

Primary Bone Cancer Flashcard

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** 🚩
- Mobility issues – unexplained limp, joint stiffness, reduced ROM
- Easy bruising
- Inflammation and tenderness over the bone
- Systemic symptoms (most commonly fatigue)

Investigations

- Plain X-ray is the first line investigation (normal X-ray does NOT rule out primary bone cancer)
- If pain is persistent consider MRI if X-ray is clean
- Bloods: ESR, ALP, LDH, FBC, U&E, Ca²⁺
- If 40+yrs, CT Chest, Abdo, Pelvis to rule out a source of metastatic bone cancer
- Biopsy is the diagnostic investigation

Radiological Features

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

Primary bone cancer can occur at any age and have the same incidence as bacterial meningitis with **560 new diagnoses each year in the UK**

Risk Factors

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

🚩 **NICE Guidelines Red Flag Symptom**

What to do if you suspect a primary bone cancer:

Refer for Plain X-ray via 2 week wait (adult) or within 48 hours (child).

If the results look indicative or suspicious for primary bone cancer: Refer directly to a specialist Bone Cancer Centre. For details on these, visit bcrt.org.uk/awareness

If the results look negative or clear: If symptoms persist, refer for further imaging including MRI via 2 week wait (adult) or within 48 hours (child).

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
- Common sites: long bones, especially around the knee
- Typical radiology: sunray spiculation, Codman 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

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 but locally aggressive)

General Epidemiology

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

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

For more information visit bcrt.org.uk/awareness

Produced by the Bone Cancer Research Trust and Medical Students from the University of Sheffield.

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Sources: Bone Cancer Research Trust website; Oxford Handbook of Clinical Specialties, UK guidelines for the management of bone sarcomas (2016, C. Gerrard et al). Charity details: Bone Cancer Research Trust charity no 1159590, Children with Cancer UK charity no 298405.

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