

Severe food allergy to water chestnut – water caltrop (Singoda flour): case report

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Background: We report a rare case of a 37-year-old man with oral allergy symptoms, the feeling of a lump in the throat, nausea, abdominal cramps, vomiting and urticaria. The symptoms started minutes after intake of legumes battered in water chestnut (Singoda) flour and evolved over the next one-two hours. The subject had experienced two severe reactions after eating water chestnut products as described and probably more with abdominal pain only. He suffered from birch, grass, cat, dog and house dust mite allergy with positive skin prick and Specific ImmunoCAP IgE tests with seasonal rhinitis and mild perennial exercised induced asthma but no other medical history of allergic reaction to other foods.

Methods: Food challenge, skin prick test, ImmunoCap and ISAC tests, Histamine Release test, SDS-page and Immunoblot were performed.

Results : Open titrated food challenge was positive after ingestion of 1.5 g of a Singoda flour-water-salt pancake. We obtained a positive prick-by-prick test (22 x 11 mm), a positive Histamine Release test (> 20 ng/mL) and a specific IgE ImmunoCAP test (14.8 kUA/L) with Singoda flour. SDS-Page followed by immunoblotting revealed specific IgE antibodies against a 26 and 28 kD antigenic band. Specific ImmunoCAP IgE and ISAC tests were positive to birch and hazelnut with related PR-10 proteins, to grass (21 kUA/L, rPhl-p-5=20 ISU-E) and to house dust and storage mites (Der. f. 10.8, acarus siro 0.6, lepidoglyphus destructor 0.7 kUA/L, rDef-1,2 and rDer-p-1,2=7-11 ISU-E). Negative ImmunoCAP ISAC tests to tropomyosin-, LTP-, traumatin-like-, profilin-, CCD- and polcalcine proteins. Skin prick tests and/or Specific ImmunoCAP IgE tests to common food allergens, several seeds, cereal products, glasswort, tiger nut and grain Weevil was negative. Histamine Release urticaria test was negative and total IgE was 173. Serum-tryptase was normal (2.8 µg/L) before and after provocation.

Conclusion: To our knowledge this is the first case presented with food allergy to water chestnut also called water caltrop (*Trapa natans*, *T. bicornis* or *T. rossica*). Water chestnut is widely used as a raw food, boiled or dried and ground to flour in Asia, Australia, tropical Africa and islands of the Pacific and Indian Oceans. It is rich in carbohydrates, gluten free and considered as a "safe" food for allergic subjects. Allergy to water chestnut may be under diagnosed. Water chestnut should not be confused with the unrelated Chinese water chestnut from the sedge *Eleocharis dulcis*.