

Pathogenic Bacteria

Gram-positive cocci

Staphylococcus

- Spherical cells arranged in clusters (grape-like) ,non-motile, non-sporing, grow aerobically and anaerobically.
- *Staphylococcus aureus* produce a golden yellow pigment.
- It cause **skin lesions as boils** and might cause **osteomyelitis**.
- It produces enterotoxin that causes **food poisoning** if ingested with food.
- Pus producing (**pyogenic**).
- Can also cause **impetigo, conjunctivitis, scalded skin syndrome** and **toxic shock syndrome**



Fig. 4 Huge abscess (carbuncle) on back with yellow pus, necrosis, ulceration and local spread.



Fig. 2 Vasculitis in *S. aureus* septicaemia.

Streptococcus

- Spherical cells grow in chains and can grow aerobically and anaerobically.
- *Streptococcus pyogenes* produces many toxins including an erythrogenic toxin which induces a characteristic **red rash** and other toxins which destroy RBCs and WBCs.

- Typical disease caused by *Streptococcus pyogenes* are **scarlet fever** and **acute tonsillitis (sore throat)** .
- It can infect wounds and in blood poisoning after childbirth (**puerperal sepsis**)
- Serious streptococcal infections include **rheumatic fever** and **acute inflammation of the kidney**.
- Invasive streptococcal infection can cause **necrosis of subcutaneous tissue** (**necrotizing fasciitis**)

Strep throat is caused by group A *Streptococcus* bacteria





Figure 27.5 Individual with *Streptococcus pyogenes* “Flesh-Eating” Disease (Necrotizing Fasclitis)

Erysipelas is a dermatologic condition, which involves the inoculation of the skin and subcutaneous tissue with streptococcal bacteria causing edema and bright red erythema of the affected areas. It is sometimes referred to as cellulitis



Streptococcus pneumonia

is the causal agent of :-

1. Acute lobar pneumonia.
2. Meningitis.
3. Peritonitis.
4. Conjunctivitis.

Gram-negative cocci



Neisseria and Branhamella

- The genus ***Neisseria*** has cells like kidney shape, occurs in pairs and embedded in pus cells.
 - ***Neisseria gonorrhoeae*** is the causative agent of the venereal disease (**gonorrhea**).
- It can also affect the eyes, causing **ophthalmia**.
- ***Neisseria meningitis*** cause **cerebrospinal fever** or **meningococcal meningitis**.
- ***Branhamella catarrhalis*** (formally known ***Neisseria catarrhalis***) is often isolated from sputum and is non-pathogenic

Gram-positive bacilli

Clostridium

- *Cl. septicum*, *Cl. perfringens (welchii)* and *Cl. novyi (oedematiens)* cause damage to tissue if they are able to develop in wounds.
- Tissue may be destroyed and CO₂ produced from muscle glycogen to form **gas gangrene**
- *Cl. botulinum* cause **food poisoning** by secreting an extremely toxic nerve poison (**neurotoxin**).

- *Cl.tetani* produces a powerful central nervous system poison and give rise to condition known as **lockjaw** or **tetanus**.
- *Cl.sporogenes* is non-pathogenic
- *Cl.difficile* cause **pseudomembranous colitis** after therapy with antibiotics such as clindamycin or ampicillin.

