

Case Report

Anaphylactic reaction to lychee in a 12-year-old girl: Cross-reactivity to latex?

Niggemann B, Reibel S, Hipler C, Wahn U. Anaphylactic reaction to lychee in a 12-year-old girl: Cross-reactivity to latex?
Pediatr Allergy Immunol 2002; 13: 64–67. © 2002 Blackwell Munksgaard

There are very few case reports on allergic reactions to lychee in the literature – so far only in adults. We report on a 12-year-old girl who developed swelling of lips, pruritus, generalized urticaria and dyspnea 30 min after eating a raw lychee. A second event occurred after eating a piece of cake covered with a fruit cocktail. All other foods were well tolerated. In infancy the girl had suffered from atopic dermatitis, which disappeared in childhood; for the previous 2 yr she had presented with seasonal allergic rhinoconjunctivitis. Upon oral provocation, she developed restlessness, flush, generalized urticaria and inspiratory stridor 50 min after eating half a lychee. The diagnostic work up showed a clear positive skin prick test to raw lychee and specific immunoglobulin E (IgE) in serum to latex but not to lychee. In the cellular antigen stimulation test (CAST) carried out with lychee extracts in several concentrations, the same positive results could be found confirming an allergic reaction. Cross-reactivity of lychee to latex was shown by inhibition experiments using the UniCAP 100-system. In conclusion, it seems worthwhile considering the rare allergy to lychee in the case of unclear food-allergic reactions and lychee should be added to the list of foods cross-reacting with latex.

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Key words: allergy; children; latex; lychee

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Accepted 19 July 2001

Allergy to exotic fruits is an increasing problem due to the growing popularity of these foods over the past decade. There are very few case reports of allergic reactions to lychee fruit (*Litchi sinensis*) (Fig. 1) in the literature – mostly in adults (1–4). Clinical symptoms range from contact urticaria (5) to anaphylaxis (4).

Several, mainly exotic, fruits have been reported to cause immediate type hypersensitivity reactions in latex-allergic patients due to cross-reactivity to latex: avocado (6,7), banana (8,9), chestnut (7,10), kiwi (10), and potato (10).

We report on a 12-year-old girl with anaphylactic reactions after eating raw lychee, in which cross-reactivity to latex could be proven.

Case report

The 12-year-old girl developed swelling of lips, pruritus, generalized urticaria and dyspnea 30 min after eating a raw lychee. A second

event occurred after eating a piece of cake covered with a fruit cocktail: 10 min later the girl again showed generalized urticaria and pruritus, rhinoconjunctivitis symptoms and dyspnea. All other foods were well tolerated. In infancy the girl had suffered from atopic dermatitis, which disappeared in childhood. For the previous 2 yr she had presented with typical hay fever symptoms from May to July. Physical examination revealed a scar formation on the upper part of the chest due to scald in early childhood. There was no history of abdominal, urogenital or neurosurgical intervention.

Upon a titrated oral provocation no symptoms were noted within 1 h with a quarter raw lychee fruit. However, after eating half a lychee she developed restlessness, flush, generalized urticaria and inspiratory stridor after 50 min. Treatment with nebulized epinephrine and a systemic antihistamine resulted in quick relief of her symptoms.

Fig. 1. Lychee fruits (*Litchi sinensis*).



Diagnostic workup

A positive skin prick test could be shown to raw lychee (wheal size 11 mm), and latex extract (Stallergen, Fresnes, France, wheal size 6 mm) by comparison with the positive control, 10 mg/ml

histamine dihydrochloride (ALK, Copenhagen, Denmark) (wheal size 6 mm) (Fig. 2).

Total immunoglobulin E (IgE) in serum was 1049 kU/l; specific IgE could be demonstrated for mugwort (>100.0 kU/l, CAP-class 6), grass (22.3 kU/l, CAP-class 4), and birch (2.7 kU/l, CAP-class 2) pollen, as well as for latex (22.0 kU/l, CAP-class 4), as measured by the Pharmacia CAP-System (Pharmacia & Upjohn, Freiburg, Germany). No specific IgE could be detected to cat dander or house dust mites.

No specific IgE could be detected to lychee, using the Pharmacia CAP-system or the EAST-assay. Furthermore, specific IgG to lychee was low (7.8 mg/l) and specific IgG4 was below the detection limit. An immunoblot using an extract of raw lychee showed no reaction to lychee, but a strong response to Hev b 7.

The cellular antigen stimulation test (CAST) (11,12) showed a dose-dependent positive response to lychee using several raw extracts in our patient. The lychee extracts were prepared according to methods described recently (13); they differed concerning enzyme-inhibiting compounds and protein content (S1=0.6 mg/ml, S10=2.3 mg/ml, S100=2.5 mg/ml, A1=2.5 mg/ml). Depending on these concentrations the sulfidoleukotriene values could be found between 200 pg/ml and 1281 pg/ml. These background-corrected results confirm the allergic origin of the clinical reaction (Fig. 3). A healthy control person remained negative.

Inhibition experiments using an allergen extract from raw lychee were performed at several concentrations using the UniCAP 100 system (Pharmacia & Upjohn, Freiburg, Germany). The experiments were carried out with the serum of a person in which antibodies against latex as well as against lychee could be found recently. This atopic patient was characterized using the following data: latex 33.9 kU/l (CAP class 5) and lychee 24.1 kU/l (CAP class 4). Pre-adsorp-



Fig. 2. Positive skin prick test to raw lychee.

