PET Case: Lung Cancer

This 61-year-old woman was 10 years post successful treatment of small cell lung cancer. A CT scan was performed that showed a new 1.5 cm right lower lobe mass adjacent to the mediastinum, as well as enlargement of the left adrenal gland.

A PET scan was obtained (Fig. 1) that showed FDG uptake in the right lung nodule (arrow) and also in three retroclavicular foci (arrowheads) that were well visualized in the transaxial view (Fig. 2, arrowheads). Abnormal tracer uptake was also present in the left adrenal region (Fig. 1, white arrowhead). Review of the CT scan showed that the foci of retroclavicular uptake corresponded to lymph nodes that did not exceed the 1 cm CT size threshold for abnormality (Fig. 3, arrows). A biopsy of these N3 nodes was performed under ultrasound guidance and showed a non-small cell lung carcinoma. This tumor differed morphologically and by immunostaining from the patient’s original tumor.

How Did PET Imaging Help?

PET was able to show additional sites of disease that were in a location that was technically much easier to biopsy than the right lower lobe nodule reported on the CT scan, which was adjacent to major mediastinal blood vessels. The pathologic diagnosis was made without the need for a more invasive lung biopsy. PET also showed that the adrenal mass was not a commonly seen benign adenoma but actually an adrenal metastasis, upstaging the patient to Stage IV.

Recent reviews have shown that FDG PET is significantly more sensitive and specific than CT for the staging of non-small cell lung cancer (1,2).


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This case was provided by David Seldin, MD, Franklin Square Hospital Center, Baltimore, MD. It was also featured on the Web site of Gabriel Soudry, MD, at www.petcases.com. In addition to the Web site, Dr. Soudry also mails printed versions of his example cases to referring physicians in Franklin Square and the surrounding community. Working with Dr. Soudry and other PET specialists, the PCOE Web site (www.snm.org/PET) features “Views You Can Use,” single-sheet PDFs that include specific cases, images, and references. As a PCOE member, you can add your own contact information to these sheets and distribute them electronically or by printed hard copy to referring physicians for educational purposes.