

AMSER Case of the Month

September 2024

31-year-old with history of diffuse large B-cell lymphoma on chemotherapy presenting with worsening bilateral gluteal and posterior thigh numbness

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Patient Presentation

- HPI: 31-year-old with history of diffuse large B-cell lymphoma on chemotherapy presenting with worsening bilateral gluteal and posterior thigh numbness.
- Three days of right muscle thigh pain with exertion and walking; unable to bear weight.
- Clinical differential diagnosis: Cauda equina syndrome vs spinal metastasis vs epidural abscess vs bone malignancy

Pertinent Labs

- CBC: WBC 1.1, Hb 13.7, platelets 78
- BMP: Glucose 89, creatinine 0.69, anion gap 19
 - Calcium 12.3
 - Slightly elevated AST

What Imaging Should We Order?

ACR Appropriateness Criteria

Variant 1: Suspect primary bone tumor. Initial imaging.

Procedure	Appropriateness Category	Relative Radiation Level
Radiography area of interest	Usually Appropriate	Varies
CT area of interest with IV contrast	Usually Not Appropriate	Varies
CT area of interest without and with IV contrast	Usually Not Appropriate	Varies
CT area of interest without IV contrast	Usually Not Appropriate	Varies
FDG-PET/CT whole body	Usually Not Appropriate	☢☢☢☢
MRI area of interest without and with IV contrast	Usually Not Appropriate	○
MRI area of interest without IV contrast	Usually Not Appropriate	○
Bone scan whole body	Usually Not Appropriate	☢☢☢
US area of interest	Usually Not Appropriate	○

This imaging modality was ordered by the physician



ACR Appropriateness Criteria

Variant 5: Suspect primary bone tumor. Lesion on radiographs. Indeterminate or aggressive appearance for malignancy. Next imaging study.

Procedure	Appropriateness Category	Relative Radiation Level
MRI area of interest without and with IV contrast	Usually Appropriate	○
MRI area of interest without IV contrast	May Be Appropriate	○
CT area of interest without and with IV contrast	May Be Appropriate (Disagreement)	Varies
CT area of interest without IV contrast	May Be Appropriate	Varies
FDG-PET/CT whole body	May Be Appropriate	☼☼☼☼
Bone scan whole body with SPECT or SPECT/CT area of interest	May Be Appropriate	☼☼☼
Bone scan whole body	Usually Not Appropriate	☼☼☼
CT area of interest with IV contrast	Usually Not Appropriate	Varies
Radiography skeletal survey	Usually Not Appropriate	☼☼☼
US area of interest	Usually Not Appropriate	○

This imaging modality was ordered by the physician



Findings (unlabeled)