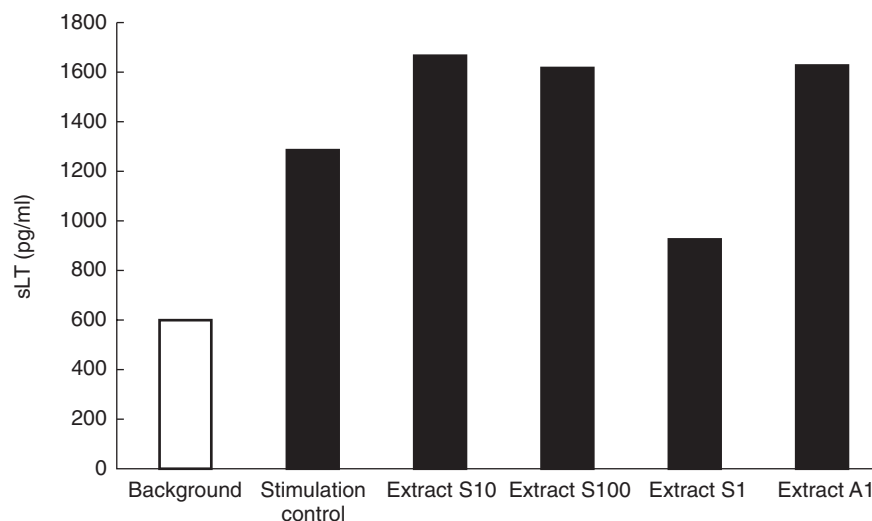


Fig. 3. Cellular antigen stimulation test with several lychee extracts performed in our patient (S1=0.6 mg/ml, S10=2.3 mg/ml, S100=2.5 mg/ml, A1=2.5 mg/ml).

tion of the serum with lychee extract showed that lychee was capable of completely inhibiting all IgE-binding bands in lychee and latex extracts, confirming a cross-reactivity between these two allergens (Fig. 4).

Discussion

Despite some inexplicable findings in the diagnostic work up, clinically relevant allergy to lychee is very suggestive in our case, making this the first report in a child.

A challenging finding is the fact that no specific IgE could be detected in serum using various IgE assays and immunoblot techniques. However, the clearly positive skin test response to raw lychee indicates that specific IgE is available on skin mast cells. Furthermore, the positive results deriving from the CAST-ELISA and the inhibi-

tion experiments support the clinical findings of the positive oral challenge test. IgE-mediated symptoms usually occur within 10–30 min after eating the food in question. A relatively long time interval of 45 min before clinical symptoms has also been reported by other authors (3).

The main question is, whether the lychee allergen is cross-reacting with latex and/or with pollen. A German group identified an IgE-binding 35-kDaA protein from birch pollen with cross-reacting homologs in various plant foods, including lychee (14). Our data indicates that there is also cross-reactivity to latex. Hypothetically, a profilin may be responsible for both phenomena. Furthermore, lychee belongs to the group of exotic fruits, botanically unrelated to European fruits.

As shown in many papers in the literature, atopy represents the major risk factor for

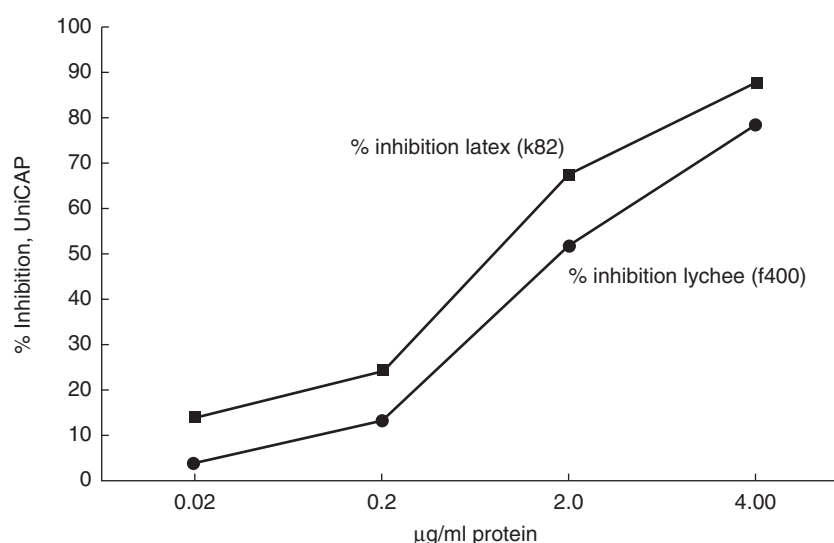


Fig. 4. Inhibition experiment with the serum of a control person showing specific IgE to lychee and latex.

clinically relevant symptoms to latex (15). Our patient not only showed an atopic disposition by being able to produce IgE antibodies, but suffered from seasonal allergic rhinoconjunctivitis. Other authors have also described this association (1–3). According to the history, the latex-sensitized girl did not show any clinical symptoms upon contact with material containing latex. Therefore, no specific advice was given in relation to avoidance of latex. However, lychee should be strictly avoided; it remains unclear whether avoidance of other cross-reaction foods should be recommended in general.

Physical examination revealed a scar formation on the upper part of the chest due to scald in early childhood. One could hypothesize that sensitization due to nursing involving latex gloves in contact with extended areas of damaged skin may predispose to sensitization latex. However, a pilot study having investigated 15 children with severe burns showed that these children are not at a special risk for latex allergy (16).

In conclusion, it seems worthwhile considering the rare allergy to lychee in the case of unclear food-allergic reactions. Lychee fruit should be added to the list of cross-reacting foods with latex.

Acknowledgments

We thank Dr Gerd Burow (Pharmacia, Freiburg, Germany) for performing IgE and IgG measurements using the CAP-system and Dr Stefan Vieths (Paul-Ehrlich-Institut, Langen, Germany) for measurement of specific IgE to lychee by EAST. We also thank Birgit Wagner (Department of Pathophysiology, Vienna, Austria) for performing immunoblot experiments.

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