

Clinical Letter

Acetylsalicylic acid dependent anaphylaxis to carrots in a patient with mastocytosis

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About 3–4 % of adults have one or more food allergies which may not become symptomatic until certain co-factors are present. The most common co-factors include physical exertion, alcohol, and acetylsalicylic acid [1, 2]. One study on anaphylaxis among mastocytosis patients reported that 26 % of anaphylaxis attacks only occurred when several co-factors were present, especially alcohol and acetylsalicylic acid [3]. Food allergies which manifest clinically only when co-factors are present are especially difficult to diagnose and thus present a considerable challenge for physicians.

A 28-year-old man reported having taken one ASS + C Hexal® (500 mg acetylsalicylic acid, 250 mg ascorbic acid) tablet to relieve a headache. Two hours later he ate two raw carrots. Fifteen minutes later, he had symptoms of flushing and dizziness followed by respiratory distress. The patient was admitted to the emergency room and treated with intravenous antihistamines and corticosteroids. He reported a history of allergic rhinoconjunctivitis, but no known oral allergy syndrome.

Skin prick testing was performed and revealed a +++-reaction for carrots; sensitization to birch pollen was also detected. Skin prick tests with non-steroidal anti-inflammatory drugs remained without reaction. At a total IgE of 115 kUA/l, specific IgE antibodies were detected against carrots (1.4 kUA/l; CAP test class 2), birch (21.5 kUA/l; CAP test class 4) and the major birch allergen Bet v1 (16.7 kUA/l; CAP test class 3). Baseline serum mast cell tryptase levels were between 57.6 µg/l and 64.2 µg/l (normal value < 11.4 µg/l) without signs of cutaneous mastocytosis. Bone marrow aspiration

confirmed the presence of indolent systemic mastocytosis [4, 5].

To confirm the diagnosis and assess the risk given the presence of mastocytosis, the patient was admitted for systemic exposure to carrots, acetylsalicylic acid, ascorbic acid, and physical exertion (Figure 1a). After exposure to carrots (raw, total of 135 g), oral paresthesia occurred as a sign of an oral allergy syndrome (test 3). Next combined exposure (test 4) to acetylsalicylic acid/ascorbic acid (500 mg/250 mg, 60 minutes before consumption of carrots) and carrots (20 g) was tested. This resulted in grade I anaphylaxis immediately after exposure to the carrots (oral paresthesia, excessive warmth, generalized flush) (Figure 1b, c)). Symptoms were controlled with intravenous administration of antihistamines, corticosteroids, and inhalation of epinephrine. No hypersensitivity

reaction occurred with exposure to acetylsalicylic acid/ascorbic acid alone (test 2) or in any combination of suspected allergens with physical exertion (tests 5 & 6).

We diagnosed acetylsalicylic-dependent immediate hypersensitivity to carrots in the presence of mastocytosis. The major allergen of carrots is Dau c1. It is a bet v1-homologue, thermally unstable allergen. Oral allergy syndrome is commonly associated with this allergen, but systemic anaphylaxis is rarely reported [6].

The role of acetylsalicylic acid as a co-factor in food allergies was first reported in 1984. Severe anaphylaxis occurred in response to ingestion of peanuts in combination with acetylsalicylic acid. Exposure to peanuts alone triggered only mild symptoms or an oral allergy syndrome [7]. Möller and colleagues reported a woman who had an attack of anaphylaxis after consuming sunflower seeds and acetylsalicylic acid. Given that in both patients exposure to acetylsalicylic acid alone did not elicit an allergic reaction, and that the triggering foodstuffs alone caused only mild oral allergy syndrome, the authors suggested that acetylsalicylic acid may enhance intestinal absorption of the allergen [7, 8]. Matsuo and colleagues showed that, with the combination of wheat and physical exertion or acetylsalicylic acid, serum gliadin levels were significantly higher than when wheat was consumed alone without any other triggering co-factors [9]. This supports

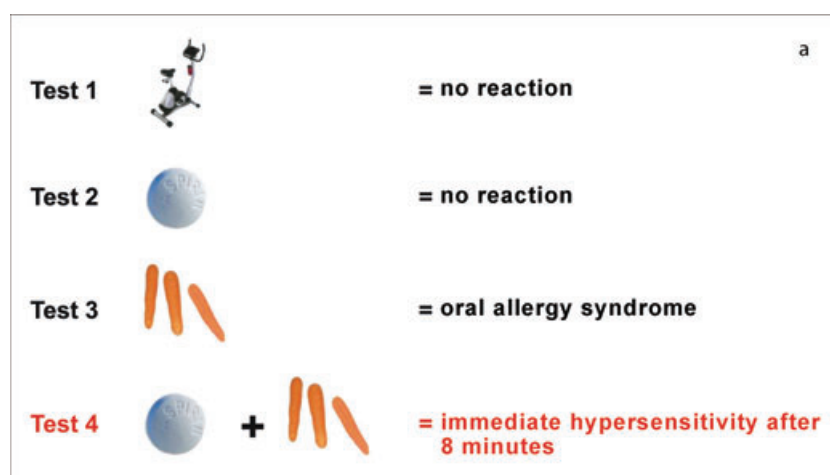


Figure 1: (a) Systematic exposure testing with carrots (icon carrot), Acetylsalicylic acid/ ascorbic acid (icon tablet) and physical exercise (icon bicycle ergometer). (b) Patient before exposition with acetylsalicylic acid/ ascorbic acid and raw carrots (test 4). (c) Patient after exposure to acetylsalicylic acid/ ascorbic acid and raw carrots (test 4).



Figure 1: Continued.

the hypothesis that acetylsalicylic acid enhances intestinal absorption of food allergens. Sometimes several co-factors are needed for anaphylaxis to occur; these include alcohol as well as hormonal factors [10].

This shows the importance of systemic provocation testing, with and without co-factors, for correctly diagnosing a food allergy and for informing the patient which allergens to avoid.

Based on the results of allergy testing, we advised the patient to strictly avoid eating raw carrots or other birch pollen-associated foodstuffs for at least 6 hours after taking any non-steroidal anti-inflammatory drugs. <<<

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