

Lesson 10: Adverse reactions (2)

Aims

- Learning the following topics about adverse reactions of iodinated contrast agents:
- Categories of adverse reactions
- Nonanaphylactoid
- Anaphylactoid
- Delayed
- High risk patients

Categories of adverse reactions

- Three categories of adverse reactions are associated with iodinated contrast agents:
- Nonanaphylactoid
- Anaphylactoid (Idiosyncratic reactions)
- Delayed

Nonanaphylactoid reactions

- Common nonanaphylactoid reactions:
- Nausea
- Vomiting
- Diarrhea
- Headache
- Dizziness

Nonanaphylactoid reactions

- For oral or rectal route of administration:
- Transient diarrhea
- Abdominal cramping
- Especially with:
 - High concentrations of contrast agent
 - Large volumes of contrast agent

Nonanaphylactoid reactions

- Common reactions:
- Pain and warmth sensation at the injection site
- Less common, but severe, reactions:
- Cardiac arrhythmias
- Pulmonary edema
- Renal failure

Anaphylactoid reactions

- A patient can experience one of these reactions the first time she/he is exposed to a contrast agent.
- Similar to allergic reactions or a hypersensitivity to iodinated contrast media

Idiosyncratic reactions

- Reason:
- unknown
- Idiosyncratic reactions may not be influenced by the:
- Iodine concentration
- Chemical properties
- Rate of the injected contrast media
- Volume of the injected contrast media

Anaphylactoid reactions

- The most common term for the "allergy type" reaction is anaphylactoid reaction.
- Allergy symptoms are produced by
- antigens
- Antibodies are formed in response to antigens →
- The antibody-antigen response →
- Stimulates the release of histamine

Histamine

- Histamine primarily effects the following systems:
- Cardiovascular
- Gastrointestinal
- Respiratory
- Central nervous system

Histamine effects

- Constricts smooth muscle
- Dilates arterioles
- Constricts venules
- Produces localized edema
- Accelerates heart rate
- Lowers blood pressure
- Increases gastric secretions
- Increases mucous secretions

Histamine

- When an excessive amount of histamine is released in the body →
- The vascular system becomes over loaded →
- Histamine extravasates outside the vessels into the surrounding tissues.
- The extravasation of histamine can cause:
 - Inflammation
 - Swelling and reddening of the surrounding tissue

Histamine

- Effects related to an excessive amount of histamine release in the body:
- Watery eyes
- Runny nose
- Migraine headaches
- Nausea
- Vomiting
- Laryngospasm
- Bronchospasm

Delayed reactions

- Delayed reactions may occur up to 6 hours after exposure to contrast media.
- Fever
- Rash
- Nausea
- Vomiting
- Headache

Risk factors for adverse events

- Major allergies
- Asthma
- Prior reaction to contrast agent
- Renal problems

High risk patients

- Patients sensitive to iodine or other iodinated contrast media
- Patients with a known clinical hypersensitivity (asthma, food allergies) have a twofold higher risk than the general population.
- Patients with a history of previous reaction to a contrast medium are three times more susceptible to adverse reactions than the general population.

High risk patients

- A positive history of allergies or hypersensitivity does not contraindicate the use of a contrast agent when a diagnostic procedure is considered essential.
- Precautions should be taken to minimize adverse reaction, including:
 - Limitation of contrast dose
 - Hydration
 - Premedication

Premedication

- The use of steroids prior to contrast medium decreases adverse events
- Patients with a history of major allergies, asthma, or a prior reaction to contrast should receive steroids the day before exam.
- For urgent patients: Initiation of intravenous steroids (hydrocortisone 200 mg) 6 hours before the exam

Summary

- Nonanaphylactoid
- Anaphylactoid
- Delayed
- High risk patients