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A 65-year-old woman presented with a left breast mass and left arm swelling for 2 months. Incisional biopsy at the left breast mass showed breast cancer with adenocarcinoma. She was doing well after the biopsy. A bone scan was done for initial staging. She was injected with 20 mCi of Technetium-99m MDP (methylene diphosphonate) intravenously. She was scanned 2 hours after the injection with planar images (Figure 1). SPECT/CT (single photon emission computed tomography/computed tomography) at the thoracic spine and pelvic bones was done at the end of the study (Figures 2 and 3).

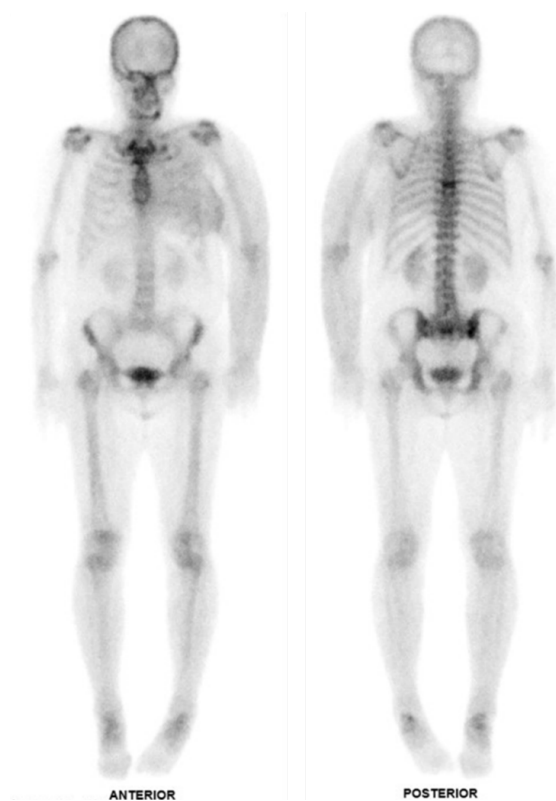


Figure 1 Whole body planar images (Wasit Kanokwongnuwat)

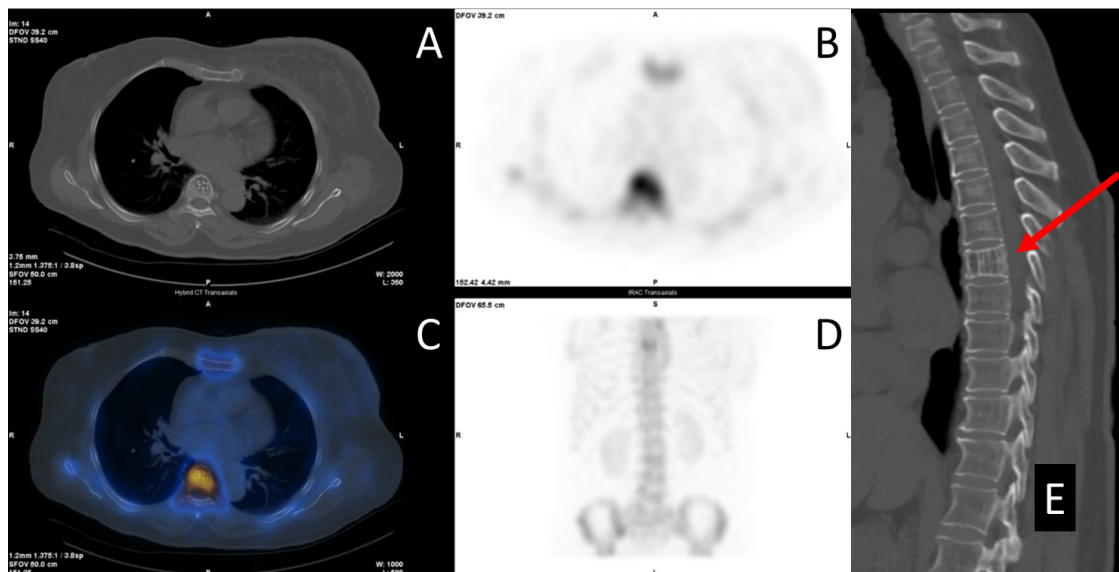


Figure 2 SPECT/CT of the T7 vertebral body showed focal increased uptake (Arrow) (B, C, D) with a polka-dot sign on the axial plane (A) and a corduroy sign on the sagittal plane (Arrow) (E). A: Axial CT, B: Axial SPECT, C: Axial fusion SPECT/CT, D: MIP, E: Sagittal CT. (Wasit Kanokwongnuwat)

