6 year old male presents with abnormal gait

Ryan Joyce, MD

UCONN HEALTH
RADIOLOGY

UCONN HEALTH
RADIOLOGY

UCONN HEALTH
RADIOLOGY

?

UCONN HEALTH
RADIOLOGY

Conventional Osteosarcoma

UCONN HEALTH
RADIOLOGY

Metaphyseal location

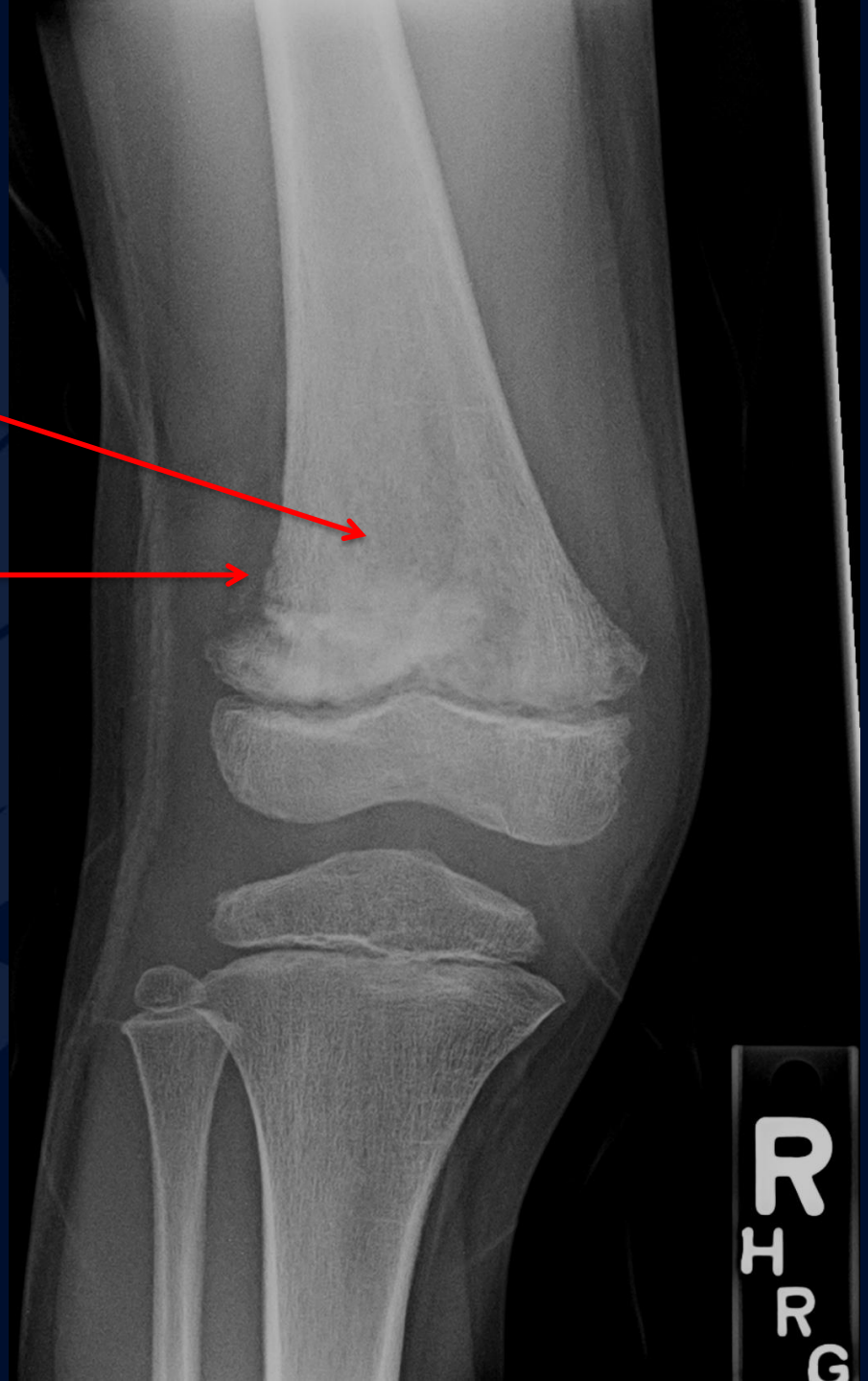
Permeative, ill-defined appearance

Cortical destruction

Soft tissue component

Aggressive periosteal reaction

Codman’s triangle



UCONN HEALTH
RADIOLOGY

Metaphyseal location

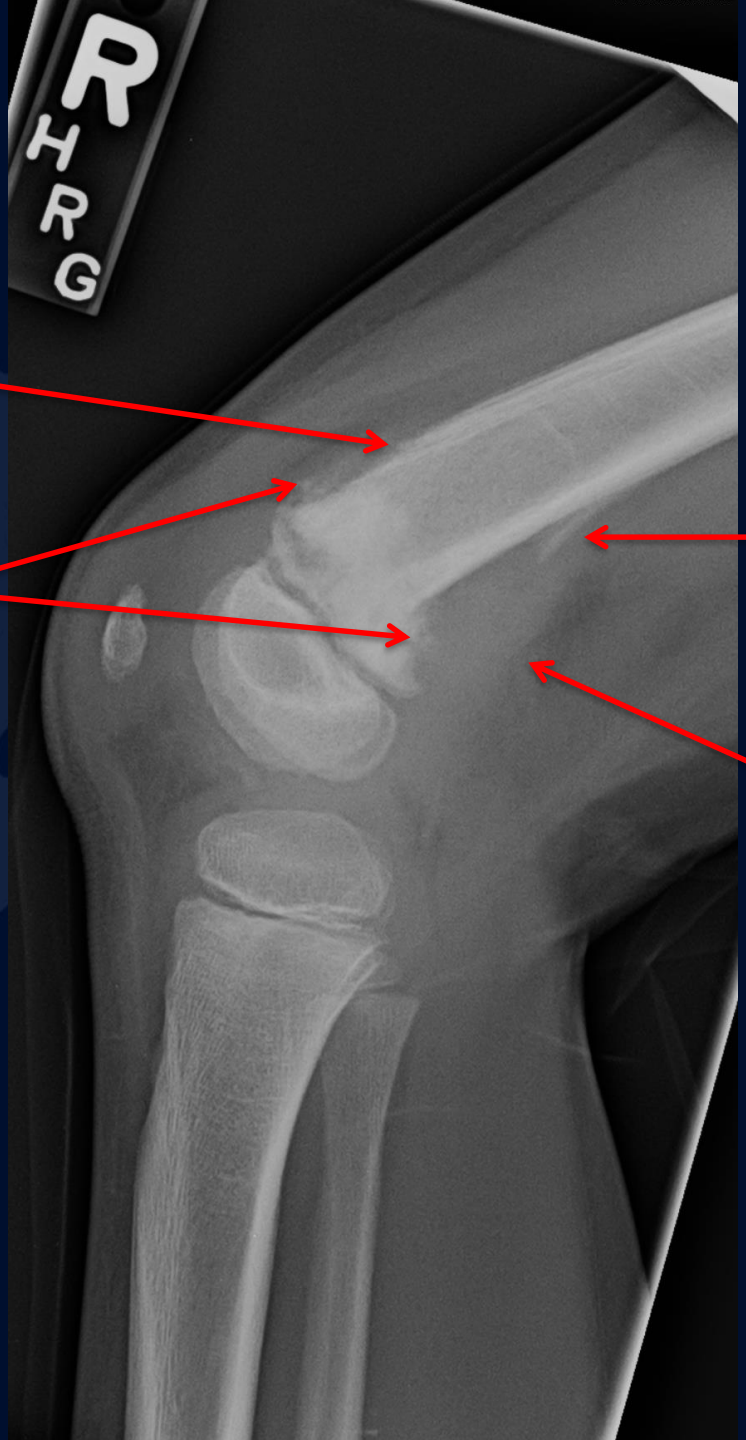
Permeative, ill-defined appearance

Cortical destruction

Soft tissue component

Aggressive periosteal reaction

Codman’s triangle



Codman’s triangle

Soft tissue component

UCONN HEALTH
RADIOLOGY

Conventional Osteosarcoma

Malignant osteoid-producing tumor originating in intramedullary space

- DDx in a child of this age includes:
  - Ewing sarcoma (usually diaphyseal but can be metaphyseal).
  - Osteomyelitis
  - Myositis ossificans
  - Bone Infarct

