

Anaphylaxis

Leslie Bodak, EMT-P

Overview

- Terms
- What is Anaphylaxis?
- Causes
- Signs & Symptoms
- Management
- Education
- Pictures
- Citations

Definitions

- **Allergic Reaction:** an abnormal immune response the body develops when a person has been previously exposed or sensitized to a substance or allergen
- **Allergen:** a substance that causes a hypersensitivity reaction or an allergic reaction in a patient; also referred to as an antigen
- **Antibody:** A protein the body produces in response to an antigen
- **Pruritus:** Itching
- **Urticaria:** Multiple small, raised areas on the skin that may be one of the warning signs of impending anaphylaxis; also known as hives

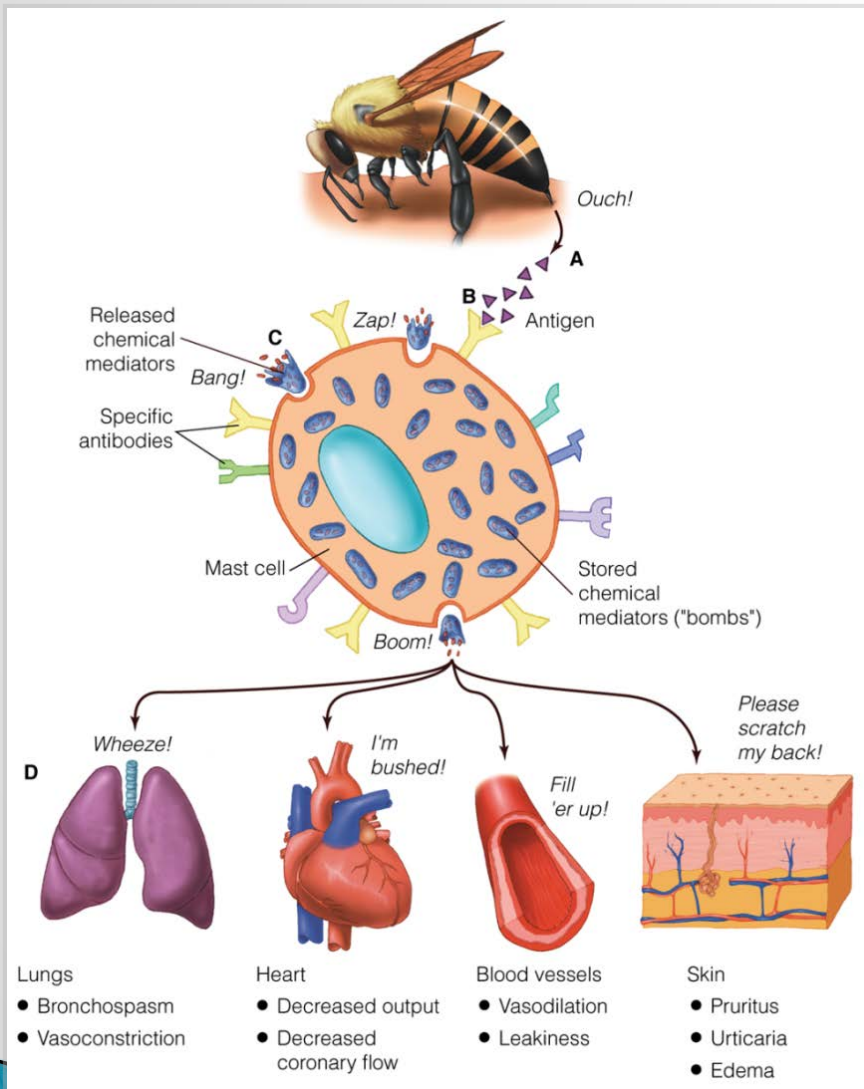
What is Anaphylaxis?

- Portier and Richet first coined the term *anaphylaxis* in 1902 when a second vaccinating dose of sea anemone toxin caused a dog's death. The term is derived from the Greek words *ana* – (“up, back, again”) and *phylaxis* (“guarding, protection, immunity”) meaning “without protection”
- Anaphylaxis is a severe, potentially life-threatening, allergic reaction that involves multiple systems
- There are two types of Anaphylaxis
 - Immunologic (the most common)
 - Non-Immunologic (Anaphylactoid)

What is Anaphylaxis (con't)

- The immunologic response involves the IgE antibody which is located on the mast cells
- In this response, the patient has been previously exposed to the allergen and has antibodies against the allergen

Immunologic Response



The sequence of events in anaphylaxis.

- A. The antigen is introduced into the body.
- B. The antigen–antibody reaction at the surface of the mast cells.
- C. Release of mast cell chemical mediators.
- D. Chemical mediators exert their effects on the end organs.