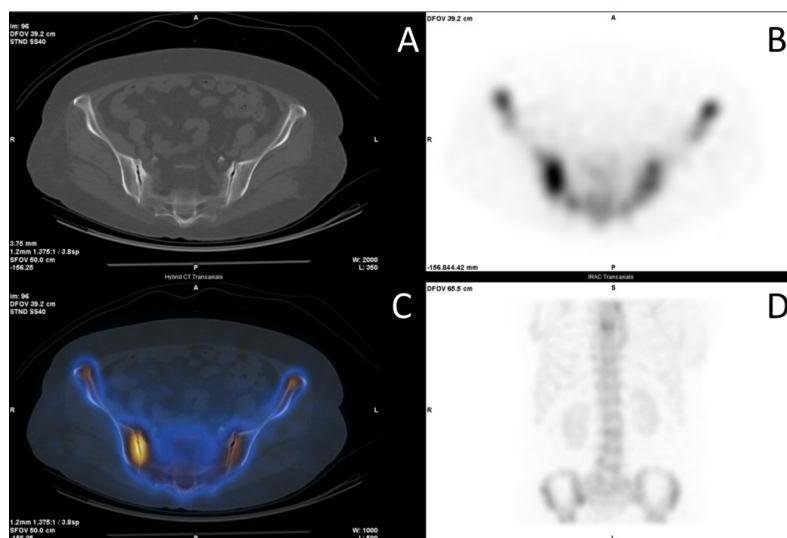


Figure 3 SPECT/CT of the sacroiliac joints showed focal increased uptake at the right side (B, C, D) with sclerosis (A). A: Axial CT, B: Axial SPECT, C: Axial fusion SPECT/CT, D: MIP. (Wasit Kanokwongnuwat)

What is your interpretation?

DISCUSSION

The planar images showed focal increased uptake at the T7, which was suspected of bone metastasis. Another focal lesion at the right sacroiliac joint was compatible with degenerative change. Soft tissue uptake at the left anterior chest wall was in keeping with primary breast cancer. There is no suspicious osteolytic or osteoblastic lesion in the CT suspected of bone metastasis at the T7. However, the appearance of a vertebral hemangioma is seen as a vertical trabecular pattern referred to as "corduroy cloth," which is most clearly seen on a lateral view. On an axial view, a vertebral hemangioma presents as sparse, thickened hyperdense trabeculae, and appears as "polka-dot"¹. Therefore, the T7 lesion suggests vertebral hemangioma, rather than bone metastasis. Overall, the patient had no evidence of bone metastasis in this scan.

Bone scans are used to detect metastatic disease, especially in breast, prostate, and lung cancers. Radiotracer uptake will show increased uptake with osteoblastic activity in response to tumor osteolysis. The presence of multiple areas of increased uptake in a random pattern is highly suggestive of bone metastasis. In older patients, degenerative change and osteoporosis may cause increased uptake at the spine and sacrum².

SPECT/CT can provide better resolution combined with the ability to reduce false-positive diagnoses of bone metastasis by the appearance of CT^{3,4}

Vertebral hemangiomas can be diagnosed with imaging. The vast majority are asymptomatic and seen as incidental findings. They do not require treatment. But if there is back pain or neurological symptoms such as myelopathy or radiculopathy due to vertebral fracture or neural element compression, they should be treated. Treatment options consist of conservative medical therapy, percutaneous techniques, radiotherapy, or surgery¹. This patient was asymptomatic and had no need for treatment.

References

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