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Case Report

A Rare Case of Exercise Induced Anaphylaxis

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Abstract

Exercise-Induced Anaphylaxis is potentially fatal phenomena. Unlike common allergic reactions related to allergens like foods, insect stings, or drugs, this unusual illness is characterized by the onset of anaphylactic symptoms during or immediately after physical activity. We are presenting herewith a 27-year-old male presented with signs and symptoms of anaphylaxis following exercise. The patient was previously healthy with no known medical history, and not on any medications. He denied any known allergies to food or medications. However, he reported multiple previous episodes of an itchy rash while jogging outdoors but was never as extensive as this episode. We managed him successfully with medications. A literature review suggests only few cases are reported, so far. Despite reported potential therapies, research gaps persist, emphasizing the need for anticipation, prompt recognition by exclusion of other causes, and appropriate investigations are essential for successful outcome.

ABBREVIATIONS

EIA: Exercise-Induced Anaphylaxis; FDEIA: Food-Dependent Exercise-Induced Anaphylaxis

INTRODUCTION

Anaphylaxis is a potentially life-threatening hypersensitivity reaction that affects multiple organs and systems, with a particular impact on the skin, respiratory tract, gastrointestinal tract, and cardiovascular system [1]. Exercise-Induced Anaphylaxis (EIA) is potentially fatal phenomena. Unlike common allergic reactions related to the foods, insect stings, or drugs, this unusual illness is characterised by the onset of anaphylactic symptoms during or immediately after physical activity [2].

CASE REPORT

A 27-year-old male brought to emergency department by the ambulance with signs and symptoms of anaphylaxis. He called the ambulance when he developed generalized body rash with itching and worsening shortness of breath and difficulty in swallowing. He initially noted a generalized itchy rash all over his body while jogging in the late afternoon. His symptoms quickly worsened in next hour and then he became extremely short of breath with wheezing and developed difficulty in swallowing. Prior to his jogging session, he had a meal consistent of toast and avocado. He denied bitten by any insects.

He reported multiple episodes of itchy rashes and urticaria on his upper extremity earlier in the past few times. However, he never experienced any shortness of breath, wheezing episodes, or severe allergies. He also denied any history of childhood asthma or eczema and any family history of allergies.

The patient was previously healthy with no known medical history, and not on any medications. He denied any known allergies to food or medications. He lives a healthy and active lifestyle, cooks at home mostly and goes for jogging multiple times a week.

His vital signs were stable and normal except above symptoms. In the emergency room, he developed generalized urticarial rash involving the whole body with swollen lips. He received intra muscular Epinephrine upon admission which relieved respiratory symptoms and urticarial. He remained under observation for a day. During his stay, he had no further symptoms and remained hemodynamically stable. He went home the next day. On discharge, we advised him to follow up with an immunologist for further assessment.

DISCUSSION

Sheffer and Austen first reported the EIA in 1980. They presented a group of 16 individuals in whom physical exertion triggered diverse anaphylactic manifestations, such

as widespread hives, itching, swelling, abdominal colic, and low blood pressure. Given the striking resemblance of these symptoms to the anaphylactic syndrome caused by exposure to foreign antigens, they coined the term exercise-induced anaphylaxis [2]. The EIA and Food-Dependent Exercise-Induced Anaphylaxis (FDEIA) pose intriguing challenges as rare entities, warranting detailed investigation. Initial reports indicated a prevalence of 0.21% among junior-high-school students, contrasting with a more recent Japanese epidemiological study involving 76,229 students, revealing lower rates of 0.031% for EIA and 0.017% for FDEIA. Notably, gender-based differences were not significant [3].

Wade et al reported the most common exercises associated with EIA. Their findings indicated that jogging was the most frequently associated exercise, accounting for 69% followed by aerobic exercises and walking [4]. Moreover, Shadick et al., reported similar findings [5]. Our patient aligns with the prevalent pattern, as jogging was the prevalent triggering exercise in most cases.

In individuals with FDEIA, the incidence of anaphylaxis imposes the combined factors of consuming the causative food and engaging in physical exertion. The most reported foods in this context are tomatoes, cereals, peanuts and wheat. Other implicated foods encompass seafood, cow's milk, various vegetables and fruits (such as oranges, onions, or grapes) [6,7].

Our reported case may also fits in the subgroup of FDEIA as he consumed avocado and toast (wheat) just prior to exercise. However, he denied allergies to these fruits.

The diagnosis of EIA and FDEIA is very challenging as there is no specific criteria for diagnosis. It depends upon exclusion of possible aetiologies and thorough history and physical examination [8].

Effective management primarily focuses on anaphylaxis prevention due to the absence of well-established treatment modalities. Limited randomized controlled trials have prompted exploration of various strategies, with limited potentials [9]. The cornerstone of prevention involves avoidance of trigger agents.

Some pharmacological agents have shown promising results despite its contradicting findings in some trials. For example, the administration of H-1 antihistamines agents before strenuous exercise has yielded mixed results. While some individuals experience symptom reduction with antihistamine therapy, it is rarely completely effective. Moreover, beta agonists and phosphodiesterase-inhibiting medications have not demonstrated clear benefits in the prevention of EIA and FDEIA.

Although reported as potential therapies, other pharmacological agents, such as leukotriene inhibitors, misoprostol, and oral corticosteroids are available but there is lack of clinical trial on their usage and effects.

CONCLUSION

Despite reported and available potential therapies for exercise-induced anaphylaxis and food- dependent exercise-induced anaphylaxis, there is still lack of information or literature on diagnostic criteria, investigation or management. In most of the cases, the diagnosis is by exclusion of other aetiologies. Therefore, anticipation, early recognition and prompt treatment is crucial for successful outcomes. However, continued scientific scrutiny is imperative to establish robust treatment paradigms for these intriguing conditions.

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