EGG AND JOGGING MADE ME PASS OUT: A CASE OF FOOD-DEPENDENT EXERCISE-INDUCED ANAPHYLAXIS

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Abstract

Food-dependent exercise-induced anaphylaxis (FDEIA) is a specific subset of exercise-induced anaphylaxis (EIA) that occurs if physical activity is undertaken within a few hours of consuming particular foods. We report a case of 22 years old gentleman with no prior medical illness and allergy history, who developed sudden onset of anaphylaxis symptoms while he was jogging in a park. He consumed an egg sandwich at home prior to his jogging activity & reported a history of similar events occurring in the past. Adrenaline administration is key in the treatment of acute FDEIA. Education on avoidance remain the mainstay of management of FDEIA which includes avoidance of consuming the associated foods 4-6 hours before exercise and 1 hour after exercise. The need of providing self-injectable emergency intramuscular (IM) adrenaline for these patients must be considered.

Keywords: Food-dependent, Exercise-induced, Anaphylaxis

Introduction

Exercise-induced anaphylaxis (EIA) is rare, in which anaphylaxis takes place following physical activity (1). Food-dependent exercise-induced anaphylaxis (FDEIA) is a particular subset of exercise-induced anaphylaxis, where anaphylaxis occurs if physical activity takes place a few hours after eating particular foods. In FDEIA, anaphylaxis does not occur with neither food ingestion nor physical activity by itself (1). The lifetime occurrence of EIA is approximately 0.05%, with 30% to 50% of cases being food-dependent, only taking place with the combination of a specific food and exercise (2). The type of foods commonly associated with FDEIA are shellfish, peanuts, corn, tomatoes and wheat (1). Nevertheless, various types of foods, comprising of seeds, beans, fruits, milk, lettuce, soybean, peas, rice and a variety of meats has also been reported to be associated with the disorder (1).

Case report

We report a case of a 22-year-old gentleman with no prior medical illness and allergy history, who developed anaphylaxis while he was jogging in a park. Symptoms included generalized rashes, itchiness, shortness of breath, abdominal pain and near-syncopal attack, which caused him to cease his jogging activity. He had eaten an egg sandwich prior to jogging and reported three similar events in the past. He had no allergy symptoms with eating egg or jogging alone. In the ambulance, his symptoms were improving without any medication or intervention. In the emergency department, he was conscious and had a generalized urticarial rash. He was hemodynamically stable and systemic examinations were unremarkable.

Despite the unavailability of specific diagnostic tests, a working diagnosis of FDEIA was made based on thorough clinical history and presentation. Treatment included intravenous antihistamines, corticosteroid and fluid therapy followed by 24 hours observation to monitor for any occurrence of a biphasic reaction. Blood analysis was unremarkable and he remained stable throughout his observation. The patient was discharged well with follow-up care at the community health clinic.

Discussion

The pathophysiology of EIA and FDEIA are not well understood. Individuals with FDEIA are able to ingest the causative food without any issues or reactions in the absence of exercise; and vice versa (1). Several hypotheses propose the pathophysiology of FDEIA, including greater allergen absorption from the gastrointestinal system during exercise, rise in osmolality in the villus bases leading to mast cell activation, and blood redistribution to skin and muscle exposing sensitive mast cells in these areas to food allergens (3).

Making a diagnosis of FDEIA can prove challenging and relies on a thorough clinical history. Apart from complete history taking and a physical examination, diagnosis can involve a skin prick test, radioallergosorbent test (RAST), and food exercise provocation testing, although these may vary in sensitivity (4). A modified exercise challenge test is the gold standard for FDEIA diagnosis which can be performed either as an open food-exercise challenge or a double blind placebo-controlled food-exercise challenge (DBPCFEC). The challenge will typically be performed using an age-appropriate portion of the suspected trigger food. Due to its intraindividual variability, conducting a DBPCFEC can be challenging. This test must be conducted under close medical supervision in a center capable of treating anaphylaxis. The challenge methodology must consider food doses and timing of administration in relation to the exercise.

Diagnosis of EIA can be made following the demonstration of a positive modified exercise challenge test performed without any food or with a negative modified exercise challenge test performed with food, which would rule out FDEIA. FDEIA is also primarily a clinical diagnosis. It is important to rule out EIA, food allergy, exercise-induced asthma, cholinergic urticaria, cold urticaria, mastocytosis, benign flushing conditions, hereditary angioedema, neoplastic disorders, and psychological condition/ disorders.

With regards to the management of acute FDEIA, adrenaline administration remains one of the key treatments. Antihistamines can be beneficial for symptom relief in cases of milder reactions. It is important for patients with this condition to carry age-specific, self-injectable IM adrenaline with a written personalized emergency plan when they plan to exercise. The activity should also be done in a well-tolerated environment, where there is someone with FDEIA awareness and training on self-injectable IM adrenaline administration (5). Prevention, including avoidance of associated foods 4-6 hours prior to exercise and 1 hour after exercise, are also the mainstay of management for FDEIA (5, 6).

Conclusion

Clinicians should be able to recognize FDEIA to provide appropriate treatment and preventive measures. Education on prevention and avoidance remain the mainstay of treatment for individuals with FDEIA including avoiding associated foods 4-6 hours prior to exercise and 1 hour after exercise. Providing self-injectable emergency IM Adrenaline for these patients must be considered.

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Competing Interest

The authors declare that they have no competing interest.

Informed Consent

As this case report was written retrospectively and the patient involved was unable to return to the hospital due to logistical reasons, a verbal informed consent was obtained from the patient prior to writing this case report.

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