UCONN HEALTH
RADIOLOGY

Conventional Osteosarcoma

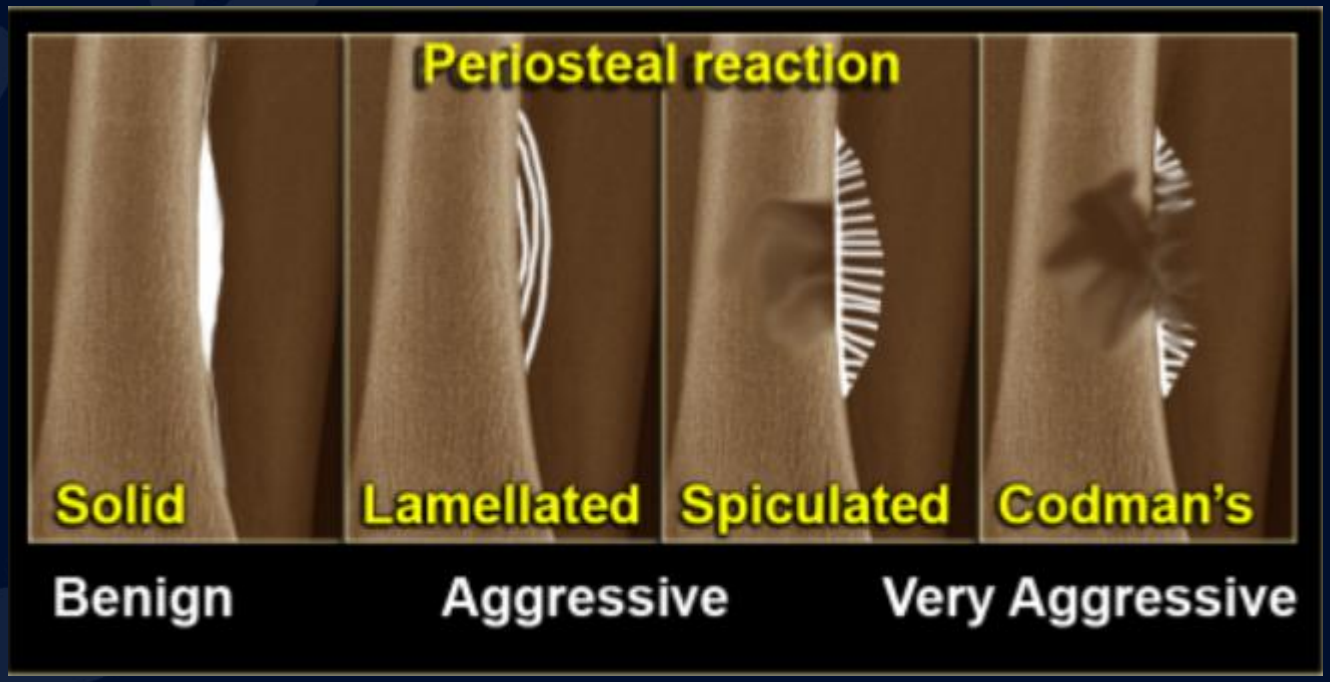
Imaging pearls:

- Metaphyseal lesion (91%), diaphyseal in 9%. Femur (40-45%) > tibia (16-20%) > humerus.
- Rapid growth
- Permeative, destructive lesion located in metaphysis
- Wide zone of transition, no sclerotic margin
- Variable density, amorphous osteoid matrix
- Aggressive periosteal reaction: Codman's triangle, interrupted, "sunburst" reaction.
- Lung mets may be ossified.
- Generally diagnosed on radiograph, CT used to eval for lung mets and image-guided biopsy.

UCONN HEALTH
RADIOLOGY

Conventional Osteosarcoma

Periosteal reaction:



radiologyassistant.nl

UCONN HEALTH
RADIOLOGY

Conventional Osteosarcoma

Clinical:

- Most commonly occur in 2nd decade (75% in patients <25 years old). Rare in patients <6 and >60.
- Most common malignant bone tumor in children/adolescents.
- 5-10% have pulmonary metastases at presentation.
- Multidisciplinary therapy results in disease-free survival of 60-80% if patients are good responders to chemotherapy.
- Local recurrence or systemic metastases generally occur within 2 years but long-term surveillance is still required.

UCONN HEALTH
RADIOLOGY

References

1. Kaste, SC. Imaging pediatric bone sarcomas. Radiol Clin North Am. 2011;49(4):749-65.
2. DiffusRadiologyassistant.nl
3. Murphey MD et al: The many faces of osteosarcoma. Radiographics. 17(5):1205-31, 1997

UCONN HEALTH
RADIOLOGY