

Short communication

Relationship between Bet v 1 and Bet v 2 specific IgE and food allergy in children with grass pollen respiratory allergy

G. Ricci^{a,*}, F. Righetti^b, G. Menna^a, F. Bellini^a, A. Miniaci^a, M. Masi^a^a University of Bologna, S. Orsola-Malpighi Hospital, Department of Pediatrics, via Massarenti, 11, 40138 Bologna, Bo, Italy^b University of Bologna, S. Orsola-Malpighi Hospital, Central Laboratory, via Massarenti, 11, 40138 Bologna, Bo, Italy

Received 14 September 2004

Available online 16 January 2005

Abstract

Grass allergy is the most common pollinosis in Northern Italy. Some patients with grass allergy show polysensitization against other pollens and plant-derived foods. In these patients oral allergic syndrome (OAS) is frequently associated.

To evaluate the correlation between food allergy or food sensitization and specific IgE against panallergens such as Bet v 1 and Bet v 2, we studied 56 children (mean age: 8 years 5 months) suffering from respiratory allergy due to grass pollens were enrolled. Specific IgE against the most important food, inhalant allergen and Bet v 1, Bet v 2 were performed by ImmunoCAP technology (UniCAP 1000, Pharmacia Diagnostics, Uppsala, Sweden).

We found 14 children (25%) sensitized to Bet v 1 and 13 (23%) to Bet v 2; in 24 cases (42.3%) a sensitization to at least one of the 2 panallergens was observed. Five of the 14 cases (36%) sensitized to Bet v 1 showed food allergy and 8 (57%) food sensitization; 6 (46%) of the 13 children sensitized to Bet v 2 showed food allergy and 7 (54%) food sensitization; only one case of Bet v 1 specific IgE without food allergy or sensitization was seen.

Sixteen subjects (29%) showed food allergy (group A); 20 children (35.5%) multiple sensitizations to inhalant and at least one plant-derived food (group B); 20 subjects (35.5%) only inhalant allergens (group C). Sensitization to Bet v 1 ($P < 0.03$) and Bet v 2 ($P < 0.009$) is from a statistical point of view significantly higher in groups A and B than in group C.

In the 16 patients with food allergy hazelnut was the major triggering food (50%), followed by peanut (38%), kiwi (31%), apple and walnut (19%). Specific IgE for Bet v 1 is more associated with nuts and legumes, while Bet v 2 is more related to fresh fruit and vegetables.

In conclusion grass pollinosis is frequently associated with polysensitization to other pollen and food allergens. Bet v 1 and Bet v 2 specific IgE are significantly higher in these patients than in patients with grass monosensitization, and this sensitization may be considered a possible risk factors to evolve later into food allergy. Among the offending foods, legumes and the nut group are mostly related to Bet v 1, while vegetables and fresh fruits to Bet v 2.

© 2004 Elsevier Ltd. All rights reserved.

Keywords: Grass allergy; Bet v 1; Grass monosensitization

1. Introduction

Patients with pollen allergy often experience symptoms like itching and swelling of the lips, the oral mucosa and soft palate after ingestion of fruit or vegetables; these symptoms are known as oral allergic syndrome (OAS). More than

50% of patients with pollen allergy suffer from OAS (Ma et al., 2003). The association between pollen and plant-derived food allergy can be explained by the presence of specific IgE against allergens (panallergens) that share a homologous structure and are thus cross-reactive (Valenta and Kraft, 1996).

Bet v 2 (profilin) is a highly cross-reactive allergen and an important component of the plant cytoskeleton. It is also expressed at lower levels in fruits, leaves, seeds, roots (Valenta

* Tel.: +39 051 6363759; fax: +39 051 6363639.

E-mail address: ricci@med.unibo.it (G. Ricci).

et al., 1992). Subjects producing specific IgE towards profilin frequently show allergic reactions to pollens from various plants and plant-derived foods. Sensitization to profilin varies between 5 and 40% in different populations (Elfman et al., 1997).

