

Anaphylaxis is a severe allergic reaction that is rapid in onset and causes sudden circulatory collapse. It occurs when the immune system reacts to a foreign substance (allergen), causing a release of chemical substances, primarily histamine and serotonin. Anaphylaxis results in a number of symptoms, potentially affecting the skin, respiratory, gastrointestinal, cardiac, and central nervous systems. The result of anaphylaxis may be a life-threatening respiratory and circulatory failure, otherwise known as anaphylactic shock.

Classic Symptoms Include:

- Bronchospasms – Narrowing of breathing passages
- Relaxation (dilation) of blood vessels
- Pulmonary edema – Pooling of fluid in lungs
- Angioedema – Deep tissue swelling
 - Also called Quincke's edema
- Dizziness, chest tightness, and pain
- Upper airway obstruction from laryngeal edema (swelling)
- Shortness of breath, wheezing caused by spasms of bronchial muscles
 - Hoarseness, pain with swallowing, or coughing
 - Stridor – High pitched wheezing, serious airway obstruction
- Hives (urticaria) progressing to itching and rash
- Swelling of the lips and tongue and/or occlusion of the throat
- Runny nose, swelling of eye tissues (conjunctiva)
- Skin may appear blue due to lack of oxygen
 - Hypoxia – Pathological condition due to deprivation of oxygen
 - Anoxia – Progression of hypoxia to a complete loss of oxygen
- Gastrointestinal symptoms include cramps, abdominal pain, diarrhea, and vomiting

Cardiac Complications

Patients with coronary disease are at greater risk of cardiac effects from anaphylaxis

- Severe drop in blood pressure (shock)
- Lightheadedness or loss of consciousness
- Abnormal vital signs, including low blood pressure and rapid heart rate
- Slow heart rate occurs in 10% of cases
- Coronary spasms due to release of histamine
- Myocardial infarction, dysrhythmia, or cardiac arrest

Incidence, Onset, and Risk Factors

Although fatal, anaphylactic shock is rare

- Risk factors
 - History of allergic reaction or sensitivity to food, medication, or product
 - ‘Trigger’ is commonly used to designate allergen
 - Asthma and respiratory disorders
 - Multiple sclerosis can worsen anaphylactic reaction
- Can occur in anyone regardless of age, sex, or race
- Milder forms occur more frequently
- Usually two or more body systems are involved in reaction
- Average onset is five to thirty minutes if allergen (trigger) is intravenous
 - Onset is two hours if allergen is from food
- Each successive exposure intensifies immunologic response
- Allergens include:
 - Venom from stinging or biting insects (bees and wasps)
 - Peanuts, shellfish
 - Latex (an increasingly common allergen)

Medication Considerations

Any medication may trigger anaphylaxis

- Most common are beta-lactam antibiotics
 - Penicillin and cephalosporins
- Aspirin and NSAIDs (non-steroidal anti-inflammatory drugs)
- Chemotherapy, vaccines, radiocontrast agents, and herbal preparations

Differential Diagnosis

Distinguishing anaphylaxis from asthma, syncope, and panic attack

- Itching, hives, and urticarial rash are classic symptoms of anaphylaxis
- Asthma does NOT entail itching or gastrointestinal symptoms
- Syncope (fainting) presents with pallor (paleness) rather than a rash
- Panic attacks may include flushing but do not include hives

Treatment

Emergency condition requiring immediate medical attention

- Call 911 and implement EMS immediately
- Epinephrine – Primary treatment for anaphylaxis with no absolute contraindication
 - Raises blood pressure by constricting blood vessels and opening airways
 - Epinephrine injected sublingually with short needle is most effective treatment
 - Benadryl ineffective against bronchospasms and cardiovascular collapse
- CPR, positive pressure oxygen, endotracheal intubation and/or emergency tracheostomy
- Intravenous fluids and medications that support heart and circulatory system
- Antihistamines and corticosteroids to further reduce symptoms after administration of epinephrine and lifesaving measures

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