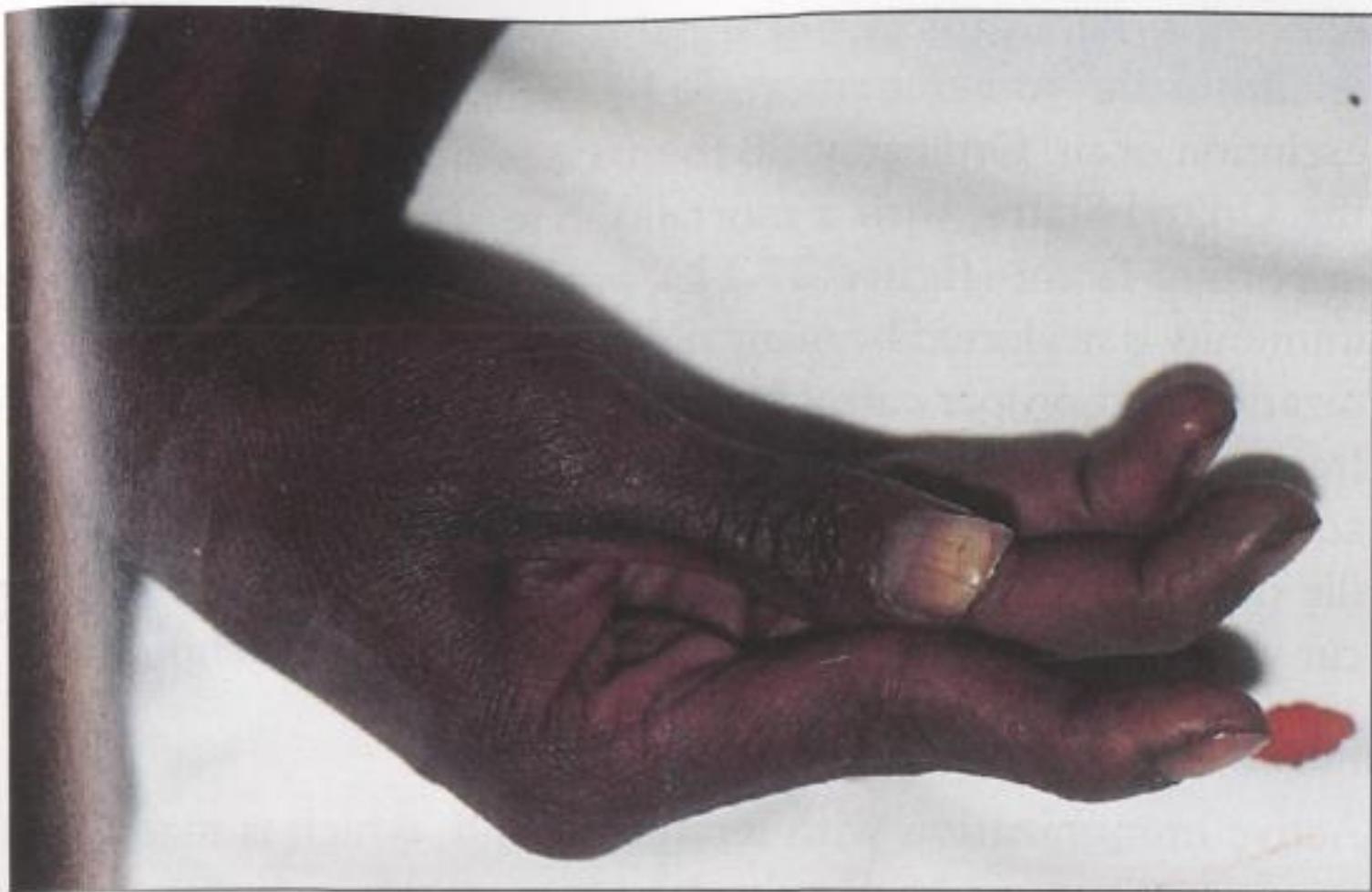


Figure 27.7 Marked Muscular Spasm of the Wrist and Hand of an Individual with Tetanus In most tetanus cases, the spasms are generalized, meaning they involve all the body's muscles.

Corynebacterium

- *Corynebacterium diphtheriae* is the causal organism of diphtheria, which has been eradicated by immunization



Fig. 4 Bull neck diphtheria.

- *Gardnerella vaginalis* (previously named *Haemophilus vaginalis*) is part of the normal flora of vagina but it can cause **vaginitis**.
- It respond to treatment with metronidazole