Another protein able to induce cross-reactive IgE is Bet v 1, which has been identified as the major allergen in birch pollen (Breiteneder et al., 1989). Bet v 1-specific IgE cross-reacts with allergens of pollens of trees belonging to the order of Fagales, in particular hazelnut pollens, since a high degree of similarity in the amino acid level is shared between birch and hazelnut pollens (Hirschwehr et al., 1992). Patients allergic to birch and hazelnut pollen are often allergic to eating hazelnuts (Hirschwehr et al., 1992). The presence of a homologous Bet v 1 allergen has been observed in various plant foods such as fruit, vegetables and spices (Wensing et al., 2002; Ebner et al., 1991; van Ree et al., 1995; Fernandez-Rivas et al., 1997). Until now, to the best of our knowledge no extensive data, are available about the relationship of panallergen and food allergy in children with grass pollen allergy.

The aim of our study was to evaluate the relationship between Bet v 1 and Bet v 2 specific IgE and food allergy or sensitization in children with respiratory allergy to grass pollen.

2. Material and methods

2.1. Patients

The study enrolled 56 children (26 females and 30 males) consecutive referrals to the Allergologic Center of the Pediatric Department of Bologna University between December 2002 and June 2003. The children (mean age: 8 years 5 months) suffered from respiratory allergy due to grass pollens. Respiratory symptoms (asthma: 12 cases, rhinitis 13 cases, or both symptoms: 21 cases) were observed in the corresponding pollen season (mainly April and May) as recorded by the [Aerobiology Research Team](http://www.isac.cnr.it/aerobiol) (<http://www.isac.cnr.it/aerobiol>); 14 children also suffered from atopic dermatitis.

Sixteen children showed food allergy symptoms: immediate adverse reactions were recorded as OAS (oral itch-

ing; perioral erythema; edema of the lips, tongue and throat) or generalized urticaria-angioedema. In the majority of patients the case history was considered reliable for the diagnosis of food allergy as reported by other Authors (Wensing et al., 2002; Fernandez-Rivas et al., 1997), the symptoms being easily recognized and described. To further investigate suspected offending foods, skin prick test with commercial or fresh food and/or the evaluation of specific IgE was performed.

If in doubt, the diagnosis of food allergy was defined by an evoked open food challenge as described (Anhoi et al., 2001); briefly the patients were challenged by chewing fresh material for 60 s, then the material was disgorged. If symptoms were reported during the next 15 min the test was considered positive.

2.2. Determination of allergen-specific IgE antibodies

Specific IgE against the most important food (wheat, rice, peas, peanut, soy, hazelnut, tomatoes, potatoes, orange, carrot, apple, banana, kiwi, avocado, chestnut, cherry and latex), inhalant allergens (timothy grass-*Phleum pratense*, Bermuda grass-*Cynodon dactylon*, *Parietaria judaica*, *Artemisia vulgaris*, *Ambrosia artemisiifolia*, *Olea europaea*, *Betulla verrucosa*, *Corylus avellana*) and Bet v1, Bet v2, were performed according to the manufacturer's instructions for use by UniCAP 1000 (Pharmacia Diagnostics, Uppsala, Sweden).

The detection limit of the ImmunoCAP technology is 0.35 kU_A/L for specific IgE. Children were considered sensitized if their specific IgE levels were above the detection limit. As far as grass pollinosis is concerned, when comparing a specific IgE in vitro test with a clinical evaluation, we considered it sufficient to define the in vitro test as positive if only one of the two tested allergens, Bermuda grass or Timothy grass, gave a positive result.

2.3. Skin prick tests (SPT)

SPT were performed for the main food and inhalant allergens, as reported above, with commercial (Lofarma, Milan, Italy) and/or fresh material. In the latter case prick to prick technique was used. Skin prick test results were compared

Table 1

Frequency and mean values of specific IgE against Bet v 1 and Bet v 2 in subjects with grass pollinosis and food allergy, sensitization or none

	N	Age mean (years)	Bet v 1		Bet v 1 kU _A /L (g mean)	Bet v 2		Bet v 2 kU _A /L (g mean)	Bet v 1 + bet v 2	
			N	(%)		N	(%)		N	(%)
Group A inhalant and food allergy	16	8.5	5*	31	4.7	6**	40	4.8	10***	62.5
Group B inhalant allergy and food sensitization	20	8.8	8*	40	2.5	7**	35	3	13***	65
Group C inhalant allergy	20	8.2	1*	5	1.3	0**	-	-	1***	5

* $P < 0.03$.

** $P < 0.009$.

*** $P < 0.001$.

Download English Version:

<https://daneshyari.com/en/article/9141805>

Download Persian Version:

<https://daneshyari.com/article/9141805>

[Daneshyari.com](https://daneshyari.com)