had few symptoms during this season, and the pooled symptom scores did not differ significantly whether they were treated with FPANS or not. This was probably due to the poor birch pollen season during a cold spring, producing fewer symptoms and making it difficult to distinguish between active treatment and placebo.

Patients with birch or hazel pollen allergy should be asked about food hypersensitivity. We can conclude that history of food hypersensitivity is of clinical value and that patients with hypersensitivity to nuts and apples are more allergic and need more effective treatment than others.

References

1. ANDERSEN KE, LØWENSTEIN H. An investigation of the possible immunological relationship between allergen extracts from birch pollen, hazelnut, potato and apple. *Contact Dermatitis* 1978; 4: 73-9.
2. BELIN L. Immunological analyses of birch pollen antigens, with special reference to the allergenic components. *Int Arch Allergy* 1972; 42: 300-22.
3. DREBORG S, FOUCARD T. Allergy to apple, carrot and potato in children with birch pollen allergy. *Allergy* 1983; 38: 167-72.
4. EBNER C, BIRKNER T, VALENTA R, et al. Common epitopes of birch pollen and apples - studies by Western and Northern blot. *J Allergy Clin Immunol* 1991; 88: 588-93.
5. ERIKSSON NE, FORMGREN H, SVENONIUS E. Food hypersensitivity in patients with pollen allergy. *Allergy* 1982; 37: 437-43.
6. ERIKSSON NE, WIHL J-Å, ARRENDAL H. Birch pollen-related food hypersensitivity: influence of total and specific IgE levels. *Allergy* 1983; 38: 353-7.
7. PASTORELLO EA, PRAVETTONI V, BIGIA, et al. IgE-mediated food allergy. *Ann Allergy* 1987; 59: 82-9.
8. STENIUS B, WIDE L, SEYMOUR WM, HOLFORD-STREVEVS V, PEPYS J. Clinical significance of specific IgE to common allergens. I. Relationship of specific IgE against *Dermatophagoides* spp. and grass pollen to skin and nasal tests and history. *Clin Allergy* 1971; 1: 37-55.

This document is a scanned copy of a printed document. No warranty is given about the accuracy of the copy. Users should refer to the original published version of the material.