

Diagnosis of bone tumours in children and young people

A summary for healthcare professionals

Consider a bone tumour in any child presenting with:

- Bone pain
- Swelling
- Bone mass/lump
- Restricted movement/limp

Associated symptoms:

- Persistent back pain, especially with associated bladder/bowel/erectile dysfunction
- Weight loss

Ask about common predisposing factors

- Personal history of Li-Fraumeni syndrome
- Hereditary retinoblastoma

Assess with:

History

- associated symptoms
- any predisposing factors
- family history
- detailed injury history

Examination of:

- Joint/limb
- Joint above and below
- Weight
- Neurological examination
- pGALS examination*

<https://ped-rheum.biomedcentral.com/articles/10.1186/1546-0096-11-44>

Diagnostic pitfalls

- Initial symptoms of bone tumour can be attributed to injury
- Symptoms frequently fluctuate - resolution then recurrence does not exclude a bone tumour
- An initial normal X-ray does not exclude a tumour
- Attributing a red, warm swelling or a bony lump/mass to infection despite no response to antibiotics
- Not enquiring about activities of daily living

Referral from primary care

- High risk of tumour: SAME DAY referral to secondary care
- Lower risk*: discuss with paediatrics by phone to advise best route

Imaging

- High risk of tumour: URGENT X-ray imaging
- Lower risk*: X-ray imaging within 4 weeks

*bone tumour in differential diagnosis, low index of suspicion

Bone pain

- Consider a bone tumour in any child with persistent* bone pain
- Ask about the presence of the other symptoms of a bone tumour (swelling, palpable lump, restricted movement/limp, fever, weight loss, back pain and bowel/bladder/erectile dysfunction) in a CYP presenting with persistent bone pain.
- Bone pain from a bone tumour can occur at any time of the day or night
- Injuries can be a red herring. Take a detailed history of the events including the onset of the symptoms after the alleged injury. Pain secondary to an injury will get better day by day.

X-ray imaging required with:

- Persistent bone pain, especially if worsening
- Localised bone pain that is waking a child or young person at night
- Unexplained bone pain (i.e. without any preceding injury)
- Bone pain that is out of proportion to the injury sustained or that does not improve 2 weeks from injury
- Bone pain with associated neurological symptoms
- Persistent back pain or pelvic pain (discuss with paediatric radiologist as X-ray may not be best imaging of choice)

Diagnostic pitfalls:

- Attributing symptoms to an injury incorrectly
- Assuming that a normal X-ray findings exclude a bone tumour

*Persistent = continuous or recurrent bone pain present for more than 2 weeks

Swelling

- Swelling from a bone tumour can be discrete or diffuse
- It can occur along the long bone or around a joint
- Swelling due to a bone tumour can present with overlying erythema
- Ask about the presence of the other symptoms of a bone tumour (bone pain, palpable lump, restricted movement/limp, fever, weight loss, back pain and bowel/bladder/erectile dysfunction)

X-ray imaging required with:

- Persistent swelling* rapidly increasing in size.
- Persistent swelling* not resolving despite treatment with regular anti-inflammatories or antibiotics.

Diagnostic pitfalls:

- Attributing a red warm swelling to infection despite no improvement with antibiotics

*Persistent swelling present for more than 2 weeks

Bone mass/lump

- A bony mass/lump which is increasing in size can be a sign of a bone tumour
- Ask and examine for the other signs and symptoms suggestive of a bone tumour (bone pain, swelling, limp/restricted movement, fever, weight loss, back pain and bladder/bowel/erectile dysfunction) in CYP with a lump/mass.

X-ray imaging required with:

- A rapidly increasing lump
- A lump/mass with one or more other symptoms

Diagnostic pitfalls:

- Attributing a bony lump/mass to infection despite no response to antibiotics

Restricted movement/limp

- A bone tumour in the pelvis or lower limb can present as a limp
- A bone tumour in the upper limb can manifest as restricted movement
- Ask about the presence of the other symptoms of a bone tumour (bone pain, palpable lump, restricted movement/limp, fever, weight loss, back pain and bowel/bladder/erectile dysfunction. Have a high level of concern for a CYP who is normally highly active or sporty but is no longer able to play sport due to the presenting symptom.

X-ray imaging required with:

- A CYP who is non-weight bearing
- Persistent restricted movement despite adequate analgesia

Diagnostic pitfalls:

- Failure to enquire about activities of daily living

*Persistent = present for more than 2 weeks

Associated symptoms

- Persistent back pain especially with associated bladder/bowel/erectile dysfunction
- Weight loss

For additional support, visit
www.cclg.org.uk/childcancersmart/bone