Bone tumours

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Introduction

- Benign
- Malignant
    - Primary
    - Secondary (metastatic)

Benign

Osteochondroma
Cartilage capped exostosis

- Bony protuberance in metaphyseal region of long bones, rarely flat bones
- Patients <20years
- Rarely multiple tumours = diaphyseal aclasis
- Complications:
    - Compression of blood vessels, nerves
    - Chondrosarcoma arising in cartilaginous component

- **<u>Chondroma (enchondroma)</u>**
- Composed of cartilage
- Common in small bones of hands and feet
- May be multiple (Ollier's disease)

- **<u>Complications</u>**
- Chondrosarcoma development
- Pathological fracture

Osteoid osteoma

- Benign bone forming tumour
- Less than 2cm in diameter
- Young patients less than 25years
- Usually in cortex of long bone
- Severe pain, usually nocturnal
- Relieved by aspirin

Simple bone cyst

- Unilocular cyst in bone
- Complication: pathological fracture

Aneurysmal bone cyst

- Blood-filled multilocular cyst in bone
- May be primary, or arise in another bone tumour.

Malignant

Osteosarcoma

- Most common primary malignant bone tumour
- Peak age incidence: 10-20years
- Rarely in elderly as a complication of Paget's disease or previous irradiation
- Male:female = 2:1
- Metaphysis of distal femur, proximal tibia, proximal humerus
- Also found in flat bones; bones of the skull

- Usually arise in marrow cavity
- With increasing size: elevation of periosteum (Codman's triangle)
- Sun-ray appearance on X-ray
- Microscopic: malignant osteoblasts producing osteoid.

- **<u>Spread</u>**:
- Direct (in marrow cavity, to adjacent soft tissue)
- Haematogenous (to lungs)

- **<u>Treatment</u>**: aggressive chemotherapy and surgery

Chondrosarcoma

- Most arise *de novo*, rarely from osteochondroma/ enchondroma
- Long bones or flat bones
- 4-6th decade
- Less aggressive that osteosarcoma
- Local recurrence rather than haematogenous spread

Giant cell tumour (osteoclastoma)

- Locally aggressive lytic tumour
- Epiphysis of long bones
- Two types of cells: Fibroblast-like stromal cells; Osteoclast-like giant cells
- 20-40 years
- Local recurrence, haematogenous spread may occur.

Ewing's sarcoma

- Children and teenagers
- Highly malignant, relatively rare
- Diaphysis or metaphysis of long bones
- Small round cells with little cytoplasm
- Metastasize early (principally to the lungs)

Myeloma / plasmacytoma

- Cell of origin: plasma cell
- Elderly patients
- Multiple lytic skeletal lesions
- Plasmacytoma = localized tumour mass

Complications

- Pathological fractures
- Infections - abnormal plasma cells produce abnormal immunoglobulins
- Renal
- Haemotologic

Renal Complications

- Deposition of Ig light chains ('Bence-Jones proteins')
- Nephrocalcinosis
- Amyloidosis

Haemotological Complications

- Anemia and bleeding tendency - normal haemopoietic tissue replaced by abnormal plasma cells.
- Hyperviscosity of blood - especially if increased IgM. Visual impairment and neurological problems due to sluggish blood flow.

Secondary (Metastatic) tumours

- More common than primary bone tumours
- **Adults**:
  - Breast, kidney, thyroid, prostate, bronchus
- **Children**:
- Neuroblastoma

Conclusion

- The most common neoplasms in bone are metastasis
- Most primary bone tumours are benign
- The most common malignant primary bone tumour is osteosarcoma