Chapter 26

Allergic Reactions

Chapter Goal

- Use assessment findings to formulate field impression & implement treatment plan for patients with allergic or anaphylactic reactions

Learning Objectives

- Define allergic reaction, anaphylaxis, allergen, antigen, & antibody
- Summarize pathophysiology of anaphylaxis
- Integrate pathophysiological principles of anaphylaxis into clinical presentation & patient treatment
- Describe common methods of entry of substances into body
Learning Objectives

- List common antigens most frequently associated with anaphylaxis
- Recognize signs & symptoms related to anaphylaxis
- Describe physical manifestations in anaphylaxis
- Correlate abnormal findings in assessment with clinical significance in patient with anaphylaxis

Learning Objectives

- Differentiate among various treatment & pharmacological interventions used in management of anaphylaxis
- Develop treatment plan based on field impression in patients with allergic reaction & anaphylaxis

Allergic Reactions & Anaphylaxis

- Differences
  - Allergic reactions
  - Anaphylaxis

- Spectrum of severity
Pathophysiology

- **Antibodies**
  - Respond to antigens
  - In anaphylaxis, IgE antibody does not destroy antigen
    - Reaction triggers release of mast cells

Pathophysiology

- Histamines are released
  - Bronchospasm
  - Vasodilation
  - Fluid leakage

- Histamine stimulates release of additional mediators
  - Results in mild to extreme reactions
Pathophysiology

- Biphasic anaphylactic response
  - 1 in 5 persons has biphasic anaphylactic response
  - Initial symptoms resolve completely
  - Impossible to predict which patients will experience late-phase reaction

Pathophysiology

- Common allergens & routes of exposure
  - Skin contact
    - Poison ivy
    - Cosmetics
    - Detergents
  - Injections
    - Penicillin
    - Bites & stings
  - Inhalation
    - Pollens
    - Perfumes
  - Ingestion
    - Foods

Assessment

- History
  - Ask about
    - Recent insect bite or sting
    - History of food or drug allergy
    - Foods recently ingested
    - Medications taken, including herbas and OTC
    - New cosmetics, soaps, clothing
  - Determine if history of other significant medical conditions
  - Identify current medications
Assessment: Anaphylaxis

- Signs & symptoms
  - May occur rapidly
  - Initially, a sense of uneasiness/agitation
  - Swelling of hands, tongue, pharynx
  - Skin flushing, hives
  - Burning, itching skin
  - Abdominal pain
  - ↓ LOC
  - Diaphoresis
  - Profound hypotension (late sign)

Assessment: Anaphylaxis

- Skin flushing and hives

Management

- Mild allergic reactions
  - Supportive
  - Diphenhydramine per local protocol, if
    - Vital signs are normal
    - No respiratory symptoms
    - Only manifestations are itching, rash, and/or external swelling

- Moderate/severe reactions
  - Aggressive airway management
  - Epinephrine if
    - Wheezing or stridor
    - Swelling of pharynx, soft palate, or tongue
  - Nebulized bronchodilator if wheezing or stridor present
Management

- Anaphylaxis & hemodynamic compromise
  - Provide reassurance
  - Ensure adequate airway
  - Perform advanced airway management; administer high-concentration O2 if
    - Patient cannot maintain airway
    - Ventilatory assistance needed
    - Severe respiratory distress
    - Cyanosis present
    - Significant hypotension present
  - Monitor ECG

- Initiate large-bore IV
  - If BP <90 mm Hg systolic, run wide open
  - Reassess VS after 300 cc delivered
- Administer epinephrine Sub-Q, IM, or IV per local protocol; repeat q 5-10 if patient’s response is inadequate
  - Patient may have own autoinjector
  - If wheezing or stridor present, administer nebulized bronchodilator per local protocol
  - Do not allow patient to walk to ambulance
  - Transport rapidly to nearest appropriate facility
  - Serial VS and patient’s response to treatment

Management: Epinephrine Autoinjector

- EpiPen

  Use per local protocol or obtain permission
Management

- Remove safety cap
- Place tip of autoinjector at 90° angle against patient’s lateral portion of thigh midway between waist & knee

Management

- Bee stings
  - Do not grasp
  - Scrape flat

Summary

- Allergic reactions are exposures to substance to which individual is sensitive
- Anaphylaxis is specific type of allergic reaction caused by interaction of allergen (antigen) & IgE antibody
- Spectrum of symptoms—from hives to shock
Summary

- Since most mast cells are localized in skin, respiratory tract, & GI tract, many patients have hives or swelling, wheezing, & abdominal discomfort
- Response (low grade or severe) can occur quickly & may lead to serious illness or death if patient not attended to immediately
- 1 in 5 patients has late-phase symptoms that may differ from initial presentation

Summary

- All patients require careful attention to ABCs
- Severe reactions—aggressive IV fluid administration & definitive airway management required
- Epinephrine is nearly always administered under these circumstances

Questions?