

*This feature will enhance your knowledge of imaging technology in oncologic diagnosis, treatment, and evaluation.*

## EVALUATION OF BONE METASTASES IN LUNG CANCER

Poonam Malhotra, MD, and Claudia G. Berman, MD

From the Department of Radiology at the H. Lee Moffitt Cancer Center & Research Institute, Tampa, Florida. E-mail: [bermancg@moffitt.usf.edu](mailto:bermancg@moffitt.usf.edu)

### Case Description

An 89-year-old woman who was a former smoker presented with worsening chest pain after biopsy of a right lung mass, which was found on a chest radiograph performed to investigate nausea, fatigue, and a 1-month history of cough. The chest radiograph and a computed tomography (CT) scan revealed a 6 × 6-cm mass in the right posterior base, a 1-cm nodule in the right middle lobe, and hilar lymphadenopathy. No liver or adrenal metastases were evident. Biopsy of the lung mass showed a poorly differentiated non-small cell lung cancer.

Since the chest pain radiated to her back and was associated with some weakness, a magnetic resonance image (MRI) was obtained that showed extension of tumor and cord compression at T9 in addition to some degenerative changes. An abnormal marrow signal at L5 suggestive of metastases was also seen.

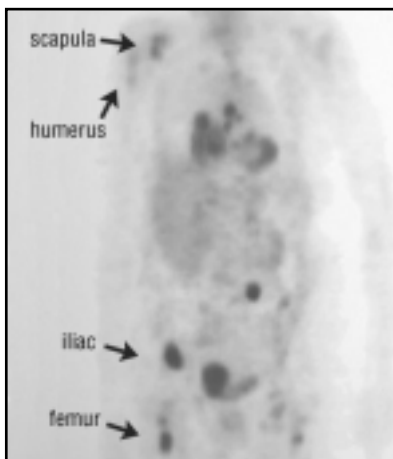


Fig 1. — Whole-body PET scan, anterior view. There is abnormal glucose metabolism in the right scapula, proximal right humerus, right iliac bone, and right femur in this patient with lung cancer and associated hilar adenopathy.

A staging positron emission tomography (PET) scan revealed increased glucose uptake suspicious for malignancy within a right lower lobe necrotic mass, along with adenopathy in the right perihilar and subcarinal regions (Fig 1). Increased uptake was also seen in multiple areas in the mid to lower thoracic spine, both of the femora, and the right shoulder. A focus suspicious for tumor was also seen adjacent to the L5 region. However, a bone scan showed increased uptake involving only the mid to lower thoracic spine and was silent regarding the other lesions seen on the PET scan (Fig 2).

The images demonstrate which of the following choices:

1. improved sensitivity of traditional bone scanning over PET
2. the failure of PET in staging cancers
3. improved sensitivity and specificity of PET over bone scanning
4. no advantage between PET and bone scanning



Fig 2. — Whole-body bone scan, anterior view. The scan shows only what appears to be mild degenerative changes in the right acromioclavicular joint. No evidence of abnormal uptake suggestive of bony metastases is present.

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