

Asst. lecturer

Dr. Sabrin AL.Hadrawy

Histopathology

Third stage

Gangrene

is the term used to describe the decay or death of an organ or tissue caused by a lack of blood supply. It is a complication resulting from infectious or inflammatory processes, injury, or degenerative changes associated with chronic diseases, such as diabetes mellitus. Gangrene can involve any body part, but the most commonly affected areas are the extremities (feet, arms, legs, hands). The Greeks used the term *gangraina* to describe putrefaction (death) of tissue.

Types of gangrene

There are three major types of gangrene:

1. Dry gangrene
2. Moist gangrene
3. Gas gangrene (a type of moist gangrene).

1. Dry gangrene: Dry gangrene is a condition that results when one or more arteries become obstructed. In this type of gangrene, the tissue slowly dies, due to receiving little or no blood supply, but does not become infected. The affected area becomes cold and black, begins to dry out and wither, and eventually drops off over a period of weeks or months. Dry gangrene is most common in persons with advanced blockages of the arteries (arteriosclerosis) resulting from diabetes.

2. Moist gangrene: Moist gangrene is seen in internal organs where conditions are conducive for the rapid growth of organisms, viz. abundant moisture (which does not get evaporated) and optimum temperature (the part is kept warm by surrounding organs). When blood flow ceases, bacteria begin to invade the muscle and thrive, multiplying quickly without interference from the body's immune system.

3. Gas gangrene: Gas gangrene, also called myonecrosis, is a type of moist gangrene that is commonly caused by bacterial infection with *Clostridium* spp. Like, *Cl. perfringes*, *Cl. septicum*, *Cl. novyi*, *Cl. histolyticum*, *Cl. sporogenes*, or other species that are capable of thriving under conditions where there is little oxygen (anaerobic). Once present in tissue, these bacteria produce gasses and poisonous toxins as they grow. Normally inhabiting the gastrointestinal, respiratory, and female genital tract, they often infect thigh amputation wounds, especially in those individuals who have lost control of their bowel functions.

CAUSES OF GANGRENE

There are so many causes, some are direct and some are indirect:

1. Direct damage to the tissues resulting gangrene.

a. Mechanical causes such as trauma or injury: In the small injury, the saprophytic or putrefactive bacteria may not grow. When an extensive area is damaged then there is invasion of bacteria. If body immunity fails only in that case gangrene may occur. In this case, anaerobic condition provides the bacterial multiplication / presence of energy related diseases.

b. Physical cause:

- Excessive hot: By burning. A small injury or burning may lead to gangrene in case of diabetic patient.

- Excessive cold:

- Radiation:

c. Chemicals

d- Microbs:

2. Indirect changes of the tissue:

- **Obstruction:** Local obstruction of the blood vessels due to thrombi, emboli, especially in coronary blood vessels.
- **Lack of utilization of energy:** Diabetes mellitus. In case of diabetes patient, any injury or wound heals very slowly. So in these case, there is every possibility of invasion by saprophytic and putrefactive bacteria and thus formation of gangrene.
- **Lack of immunity:** In AIDS patient, there is lack of immunity and chance of formation of gangrene.



Moist gangrene



Dry gangrene



Gas gangrene



wet gangrene of the intestine