Gangrene

Gangrene is ischemic tissue necrosis with desiccation (dry gangrene) or putrefaction (wet gangrene).

Etiology

1- Thrombosis, e.g. arterial inflammation.
2- Embolus, e.g. atherosclerotic emboli in peripheral vascular disease.
3- Extrinsic compression, e.g. fracture, organ torsion, tourniquet.

Clinical appearances

Dry gangrene

The affected limb, digit, or organ is black (because of breakdown of hemoglobin), dry, and shriveled. Dry gangrene shows little or no tendency to spread. A zone of demarcation appears between the dead and viable tissue and separation begins to take place by aseptic ulceration in a few days.

Wet gangrene

Veins as well as arteries are blocked. Pain is initially severe but lessens as the patient becomes more septic. There is always infection. The skin and superficial tissues become blistered. There is a broad zone of ulceration that separates it from normal tissue. Proximal spread is a feature leading to septicemia and death.

Gas gangrene

Gangrene complicated by infection with gas-producing anaerobic bacteria, e.g. Clostridium perfringens. Gases elaborated from putrefaction lead to surgical emphysema and crepitus.

Principles of treatment

A- Systemic treatment.
1- Aggressive fluid resuscitation is often necessary.
2- Pain relief (IV morphine 5-10mg).
3- IV antibiotics broad-spectrum (e.g. benzylpenicillin, metronidazole, piperacillin/tazobactam, or according to microbiological advice).

B- Conservative treatment. Only possible for non-vital organs affected by dry gangrene (e.g. toes/forefoot). Aim is to let the affected areas mummify and spontaneously separate.
C- Surgical salvage procedures. Conservative excision possibly combined with reconstruction or restoration of blood supply. (e.g. foot amputation and bypass surgery for distal lower limb gangrene).
D- Radical surgical excision. Only possible where affected organ is completely respectable (e.g. limbs, perineal tissues)-excision must be radical in spreading or gas gangrene. Ensure all pus is released and all affected tissue (not just the necrotized area) is excised back to bleeding healthy tissue. Often requires relook surgery to ensure adequate excision of infected tissue.

Palliative care.
Considered for unrespectable gangrene (e.g. retroperitoneal gangrene, very extensive intestinal gangrene) or for elderly sick patients where surgery is inappropriate.

Prognosis:
according to the dead area