

A Bone Scan May Not Be Enough for the Diagnosis of Bone Metastases: Case Report

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Introduction

- Radiotracer bone scans visualize osteoblastic activity¹
- Osteoblastic activity upregulated by some bone neoplasia and some benign conditions (fracture, arthritis, infection)¹
- Bone scans are cost-effective & sensitive¹
- Disadvantage - higher false positive rate, cannot distinguish between benign and malignant lesions¹
- Should be used with other correlative imaging modalities for accurate diagnoses

Materials and Methods

- Case report and literature review
- Patient consent obtained

Case Report

- 77 yo female, breast cancer in 1997
- Presented in June 2016 with back pain
- June 2016 bone scan: increased uptake in anterior superior iliac spine – suspicious for bone metastases
- CT of chest, abdo, pelvis: L hemipelvis exostosis or ossification, calcified foci in tensor fascia lata
- Physical exam: generalized pain, aches, fatigue, no bony tenderness
- Interpretation: left anterior superior iliac spine, benign
- Sacroiliac joint: consistent with osteoarthritis

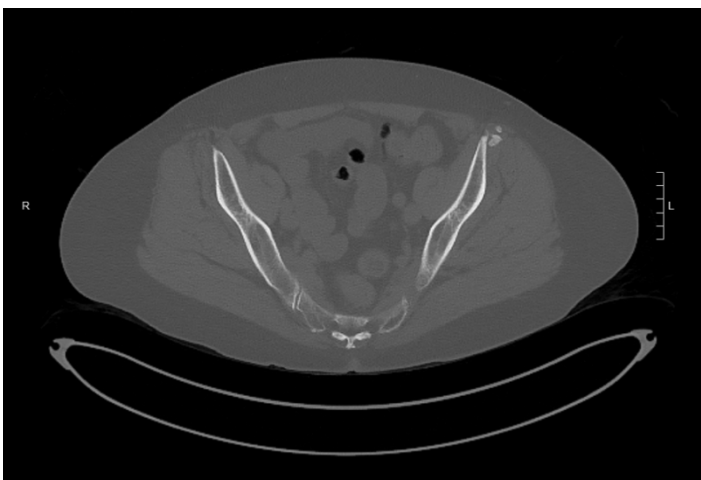


Figure 1: CT Pelvis June 2016 – moderate-sized exostosis or ossification (10x12x14 mm) attached to anterolateral aspect of iliac bone

Discussion

- Bone scans alone are not sufficient to distinguish different etiologies
- Correlative imaging such as MRI, CT or X-ray should be used to characterize suspicious or single hot spot lesions¹
- Supports other case reports indicating bone scan alone is not effective for confirming metastatic involvement³
- In a study on solitary hot spots on bone scan in patients with a cancer diagnosis, only 43% of cases were found to be malignant²
- Another study found bone scan had only a 59.8% positive predictive value⁴
- All available imaging modalities have advantages and disadvantages – most appropriate correlative imaging technique will vary^{1, 4}
- Eg. MRI preferable for distinguishing between osteoporotic and malignant vertebral compression fractures⁴
- CT preferable for assessment of bony lesions on the ribs⁴
- Hybrid techniques (SPECT-CT, PET-CT) combine functional advantages of one with morphological detail of the other – need to be further investigated⁵⁻⁷

Conclusions

- Bone scan beneficial for screening but should not be considered conclusive
- CT in this case was essential in differentiating between bone metastases and other benign findings
- Accurate diagnosis of musculoskeletal pain suspicious for bone metastases is essential to initiate appropriate treatment and reduce distress
- Recommendation: bone scan followed by other imaging such as CT or MRI

References

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