Description, Diagnosis and Management of exercise-induced anaphylaxis*.

(* severe allergic reaction).

(Abstract from 'Pathophysiology, Diagnosis and management of exercise-induced anaphylaxis' by DaPaula Robson-Ansley and George Du Toit)

Introduction

Exercise-induced anaphylaxis (EIA) is a rare, unpredictable, potentially fatal, syndrome characterized by anaphylaxis associated with exercise.

Anaphylaxis is associated with a mortality rate of between 1 and 2%; importantly, some 5–15% of anaphylactic episodes are caused by or are associated with exercise. EIA may occur independently of food-allergen ingestion or may require the ingestion of a food allergen around the time of exercise, known as **food dependent exercise-induced anaphylaxis (FDEIA).**
Several kinds of medication may also be required as an additional facilitating factor.

Key clinical features

The symptoms of FDEIA may vary in severity but, reassuringly, fatalities are rare. EIA occurs in all ages, in both sexes, and is more common in atopic individuals (people with a history of allergic disorders including asthma, eczema and anaphylaxis).

Recent findings

Exercise-induced anaphylaxis (food dependent and non-food dependent) is a clinical syndrome in which anaphylaxis occurs in conjunction with exercise.

Summary

EIA is generally reported following exercise of a relatively short duration. EIA has been described in high-performance athletes and in individuals undertaking only occasional exercise. Even regular physical activity, for example, raking garden leaves, has been reported as a trigger for EIA. There are no consistent exercise-associated factors such as extreme ambient temperature or humidity.
Although wheat is the most commonly reported food allergen associated with FDEIA, many other food allergens have also been reported. It is important to exclude food allergies that may be associated with the frequent ingestion of commercial rehydration fluids, such as soya and gelatin.
The natural history of EIA is not well described but opinion is that with careful management, a gradual return to exercise can be safely achieved.

Diagnosis

EIA is a clinical diagnosis; when symptoms and signs are not typical, then care should be taken to consider the broad list of differential diagnoses associated with exercise.

The clinician needs to consider not only those diagnoses that are 'exercise-induced' but also 'exercise-related' allergens; examples include hidden food allergens in rehydration fluids such as soya, nut allergens in massage oils, and contact skin reactions to strappings and supports.

Due to its unique properties, latex is still commonly found in sports equipment such as basketballs and tennis-racket hand grips. Allergic reactions to non-steroidal anti-inflammatory agents, which are frequently ingested by athletes, such as paracetamol or ibuprofen, should also be considered.

Investigations then typically include skin prick testing (often requiring modified tests to sports drink solutions) and specific immunoglobulin E (IgE) testing. Broad panels may be required so as not to miss 'less typical' food allergens such as lupine.

A diagnosis of food-independent EIA can only be made once FDEIA has been excluded; to do so, the clinician will need to rely on a thorough clinical history and modified exercise food challenge tests.

A diagnosis of exercise-induced asthma – a condition which is far more frequent than EIA but for which the same abbreviation is used – will require consideration for patients who experience predominantly respiratory symptoms in the absence of allergic manifestations such as hives or angioedema (swelling around the eyes).

Interestingly, a case of FDEIA has been reported in which food was ingested shortly after exercise; recovery of blood flow following exercise to pre-exercise distribution can take at least 40 min. Therefore, post-exercise food consumption should also be a consideration in FDEIA.

Management

As physical activity cannot be avoided, or even scheduled in young children, a challenge-proven diagnosis in a well tolerated setting is indicated to unequivocally establish a diagnosis of EIA. If food is playing a role in the presentation, then dietary management is required; this is best achieved with the help of a dietician.

A personalized emergency plan and medications are required but should only be issued after the individual (and family/carers) has been trained in the identification and treatment of anaphylaxis.

A slow, supervised return to exercise should be encouraged. If a diagnosis of FDEIA has been made, then the allergen should be avoided both prior to and after exercise. We suggest a 3-hour avoidance of the allergen prior to planned exercise and 1 hour following exercise.

To achieve the successful separation of the food ingestion with exercise, it may be necessary to totally eliminate the food from the diet of athletes and physically active young children.
The role of certain medicines which is well documented for use in exercise-induced asthma, have not been well studied for the control and prevention of EIA. It also seems prudent for food allergic individuals to avoid aspirin or any medication/therapy/alcohol, as this may alter gastrointestinal integrity (health of the gut) prior to exercise.

Conclusion

EIA is a rare but troubling condition. A step-wise and goal-directed diagnostic and management approach is required. The physiological changes that occur during exercise need deeper consideration to ensure that proposed mechanisms are realistic and actually occur within the time frame and exercise-intensity domain during which the reported EIA occurred..

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