Exercise Induced Collapse: Anaphylaxis

Background

1. Allergic response to exercise
2. Two types:
    - Cholinergic urticaria
        - No anaphylaxis
    - True exercise induced anaphylaxis
3. May both present with similar symptoms initially
4. Affects young athletes
    - 25 years mean age of onset
5. Female gender
6. Family history of atopy

Pathophysiology

1. Rare cause of athletic collapse
2. Most common causes:
    - Insect bites
    - Medications
    - Foods during/prior to exercise
    - Exercise
3. Mast cell degranulation releases vasoactive substances and histamine
4. Foods eaten 24 hours prior to exercise may induce EIA

Diagnostics

1. Differentiate between cholinergic urticaria vs. exercise induced anaphylaxis
    - Thorough patient history
        - Common symptoms:
            - Angioedema, flushing, pruritus, hypotension, choking, nausea, wheezing, shock, coma
        - Exercise-induced cutaneous warmth, erythema and pruritus with and without urticaria could be either
        - Progression of dysphagia, dyspnea, wheezing, dizziness or syncope is consistent with EIA
        - Food intake prior to exercise
        - Witnessed insect bite during activity
    - Passive warming test
        - Increase core body temp by >0.9 °F
            - Immerse patient in warm water or raise ambient temperature
            - Cholinergic urticaria
            - Plasma histamine increases
            - Exercise induced anaphylaxis
            - No histamine increase
        - Methacholine skin test for cholinergic urticaria
            - 100 units in saline injected intradermal
            - Positive test induces micropapular hives
            - Sensitivity: 33% but high specificity
2. Treadmill or exercise bike test for EIA
    - Must have epinephrine ready, intubation equipment, oxygen, ACLS cart

3. Symptoms:
    - Initially itching and hives
    - Facial and body swelling
    - Respiratory difficulties

Therapeutics

1. Rapid administration of subcutaneous epinephrine
    - 0.3-0.5 ml of 1:1,000 epinephrine solution
2. PO or IM diphenhydramine
    - 50-100 mg
3. Any compromise of airway, patient need to be seen in ER emergently
4. Benefit of corticosteroids not been established
    - Most experts advocate their administration (SOR C)3
        - Not effective for 6-12 hr
        - May be used in prevention of recurrent or protracted anaphylaxis
5. Reported to occur in 20% of patients
6. Methylprednisone 1-2 mg/kg/day x 3-4 days
    - All protracted or biphasic reactions have been reported within 72 hr of event

Prevention

1. Allergy testing
2. Carry EpiPen
3. Patient education on how to use
4. Avoid exercise 4-6 hours after eating
5. Avoid ASA or NSAIDs prior to exercise
6. Avoid all associated conditions known to trigger attacks in athlete
7. Discontinue exercise at the earliest warning of symptoms
8. May not stop symptoms
9. If EIA, symptoms should improve
10. Exercise with a buddy
11. Wear medic-alert bracelet

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