

Pseudolesions referred to an orthopedic oncologist: A Review

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Background:

In spite of recent advances in radiological imaging, characterizing and discriminating focal lesions can still present as a challenge to radiologists. Pseudolesions are focal abnormalities that can mimic true lesions. They are encountered in routine imaging studies frequently. Some of these focal lesions may be true neoplasms, others may just appear so on imaging. These may be due to infection, congenital abnormalities, iatrogenic lesions, artifacts, and arthritic changes associated with an imaging modality.

We investigate pseudolesions and their radiological characteristics through a case based review.

Methods:

A comprehensive PUBMED search was conducted using key words relevant to pseudolesions and orthopedic oncology that fit into the following categories: normal variants, congenital, iatrogenic and degenerative.



Focal periphyseal edema (FOPE) - During the process of skeletal maturation, new cartilage is added to the epiphyseal border of the physis that subsequently is mineralized as a form of metaplastic bone, forming the first union between the epiphysis and diaphysis.

Figure 2: Coronal T1-weighted image shows a centrally located focal bone marrow edema adjacent to the femoral physis (white arrow), likely related to early stages of physal closure.



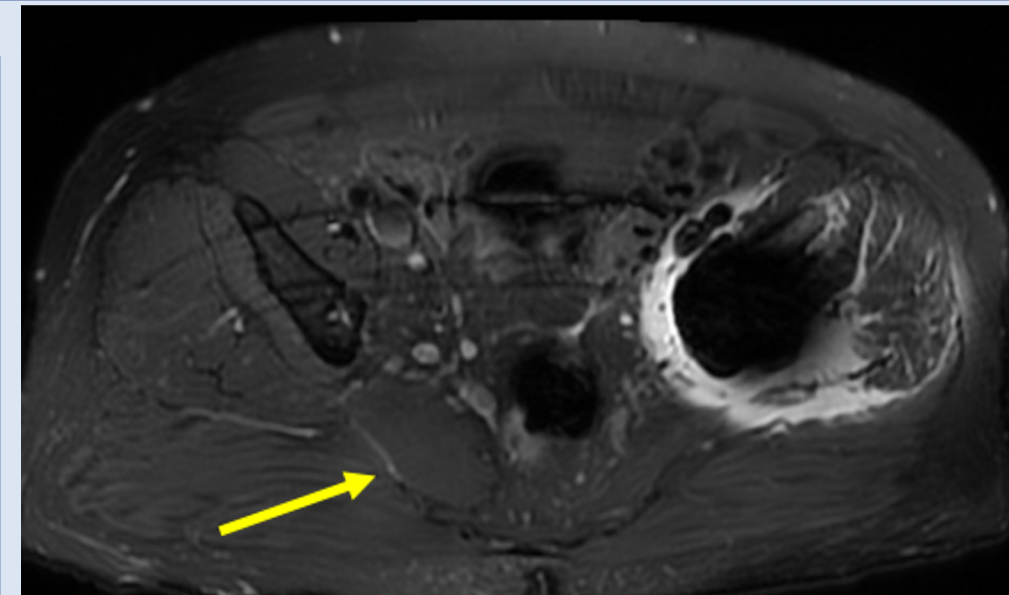
Ossification variant of posterior condyle of knee appear as ill-defined defects in the posterior third of the femoral condyle, representing incomplete epiphyseal bone formation

Figure 1. Ossification variant of posterior condyle of knee. Lateral radiograph of the left knee portrays subchondral irregularities in the lateral femoral condyle (white arrow).



Stellate Crease Lesion is located medial to the supraacetabular fossa, above the anterosuperior margin of the acetabulum.

Figure 3 : Coronal T1 image demonstrated the bare area within the articular surface of the acetabulum (yellow arrow).



Local muscle hypertrophy can occur as the result of excess activity of the muscle group or can occur from a hereditary "tic. Asymmetric muscle hypertrophy may present as a soft tissue mass, although MRI can show enlarged muscle, excluding a neoplasm.

Figure 4: Asymmetric muscle hypertrophy - Axial T2 FS image demonstrated peculiar thickening of the piriformis muscle (yellow arrow).



Dorsal defect of the patella is a subarticular abnormality in the superolateral aspect of the patella with unknown etiology . The dorsal patellar defect appears as a 1-2 cm rounded area of lucency in the same location as the bipartite patella on a radiograph

Figure 5: Dorsal defect of the patella. Lateral view of the left knee, showing a well marginated osteolytic lesion (white arrow) on the superolateral aspect of the patella, surrounded by faint sclerosis.



Cortical irregularity of the posteromedial distal femoral metaphysis also known as cortical desmoids or cortical avulsive injuries . Classically seen at the posteromedial aspect of the distal femur, they are related to repetitive stress at the attachment of the medial head of the gastrocnemius or less frequently the lateral head of the gastrocnemius or the aponeurosis of adductor magnus attachment sites.

Figure 6: On lateral view of the knee joint, note the well-defined region at the posterior aspect of the distal femoral metaphysis surrounded by sclerosis demonstrating cortical irregularity of the posteromedial distal femoral metaphysis.

RESULTS:

Numerous pseudolesions found throughout the musculoskeletal system and how they appear on different imaging modalities are discussed, which can be mistaken for true pathology.

CONCLUSIONS:

It is essential for both the radiologist and provider to realize the difference between pseudolesions and malignant lesions. By considering the patient's past medical history, prior imaging, and physical exam, the radiologist can avoid this pitfall. Having the skillset to determine if a lesion should need further workup is necessary in order to prevent misdiagnosis, unnecessary procedures, and additional medical costs.

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