Sanchez-Lopez et al. Clinical and Translational Allergy 2013, 3(Suppl 3):P58
http://www.ctajournal.com/content/3/S3/P58

Clinical and Translational Allergy

POSTER PRESENTATION Open Access

Lipid transfer protein: a link between food and respiratory allergy

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From Food Allergy and Anaphylaxis Meeting (FAAM 2013)
Nice, France. 7-9 February 2013

Background

Lipid transfer proteins (LTP) are considered true food allergens because sensitization takes place in the gastrointestinal tract, in contrast with other food allergens like profilins or Bet v 1-homologues, where sensitization is a consequence of an allergic sensitization to inhaled allergens. Although allergy to peach LTP (pru p 3) is frequently associated to sensitization to plane tree pollen LTP (Pla a 3) and/or mugwort LTP (Art v 3), it has never been elucidated if this cross-reactivity could lead to a respiratory allergy. The aim of this study is to demonstrate that a LTP-dependent food allergy with the adequate exposure can induce a LTP-dependent respiratory allergy.

Methods

Two groups of patients were selected: group A, patients allergic to Pru p 3 and sensitized to Art v 3, and group B, controls not sensitized to Pru p 3 nor Art v 3.

Skin prick test (SPT) and specific IgE (sIgE) to peach, mugwort, Pru p 3 and Art v 3, and nasal challenge test (NCT) to Art v 3 and mugwort were performed. NCT was controlled by acoustic rhinometry, visual analogue scale (VAS) and total nasal symptom score (TNSS).

In vitro tests included leukotrienes (cysLT) detection in nasal lavage before and after NCT, immunoblotting with mugwort pollen extract, ELISA and ELISA inhibition with Pru p 3 and Art v 3.

Results

13 patients and 9 controls were selected. The median of nasal volumes at group A decreased significantly from 100% (baseline value) to 77.5% 15 minutes after NCT with Art v 3 ($P<0.001$), TNSS and VAS significantly changed ($P<0.001$) from baseline to 15 minutes after NCT. CysLT levels were significantly increased in nasal lavage 15 minutes after NCT from 1784.38 pg/ml to 4493.21 pg/ml ($P<0.001$). Immunoblotting with complete extract of mugwort showed that 8 patients from group A had only a band around 10 kDa, presumably corresponding to Art v 3. These patients were challenged with a complete mugwort pollen extract, with a positive response in all of them.

The ELISA experiment showed higher detection of Pru p 3 than Art v 3 in all cases, and ELISA inhibition with Pru p 3 and Art v 3 indicated that Pru p 3 was a stronger inhibitor than Art v 3, highlighting that the primary sensitizer was Pru p 3.

Conclusion

Patients allergic to Pru p 3 who present a sensitization to Art v 3 by a cross-reactivity phenomenon, can elicit symptoms when exposed to mugwort pollen. That means that a food allergy induced by digestive route may lead to a respiratory allergy when exposed to a LTP-containing pollen.

Disclosure of interest

None declared.

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Published: 25 July 2013

doi:10.1186/2045-7022-3-S3-P58
Cite this article as: Sanchez-Lopez *et al.*: Lipid transfer protein: a link between food and respiratory allergy. *Clinical and Translational Allergy* 2013 **3**(Suppl 3):P58.

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