Anaphylaxis and Contrast-Related Reactions

Dr. Srwa R. Rasul

Fundamentals of First Aid and Emergency Care for Radiography

Medical Technical Radiology Department

Fall Semester/ Lec 8

2025-2026

Student Learning Outcomes (SLOs):

By the end of this lecture, students will be able to:

1. **Define anaphylaxis** and describe how contrast media can cause allergic-like reactions in imaging units.
2. **Differentiate** between mild, moderate, and severe (anaphylactic) contrast reactions based on clinical symptoms.
3. **Identify key risk factors** and early warning signs of contrast-related reactions.
4. **Outline the essential steps** in managing anaphylaxis and contrast emergencies in the imaging unit.
5. **Explain the role of radiology technologists** in screening patients, monitoring during contrast administration, and responding to emergencies.

Anaphylaxis and Contrast-Related Reactions

Contrast media (especially iodinated contrast used in CT scans) can sometimes cause allergic-like reactions.

Most reactions are mild, but some can be severe and life-threatening (anaphylaxis).

Radiology technologists must recognize symptoms early and act quickly.

According to The American Academy of Allergy Asthma and Immunology it is a serious allergic response that often involves swelling, hives, lowered blood pressure and in severe cases, shock. If anaphylactic shock is not treated immediately, it can be fatal.

What Is Anaphylaxis

Anaphylaxis is a **sudden, severe allergic-type reaction** that affects many body systems:

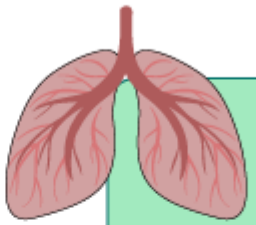
- Airway
- Breathing
- Circulation (blood pressure)

It can happen within seconds to minutes after contrast injection.

Anaphylaxis

Signs and symptoms

itching

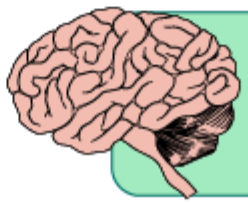


breathing difficulty,
wheezing

red rash or raised areas
of the skin (hives)

abdominal pain,
vomiting, diarrhoea

swelling
(hands, feet, face, airway)



disorder of the consciousness,
sweating and other signs and
symptoms of the developing
anaphylactic shock

Types of Contrast Reactions

A. Mild Reactions

- Usually self-limited
- Warm feeling
- Nausea or vomiting
- Mild itching
- Small skin rash or hives

Types of Contrast Reactions

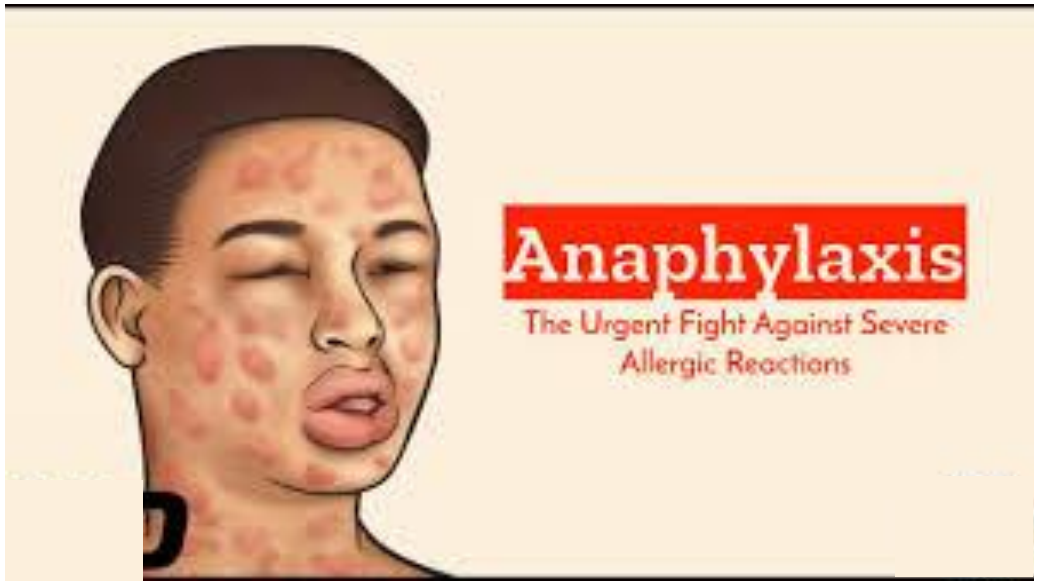
B. Moderate Reactions

- Needs medical attention
- Widespread hives
- Swelling of lips or face
- Wheezing
- Fast breathing
- Mild drop in blood pressure

Types of Contrast Reactions

C. Severe Reactions (Anaphylaxis)

- Life-threatening — emergency
- Trouble breathing / airway swelling
- Severe wheezing or bronchospasm
- Very low blood pressure
- Loss of consciousness
- Possible cardiac arrest



Risk Factors

Patients are at higher risk if they have:

1. Previous reaction to contrast
2. Asthma
3. Multiple allergies
4. Heart disease
5. On beta-blockers

- But reactions can also occur without risk factors.

Early Warning Signs

Watch the patient closely for:

- Difficulty breathing
- Chest tightness
- Swelling of face, throat, tongue
- Worsening rash or hives
- Dizziness or collapse

Anaphylaxis Response

Anaphylaxis

The four A's:

Awareness / Allergic signs & symptoms / Adrenaline / Action

Management in Imaging Unit

1. **Stop the contrast injection immediately.**
2. **Call emergency code / doctor immediately.**
3. **Help the patient lie down** (unless breathing is difficult).
4. **Give oxygen** (10–15 L/min via mask).
5. **Prepare epinephrine injection** (usually given IM by the physician).
6. **Start IV fluids** if needed (as instructed).
7. Keep monitoring vital signs.

- **Epinephrine is the FIRST and most important treatment for anaphylaxis.**

Prevention

Before Giving Contrast	Details
Ask about allergy history	Identify any known allergies, especially to medications or contrast media.
Ask if the patient had a previous contrast reaction	Previous reactions increase the risk of another reaction.
Check for asthma or breathing problems	Asthma increases the likelihood of contrast-related reactions.
Use low-osmolar contrast when possible	Safer and associated with fewer adverse reactions.
Have emergency drugs and equipment ready	Ensure epinephrine, oxygen, airway equipment, and IV access are prepared.

Role of Radiology Technologists

1. Screen all patients before contrast
2. Stay with the patient during and after injection
3. Recognize early symptoms
4. Act quickly in emergencies
5. Maintain emergency equipment
6. Communicate clearly with the team