Chapter 22 - Allergic Reaction

OBJECTIVES

22.1 Define key terms introduced in this chapter. Slides 10–14, 19, 27, 39

22.2 Differentiate between the signs and symptoms of an allergic reaction and an anaphylactic reaction. Slides 18–24

22.3 Describe the relationship between allergens and antibodies necessary for an allergic reaction to occur. Slides 11–13

continued

22.4 Describe the effects of histamine and other chemicals in producing the signs and symptoms of anaphylaxis. Slides 13–14

22.5 List common allergens. Slides 15–16

22.6 Prioritize the steps in assessment and management of patients with allergic and anaphylactic reactions. Slides 25–28

continued
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OBJECTIVES

22.7 Recognize the indications for administering and assisting a patient in the use of an epinephrine auto-injector. Slides 29–31

22.8 Describe the desired effects and side effects associated with the administration of epinephrine. Slides 37–38

continued

22.9 Demonstrate administration of epinephrine by auto-injector. Slides 39–41

22.10 Describe the considerations in reassessment of patients with allergic and anaphylactic reactions. Slides 39–41

MULTIMEDIA

• Slide 34 Allergic Reaction—Anaphylaxis Video
• Slide 35 Information About Allergic Rhinitis Video
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CORE CONCEPTS

• How to identify a patient experiencing an allergic reaction
• Differences between a mild allergic reaction and anaphylaxis
• How to treat a patient experiencing an allergic reaction
• Who should be assisted with an epinephrine auto-injector

Topics

• Allergic Reactions
• Self-Administered Epinephrine

Allergic Reactions
Allergic Reactions

- Immune system naturally responds to foreign substances in body
- Allergic reaction: exaggerated response to foreign substance
- Allergen: substance causing exaggerated effect

Body's Reaction to Allergen

- First exposure
  - Immune system forms antibodies
  - Antibodies identify and attack particular foreign substance
  - Antibodies combine only with allergen they were formed in response to

- Second (and subsequent) exposures
  - Antibodies exist
  - Antibody combines with allergen, leading to release of histamine and other chemicals into bloodstream
  - Chemicals cause harmful effects
Body’s Reaction to Allergen

- Effects of histamine and other chemicals
  - Inflammation (swelling)
  - Bronchoconstriction
  - Vasodilation

Anaphylaxis

- Severe, life-threatening allergic reaction
- Can cause:
  - Dilation of blood vessels (hypotension)
  - Airway swelling (airway obstruction)
  - Bronchoconstriction (respiratory failure)

Common Allergens

- Insects
- Foods
- Plants
- Medications
- Others
  - Dust, makeup, soap, etc.
Latex Allergy

- Common concern in EMS
  - Many patients have latex sensitivity
  - Providers can develop latex allergy from prolonged exposure

Course of Reaction

- No way to predict exact course of an allergic reaction
- Severe reaction often takes place immediately, but can be delayed 30 minutes or more
- Mild allergic reaction can rapidly progress to anaphylaxis

Signs and Symptoms: Skin

- Swelling
- Flushing (red skin)
- Warm, tingling feeling in face, mouth, chest, feet, or hands
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Signs and Symptoms: Hives

Signs and Symptoms: Respiratory
- Tightness in throat or chest
- Cough
- Rapid, labored, and/or noisy breathing
- Hoarseness, muffled voice, loss of voice
- Stridor
- Wheezing

Signs and Symptoms: Cardiac
- Increased heart rate
- Decreased blood pressure
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**Signs and Symptoms: Generalized**
- Itchy, watery eyes and/or runny nose
- Headache
- Feeling of impending doom

**Signs and Symptoms: Anaphylactic Shock**
- Altered mental status
- Flushed, dry skin or pale, cool, clammy skin
- Nausea or vomiting
- Changes in vital signs
  - Increased pulse, respirations
  - Decreased blood pressure

**Distinguishing Anaphylaxis from Mild Allergic Reaction**
- Any of previous signs and symptoms can be associated with an allergic reaction
- Anaphylaxis: patient has either respiratory distress or signs and symptoms of shock
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Assessment

• Primary assessment
• Identify and treat life-threatening problems
  – Airway
  – Breathing
  – Circulation

