

Gangrene

Gangrene: is a necrotic tissue invaded (infected) by saprophytic bacteria found in the skin usually in the extremities and intestine. Toes, feet, lower limbs and sometimes fingers can all become vulnerable to the conditions that may cause gangrene. Symptoms include numbness in the affected part and it will also be cold to the touch.

Causes of gangrene

- 1) Ischemia.
- 2) Infection.
- 3) Thrombosis.
- 4) Decrease blood supply.

Ischemia: Is a restriction in blood supply to tissues, causing a shortage of oxygen and glucose needed for cellular metabolism (to keep tissue alive). Dysfunction of tissue resulting from congestion (such as vasoconstriction, thrombosis or embolism).

There are three types of gangrene:-

1) Dry gangrene characterized by :-

- a) **Solid, dense** and **dry** occur in solid organ with reduce blood supply ex: - nose and ear.
- b) Few putrefactive odor.
- c) Few bacterial proliferation with presence of inflammatory cells.
- d) Permanent inflammatory cells between gangrene and living tissue.

2) Moist gangrene characterized by:-

1. **Moist and spongy** occur in the soft organ with rich blood supply
ex :- udder and intestine.
2. Too much putrefactive odor.
3. Too much bacterial proliferation with unclear inflammatory cells.
4. Inflammatory line not permanent.

3) Gas gangrene characterized by:-

- a) Bacterial infection that produces gas within tissues.
- b) Deadly form of gangrene usually caused by *Clostridium perfringens* bacteria.
- c) Bacteria enter the muscle through a wound and subsequently proliferate in necrotic tissue and secrete powerful toxins.
- d) These toxins destroy nearby tissue, generating gas at the same time.

Fate of gangrene

Gangrene is treatable if the symptoms are recognized early, before the death of tissue occurs. After tissue dies, removal of the dead tissue or amputation is the usual treatment. The fate of gangrene is death because **sapremia** (circulation of saprophytic bacteria and their toxin in the blood after gangrene formation).

Infarction :is a coagulative necrosis in the area in which cut of oxygenated Blood (ischemia) occur at the end of artery and infarction area is triangular surrounded by inflammatory cell with connective tissue replacement .There are two types of infarction:-

Red infarction (hemorrhagic)

- 1) Occur within 2-3 days.
- 2) Occur in soft tissue: brain, lung, heart depend on the time.
- 3) Gross appearance the area of infarction is red color with bulging.
- 4) In microscopic appearance: dispersion of inflammatory cells with bleeding and irregular borders.

White infarction (anemic)

- 1) Occur after 3 days.
- 2) Solid organ such as kidney
- 3) Grossly: the area of infarction is dispersed and pale in color.
- 4) Microscopically inflammatory cells prominent with regular border.