What is Anaphylaxis (con't)

- In a non-immunologic reaction (anaphylactoid reaction), the response does not involve IgE antibody mediation
- This event may occur without the patient having been previously exposed to the agent
 - Examples: nuts, fish, latex, morphine-derivative medication, ASA, contrasts given before radiography
- Even though the processes that cause the reaction are different, the patient presentation is the same

Causes

- Drugs
 - PCN (most common), ASA, Sulfa drugs, Mismatched blood transfusions, vaccines, Biologic Extracts and Hormones (Insulin, Heperan)
- Insect Bites
 - Bees, Yellow Jackets, Hornets, Wasps, Fire Ants
- Food (Most common cause of Anaphylaxis)
 - Tree nuts, Fish, Shellfish, Legumes (Peanuts, beans, etc), Egg, Soy, and Milk
- Latex
- Animals
 - Dander, Animal Serum Products
- Immunotherapy (rare)

Signs & Symptoms

➤ Skin

- Warm, flushed, itching (pruitus), swollen red eyes, swelling of the face and tongue (angioedema), swelling of the hands and feet, Hives (urticaria)

➤ Respiratory

- **Dyspnea**, tightness of the throat and chest, stridor, hoarseness, lump in throat, wheezes, crackles, coughing, sneezing

(Key indicators are noted in **BOLD** type)

Signs & Symptoms (con't)

- Cardiovascular
 - Dysrhythmias, **Hypotension**, **Tachycardia**
- Gastrointestinal
 - Abdominal cramping, nausea, bloating, vomiting, abdominal distension, profuse, watery diarrhea
- Central Nervous
 - Headache, dizziness, confusion, anxiety and restlessness, sense of impending doom, AMS

(Key indicators are noted in **BOLD** type)

Management

- When possible, remove the patient from the offending allergen
- If the reaction was caused by a sting, make sure the stinger has been removed
- Maintain the airway and be prepared to assist breathing as needed

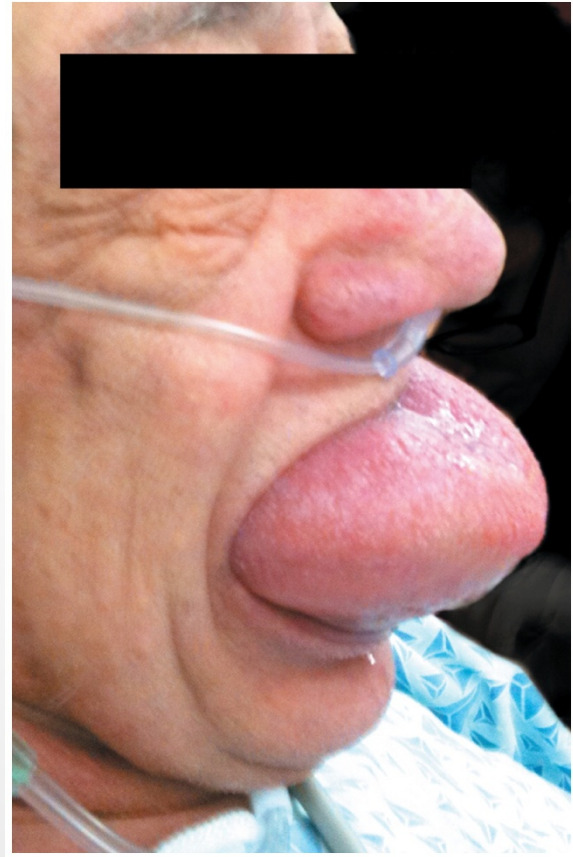
Management (con't)

- In anaphylaxis, early administration of epinephrine should be a priority
- Epinephrine can have an effect within 1 minute
- Patient PMHx is critical! If the patient is geriatric or has a history of cardiovascular disease, epinephrine will increase myocardial oxygen demand and increase workload of the heart
- Follow the local protocols

Education

- The best management of anaphylaxis is education!
- The patient:
 - needs to avoid the antigen
 - should notify all health care personnel of the allergy
 - wear ID tags or bracelets
 - carry an anaphylaxis kit and the kit should be close by
 - Report symptoms early!

Angioedema



Urticaria



Anaphylaxis; LBodak

Bibliography and Videos

- Anaphylactic Shock, Khan Academy
<https://www.khanacademy.org/science/health-and-medicine/circulatory-system-diseases/shock/v/anaphylactic-shock>
- Anaphylaxis, S Shahzad Mustafa, MD; Chief Editor: Michael A Kaliner, MD Medscape <http://emedicine.medscape.com/article/135065-overview>
- Anaphylaxis, Mayo Clinic <http://www.mayoclinic.org/diseases-conditions/anaphylaxis/basics/definition/con-20014324>
- Emergency Care and Transportation of the Sick and Injured, 10th Edition, Series Editor: Andrew N. Pollak, MD, FAAOS
- Nancy Caroline's Emergency Care in the Streets, 7th Edition, Vol. 1, Series Editor: Andrew N. Pollak, MD, FAAOS