Primary Bone Cancer Flashcard

Approximately 560 people are diagnosed with primary bone cancer in the UK every year

Risk Factors

- Previous radiotherapy
- Previous primary bone cancer
- Paget's disease of bone
- Childhood cancer
- Germline abnormalities
- Benign bone lesions

Clinical Presentations

- **Bone pain**
  - **Worse at night** 🚩
  - Constant or intermittent
  - Resistant to analgesia
  - May increase in intensity
- **Atypical bony or soft tissue swelling/ masses** 🚩
- **Pathological fractures** 🚩
- Easy bruising
- Mobility issues – unexplained limp, joint stiffness, reduced ROM
- Inflammation and tenderness over the bone
- Systemic symptoms

Causes

- Generally unknown
- Genetics

Investigations

- Plain X-ray is the first line investigation (normal x-ray does NOT rule out primary bone cancer)
- Bloods: ESR, ALP, LDH, FBC, U&E, Ca^{2+}
- If 40+yo, CT Chest, Abdo, Pelvis to rule out a source of metastatic bone cancer
- **Biopsy is the diagnostic investigation**

Management

- Neoadjuvant and adjuvant chemo in most primary bone cancers (except Chondrosarcoma)
- Radiotherapy (in Ewing sarcoma predominantly)
- Surgery in most cases of primary bone cancer depending on location
  - Limb sparing
  - Amputation

Radiological Features

- Bone destruction
- New bone formation
- Soft tissue swelling
- Periosteal elevation

🚩 **Red Flag Symptom**

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The three most common types of primary bone cancer are:

Chondrosarcoma

- Most common in adulthood
- Malignant mass of chondrocytes
- Can arise from chondromas
- Highest incidence: 30-60 years old
- Locally aggressive
- Common sites: long bones, pelvis and ribs
- Typical radiology: popcorn calcification
- Tx: excision only (chemotherapy and radiotherapy resistant)

Osteosarcoma

- Most common in children and young adults
- Malignant mass of osteoblasts
- Biphasic incidence peak: 15-19 years old, 70-89 years old
- Commonest site: long bones, especially around the knee
- Typical radiology: sunray spiculation, Codman's triangle
- Tx: surgery, chemotherapy

Ewing sarcoma

- Second most common in children and young adults
- Malignant mass of neural crest cells
- Highest incidence: 10-20 years old
- 9x more common in Caucasians vs Black African or Chinese origin
- Common sites: long bones, pelvis, ribs, vertebrae
- ALWAYS high grade
- Typical radiology: onion ring sign
- Tx: chemotherapy, surgery, radiotherapy

General Epidemiology

- More common in males
- Common sites: long bones
- Prognosis: better if younger and no metastases

Other types:

- Chordoma (occurs at the base and length of the spine and base of the skull)
- Spindle cell sarcoma of the bone
- Adamantinoma
- Angiosarcoma of the bone
- Giant cell tumour of the bone (benign)

Produced by Medical Students from the University of Sheffield as part of their Social Accountability SSC placement at BCRT.

For more information visit the Bone Cancer Research Trust website at bcrt.org.uk

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Sources: BCRT website; Oxford handbook of clinical specialities, UK guidelines for the management of bone sarcomas (2016, C. Gerrand et al)