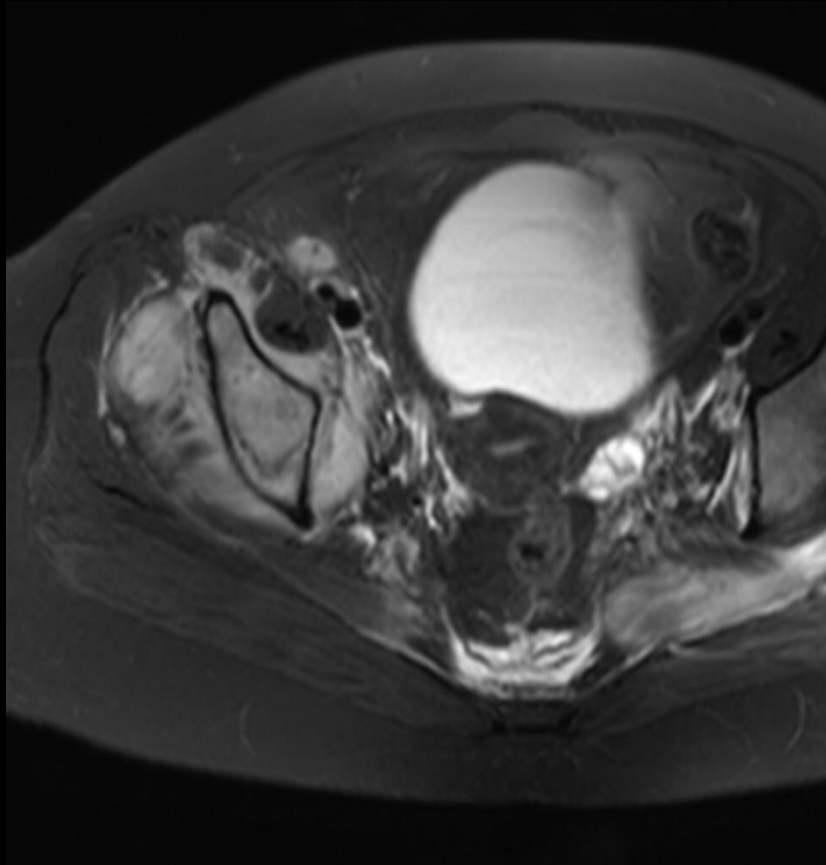


Right femur AP
radiograph

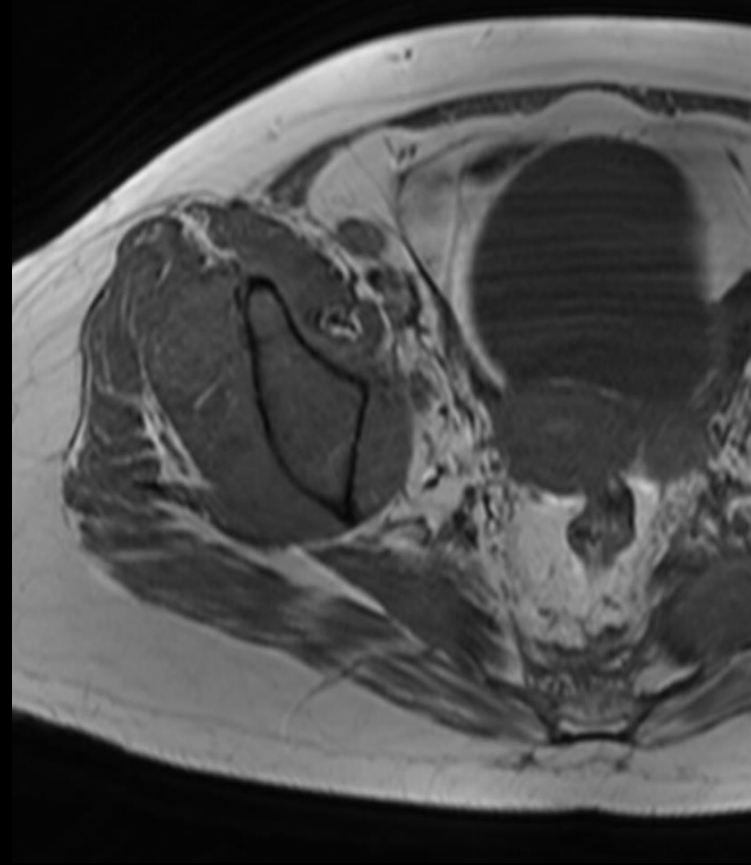


Right femur coronal T1
fat sat post contrast MRI

Findings (unlabeled)



Axial T2 MRI



Axial T1 MRI

Findings: (labeled)



Multiple ill-defined small lucencies (white arrows) are seen in the mid to distal femoral diaphysis and cortices.

