

## Imaging Sciences Interesting Cases

### CASE 559

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**CLINICAL PRESENTATION:** Patient is an 81-year-old female involved in a motor vehicle accident. She was an unrestrained passenger and was found to have an open left tibial shaft fracture and a closed left acetabular fracture.

**IMAGING FINDINGS:** Thickening of iliopectineal lines and accentuation of the trabecular pattern in the sacrum.



**Figure 1:** Thickened iliopectineal lines and thickened trabeculae in sacrum.



**Figure 2:** Significant osteoporosis in the sacrum with large portion of the medullary cavity replaced by fat.

### **DIAGNOSIS: Paget disease**

**DISCUSSION:** Paget disease is a common disease of unknown etiology. Involvement before age 40 is unusual; after age 40 Paget disease can be seen in up to 3% of the population. Men are affected twice as commonly as women. Nearly any bone can be affected, although involvement of the skull, spine pelvis, femur, tibia, humerus, or scapula is typical. Three stages have been described: an early phase with osteolysis from osteoclastic bone resorption, a second phase with mixed osteolytic/osteoblastic activity with a coarsened and thickened trabecular pattern and cortex, and a third blastic phase with osteosclerosis. Monostotic or polyostotic patterns are seen, but diffuse involvement is less common.

The lesions (as in this patient) are seldom painful. Some estimate that 90% of lesions remain unrecognized.

Involvement of the skull, particularly the skull base, and of the spine may be associated with neurological disturbances. Long bones may develop pathological fractures.

Serum calcium and phosphorus are normal. Alkaline phosphatase is markedly elevated. Urinary excretion of hydroxyproline is elevated.

Histologically, there is intense osteoclastic resorption of normal bone by giant multinucleated cells. Osteoblasts produce exuberant hypervascular new bone. There is distortion and disruption of the organized bony matrix.

#### **TOP 4 DIFFERENTIAL DIAGNOSIS:**

1. Osteoblastic Metastases: May be indistinguishable. Often diffuse, bilateral (Paget usually unilateral).
2. Lymphoma: Cancellous bone erosion, cortical destruction with soft tissue mass and high signal on T2W MR of involved areas.
3. Fibrous Dysplasia: Ground glass appearance. Cranial lesions may be indistinguishable.
4. Multiple Myeloma: Multiple well-defined lytic lesion. Sclerosis is extremely rare. Presents with soft tissue mass adjacent to bone destruction and with enosteal scalloping.

#### **REFERENCES:**

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