BONES AND JOINTS

- It is made up of two components:
  - Organic matrix (osteoid)
  - Calcium hydroxyapetite

- Cells of bones:
  i. Osteoprogenitor cells: plueripotent stem cells that gives rise to other cells.
  ii. Osteocytes:
    - Maintains calcium and phosphate levels.
    - Homeostasis in bones.
  iii. Osteoblasts : initiate process of mineralisation, synthesise, transport and arrange many matrix process.
  iv. Osteoclasts: cells responsible for bone resorption.

- Infections:

i.Osteomyelitis :

- Inflammation of bone/secondary to infection.
- Secondary to systemic diseases or solitary to focus diseases.
- Mainly caused by pyogenic bacteria and mycobacteria.

i. Pyogenic osteomyelitis:

- Caused by bacteria.
- Haematogenous spread.
- Initial bacteremia.
- In adults, open fractures, surgical procedures, diabetic infection of feet.

- Causative agent:
  - ✓ Mainly staphylococcus aureus.
  - ✓ Location: within the bone is based on osseous vascular circulation.

- Clinical cause:
  - ✓ If the spread is haematogenous, symptoms are systemic.
  - ✓ Intense throbbing pain in the affected area.
  - ✓ Cystic focus of bone destruction with zone of bone sclerosis (radiographic).
  - ✓ Chronic osteomyelitis complications:
    1. Pathologic fractures 2.Amyloidosis 3.Sepsis
    4. Endocarditis 5.Sqamous cell carcinoma

- Morphology :

Bacterial proliferation in bone

↓

Acute inflammatory reaction

↓

Necrosis of entrapped bone with 48 hours

↓

Spread of bacteria and inflammatory exudates

↓

Shaft of bone perforate

↓

Haversian system

↓

Periosteum

↓

Subperiosteal abscess raise periosteum

↓

Impair blood supply to underlying bone

↓

Supparative and ischemic injury

↓

Bone necrosis

↓

Dead piece of bone (Sequestrum)

↓

Rupture of periosteum (formation of draining sinus)

↓

Spread of ephiphyseal infections

↓

Septic/supparative arthritis

↓

After 1st week of inflammation

↓

Chronic phase

↓

Chronic inflammatory cells

↓

Involucrum

↓

Brodie's abcess

↓

Involving the cortex and walled off by reactive bone

ii. Tuberculous osteomyeilitis

- Osseous involvement – 1-3% individual with TB or extrapulmonary TB
- Blood borne organism causes it.
- Other routes – draining lymphatics

- Site of involvement:
    1. Spine(T&L) - 40% of cases
    2. Knee
    3. Hip

- Involvement of spine – **Pott's disease**
- Breakthrough of the infection along intervertebral disc
- Extension of soft tissues to form abscess – **Cold Abscess**

- Clinical cause:
    1. Pain on motion
    2. localised tenderness
    3. low grade fever
    4. chills
    5. Weight loss
    6. Permanent compression fracture due to severe destruction of vertebrae
    7. Kyphotic or scoliotic deformation.