

CASE OF THE MONTH

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FOOD-DEPENDENT EXERCISE-INDUCED ANAPHYLAXIS ASSOCIATED WITH SESAME SEED INGESTION – A CASE REPORT

It is well known that exercise can induce systemic reactions (urticaria with or without angio-oedema or anaphylaxis) in some patients suffering from food allergy.¹⁻⁶ The clinical syndrome of food-dependent exercise-induced anaphylaxis (FDEIA) is typified by the onset of anaphylaxis during (or soon after) exercise which was preceded by the ingestion of the causal food allergen/s. In FDEIA, both the food allergen/s and exercise are independently tolerated. FDEIA has been associated with various foods, including cereals, seafood, peanuts, tree nuts, eggs, milk and certain vegetables.¹⁻⁶ Wheat flour and crustaceans are the commonest offending foods.⁴ The mechanism and natural history of FDEIA is unknown.

Sesame seed is widely used in fast-food, bakery and confectionery products. Allergy to sesame seed is becoming increasingly prevalent in adults and children, probably because of its increasing use. Allergy to sesame is predominantly IgE mediated. Animal studies have shown that sensitisation to sesame can occur via the oral or transdermal routes.⁷ The major allergens of sesame are Ses i 4, Ses i 5, Ses i 6 and Ses i 7 and 11S globulin.⁷⁻⁹ These allergens are highly resistant to pepsin digestion and thermal processing. Sesame also contains seed storage proteins (Ses i 2 and Ses i 3).¹⁰ These storage proteins are known food allergens in peanut, walnut, Brazil nut and soybean, and may cross-react with sesame seed. Sesame is a major cause of food allergy in Israel – in fact it is only second to cow's milk protein allergy.¹¹ Sesame-seed-induced anaphylaxis is well documented.¹²⁻¹⁸

We report on a 22-year-old female athlete with FDEIA associated with sesame seed ingestion. The patient started running 2 hours after she had eaten a bread roll containing sesame seed. Thirty minutes later, she suffered from cutaneous erythema with itching, urticaria, angio-oedema of the face and dyspnoea. She was treated with intramuscular adrenaline and oral antihist-

amines in the emergency department. Later, she was referred to the Allergy Clinic for investigation.

Clinical history revealed that she had suffered two episodes of urticaria and angio-oedema with postprandial exercise previously – on both occasions after ingestion of a bread roll with sesame seeds. Of note was the fact that she had had a sesame seed roll once before without any adverse effects (had not exercised on this occasion). She had a history of asthma (well-controlled on Seretide 250/50 µg twice daily) and allergic rhinitis (treated with Flixonase nasal spray 50 µg once daily).

Skin-prick tests (SPTs) performed on the patient were positive for mites and grasses but negative for wheat and milk. SPT was not performed for sesame seed because no commercial reagents were available. Specific IgE was positive to sesame seed (0.69 kU/l) but negative to wheat and milk (< 0.35 kU/l). An open challenge test with wheat (plain bread roll) and 10 grams sesame seed in the resting state was negative. Treadmill ergometric stress in a fasting state and 60 minutes after ingestion of a plain bread roll (without sesame seed) gave negative results. Exercise challenge test 60 minutes after ingestion of a sesame seed was positive, showing mild diffuse erythema and small wheals on the face and trunk. We concluded that this patient had FDEIA related to sesame seed ingestion. To the best of our knowledge this is the first report of FDEIA associated with sesame. The patient was advised to avoid all products containing sesame seeds. She remained symptom-free on a sesame-free diet.

Although FDEIA is an uncommon allergic condition it is an important differential diagnosis to be considered when faced by a patient who has experienced exercise-associated anaphylaxis. The diagnosis of FDEIA is heavily dependent on the clinical history. Allergy tests may need to be performed for a broad panel of foods. Modified exercise challenges (performed with and without prior ingestion of food) are mandatory as allergy test results frequently return low-positive results. A diagnosis of FDEIA facilitates the safe independent return to exercise and reintroduction of foods for patients who otherwise may unnecessarily avoid exercise and/or restrict their diet.

Sesame seed allergy is an emerging problem of a serious nature because of the high risk of anaphylaxis. Prompt and correct diagnosis of sesame seed allergy is important so that patients can eliminate the offending food/s and use appropriate rescue treatment in the event of accidental ingestion.

Declaration of conflict of interest

The authors declare no conflict of interest.

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