Exercise-Induced Anaphylaxis

Anna M. Feldweg, MD

KEYWORDS

• Exercise-induced anaphylaxis • Food-dependent exercise-induced anaphylaxis
• Omega-5-gliadin • Cromolyn sodium • Cholinergic urticaria

KEY POINTS

- Symptoms of exercise-induced anaphylaxis/food-dependent exercise-induced anaphylaxis include extreme fatigue, warmth, flushing, pruritus, and urticaria, progressing to angioedema, wheezing, upper airway obstruction, and collapse.
- Diagnosis of exercise-induced anaphylaxis/food-dependent exercise-induced anaphylaxis is usually based on the clinical history and exclusion of other disorders.
- Exercise challenge (with or without food) is useful when positive, but the symptoms can be difficult to elicit, and the diagnosis can be made without this maneuver. In food-dependent exercise-induced anaphylaxis, allergen-specific immunoglobulin E to the culprit food should be demonstrable.
- Management includes education about safe conditions for exercise, the importance of ceasing exercise immediately if symptoms develop, appropriate use of epinephrine and, for patients with food-dependent exercise-induced anaphylaxis, avoidance of the culprit food for at least 4 hours before exercise.
- All patients should be equipped with epinephrine for self-administration. H1 antihistamines may reduce symptoms in some patients but do not prevent attacks. Oral cromolyn sodium seems to be useful in many cases of food-dependent exercise-induced anaphylaxis. Refractory cases have been treated with misoprostol or omalizumab.

INTRODUCTION

Exercise-induced anaphylaxis (EIAn) is a disorder in which anaphylaxis occurs exclusively in association with physical exertion. Food-dependent exercise-induced anaphylaxis (FDEIAn) is a similar disorder in which symptoms develop only if exertion takes place within a few hours of eating, and usually only if a certain food(s) is ingested, to which the patient is sensitized.

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Division of Rheumatology, Immunology, and Allergy, Brigham and Women's Hospital, Harvard Medical School, 1 Jimmy Fund Way, Smith Building, 6th Floor, Boston, MA 02115, USA
E-mail address: AFELDWEG@PARTNERS.ORG

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EPIDEMIOLOGY

EIAn and FDEIAn have been reported around the world and in patients of all ages, although adolescents and young adults make up most cases in the literature.[1–5] Both EIAn and FDEIAn seem to be rare. In one of the few studies of prevalence, rates of 0.03% and 0.017%, for EIAn and FDEIAn, respectively, were estimated among Japanese adolescents.[3] However, in the author's clinical experience, FDEIAn is more common than EIAn. Slightly more females than males have been reported to be affected.[6] Most cases of EIAn and FDEIAn are sporadic, although there are rare reports of familial cases.[7,8]

SYMPTOMS AND CLINICAL FEATURES

In both EIAn and FDEIAN, episodes of symptoms are unpredictable in most patients in that a given level of physical exertion may trigger symptoms on one occasion but not on other similar occasions. Most patients exercise routinely but only develop attacks occasionally.

The signs and symptoms are similar to those in anaphylaxis from other causes. A typical episode begins while the patient is exercising vigorously, with a sensation of warmth and flushing, sometimes accompanied by sudden fatigue.[9,10] The individual then becomes aware of pruritus, and urticaria often begins to appear on the skin. If the episode progresses (because the patient continues the exercise), lightheadedness or presyncope, gastrointestinal symptoms (nausea, abdominal cramps, diarrhea), angioedema (typically of the face or hands), throat tightness, or bronchospastic symptoms may develop. In severe episodes, patients become hypotensive and collapse. After an episode of EIAn or FDEIAn, patients may report fatigue or headache lasting a day or so.[10,11]

If the patient stops the activity immediately at the first awareness of symptoms, there is most often improvement or resolution of the symptoms within minutes. However, not all patients instinctively stop what they are doing. Some may try to "push through" to see if the symptoms will pass, and others may become frightened and try to reach a place where there are other people. Runners may sprint for home. "Pushing through" uniformly results in a worsening of symptoms, and discussing this with patients is an important part of initial management.

Triggering Forms of Exercise

Vigorous forms of exercise, such as jogging, sports involving sudden bursts of sprinting (soccer/football), dancing, and aerobics are most likely to trigger symptoms.[11] However, brisk walking or yard work can trigger episodes in some patients, and there are case reports of older adults in whom the physical exertion of crossing a road was sufficient.[12]

Food-dependent Exercise-induced Anaphylaxis

In FDEIAn, symptoms occur only when the person exercises within minutes to a few hours after eating. In rare cases, symptoms occur when the food is eaten in the minutes immediately after exercise.[13] Patients describe episodes in which the combination of the food and exercise precipitates attacks: they can eat the food in question without symptoms if there is no associated exercise, and they can exercise without symptoms if they have not eaten the culprit food. Most patients have symptoms only after eating a specific food, although a few have attacks if any food (usually solids rather than liquids) has been ingested.[14] Rare patients have been described in whom symptoms only occurred if 2 foods were eaten together before exercise,[15] or who only