Assessment

• History and physical exam
  – History of allergies
  – Exposure
    • What was the patient exposed to?
    • How (what method/route) was the patient exposed?
  – Signs and symptoms
  – Progression
  – Interventions

Treatment

• Manage patient’s airway and breathing
• Apply high-concentration oxygen
• Provide artificial ventilations if patient is not breathing adequately
• Consider assisting patient with epinephrine auto-injector
Treatment

- If patient is not wheezing or showing signs of respiratory distress or shock
  - Continue with assessment
  - Consult medical direction regarding use of auto-injector

Use of Auto-Injector

- When use of auto-injector may be appropriate
  - If patient has come in contact with substance that caused allergic reaction in the past
  - If patient also has respiratory distress or exhibits signs and symptoms of shock

After Administering Auto-Injector

- Record administration of auto-injector
- Transport patient
- Reassess
Additional Doses of Epinephrine

- Reassessment may show patient condition deteriorating
- Additional doses of epinephrine may be necessary
- Requires on-line medical control
- Requires bringing patient’s additional auto-injectors in ambulance

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Additional Doses of Epinephrine

- If no auto-injector available
  - Request ALS intercept
  - Treat for shock

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Think About It

- Should you administer an auto-injector for a simple allergic reaction?
- What assessment findings would indicate the need for epinephrine?
Epinephrine

- Commonly prescribed to patients with a history of allergy
- Auto-injectors are common for people to carry or have at home
- Hormone produced by body
- Constricts blood vessels
- Dilates bronchioles

Side Effects of Epinephrine

- Increased heart rate
- Increased cardiac workload

Auto-Injector

- Spring-loaded needle and syringe with a single dose of epinephrine
- Upon administration, medication automatically releases and injects
Administering Auto-Injector

• Injection site typically anterior-medial thigh (midway between waist and knee)
• Remove clothing from site if possible
• Use standard precautions
• Remove cap

continued

Administering Auto-Injector

• Press tip of auto-injector firmly against patient’s thigh
• Once needle is deployed, allow full injection of medication before removing from injection site
• Carefully discard auto-injector into sharps container

Pediatric Note

• Two sizes of auto-injectors
  – Adult dose: 0.3 mg
  – Children’s dose (for child less than 66 pounds): 0.15 mg
Chapter Review

- Allergic reactions are common. Anaphylaxis, a true life-threatening allergic reaction, is rare.
- The most common symptom in these cases is itching. Patients with anaphylaxis will also display life-threatening difficulty breathing and/or signs and symptoms of shock.

continued

Chapter Review

- Patients with anaphylaxis will be extremely anxious. Their bodies are in trouble and are letting them know it.
- The signs and symptoms of anaphylaxis result from physiological changes: vasodilation, bronchoconstriction, leaky capillaries, and thick mucus.

continued
Chapter Review

- By quickly recognizing the condition, consulting medical direction, and administering the appropriate treatment, you can literally make the difference between life and death for these patients.

Remember

- In an allergic reaction, the body's immune system overreacts to an allergen and causes potentially harmful side effects.
- Anaphylaxis is a severe, systemic form of allergic reaction; it is a life-threatening emergency.

Remember

- EMTs must use assessment to differentiate a localized allergic reaction from a systemic anaphylactic reaction.
- Epinephrine is useful in anaphylaxis because it constricts dilated blood vessels and opens bronchial passages.
Remember

• Epinephrine has potentially dangerous side effects and should be used only in the event of anaphylaxis.

Questions to Consider

• What are the indications for administration of an epinephrine auto-injector?
• List some of the more common causes of allergic reactions.

Questions to Consider

• List signs or symptoms of an anaphylactic reaction associated with each of the following:
  – Skin
  – Respiratory system
  – Cardiovascular system
Critical Thinking

• A 24-year-old male ate a meal that he believes contained shellfish. He is allergic to shrimp. He is sweating and nervous. He appears to be breathing adequately. You do not note any wheezing or stridor.

Critical Thinking

• His face is slightly red. His pulse is 88 strong and regular, respirations 24, blood pressure 108/74, and skin warm and moist. Should you administer epinephrine?

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