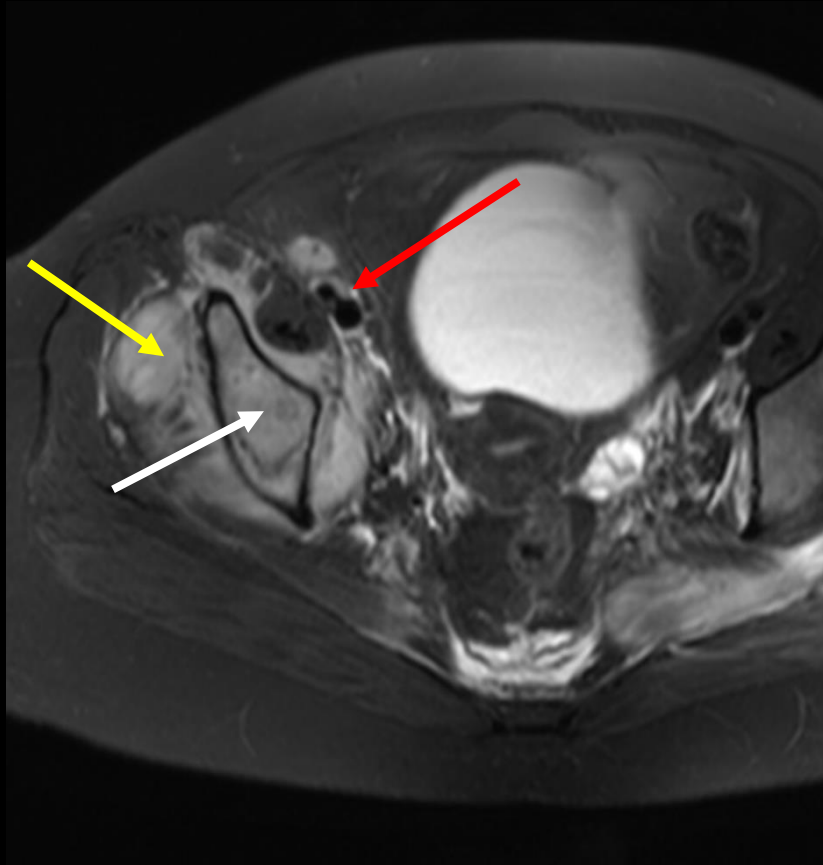
Right femur AP radiograph



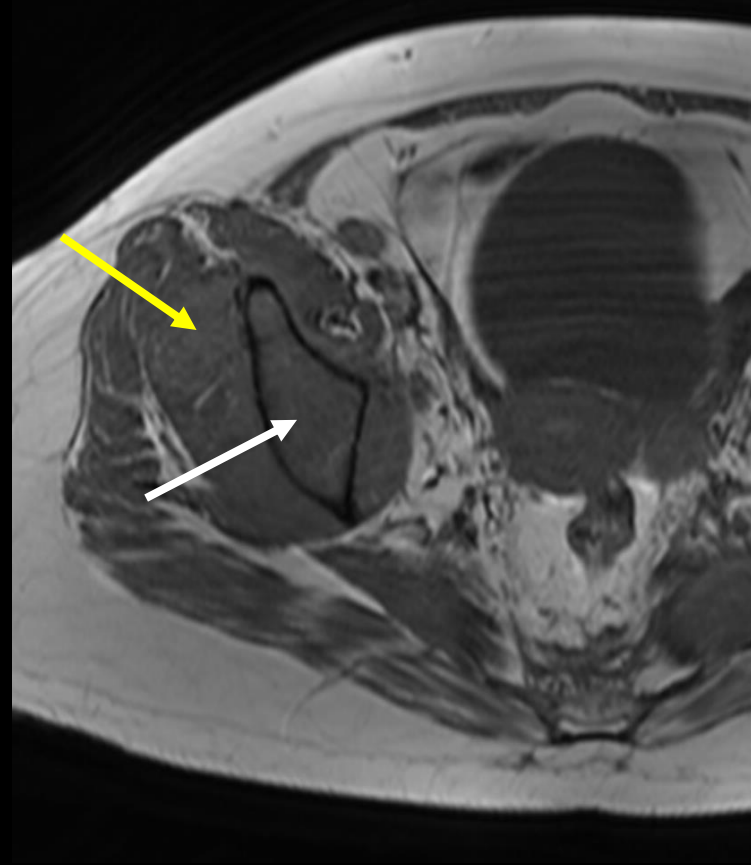
Large infiltrative lesion is seen in the right distal femur demonstrates enhancement within the medullar cavity with large enhancing soft tissue component (white arrow) in the surrounding vastus medialis and lateralis musculature without destruction of the cortices.

Right femur coronal T1 fat sat post contrast MRI

Findings: (labeled)



Axial T2 MRI



Axial T1 MRI

Additional infiltrative lesion is seen in the right iliac bone involving the acetabulum with extensive high T2 and low T1 signal (white arrows)

Extensive infiltrating soft tissue mass extends beyond the cortices into the surrounding pelvis musculature (yellow arrows) and retroperitoneum/extraperitoneal pelvis encasing the iliac vasculature (red arrow).

Final Dx:

Osseous Lymphoma

Case Discussion

- Osseous lymphoma, also known as primary bone lymphomas, accounts for less than 5% of all primary bone tumors
 - The most common subtype is diffuse large B-cell lymphoma (DLBCL), which represents over 80% of all cases
- Demographic: can occur at any age but typically affects adults between 45-60 years old, with a slight male predominance.
- Clinical presentation: The most common symptoms include local bone pain, soft tissue swelling, palpable mass, and pathological fractures.

Case Discussion

- Common sites: The most frequently affected bones include the femur, humerus, tibia, spine, and pelvis.
- Radiographic features: Non-specific and can include lytic, sclerotic, or mixed patterns.
 - MRI often shows associated bone marrow changes and soft tissue masses, often without destruction of the overlying cortex
- Osseous lymphomas can be challenging to diagnose due to their rarity and non-specific presentation.
 - Prompt and accurate diagnosis is crucial for appropriate management and improved outcomes

References:

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Kanavos T, Birbas E, Papoudou-Bai A, et al. Primary Bone Lymphoma: A Review of the Literature with Emphasis on Histopathology and Histogenesis. *Diseases*. 2023;11(1):42. doi:10.3390/diseases11010042

Knipe H, Ibrahim D, Elfeky M, et al. Primary bone lymphoma. *Radiopaedia.org*. Accessed July 19, 2024. <https://doi.org/10.53347/rID-33182>