PET Case: Papillary Thyroid Carcinoma

This 72-year-old man presented with hoarseness. Laryngoscopy revealed right vocal cord paralysis. A CT scan of the neck and chest showed a large right thyroid mass (Fig. 1, arrow) and a very large mediastinal mass (Fig. 2, arrow). Fine-needle aspiration of the thyroid mass and transtracheal biopsy of the mediastinal mass revealed papillary thyroid carcinoma, tall cell variant. A PET scan showed intense $^{18}$F-FDG uptake in the thyroid and mediastinal masses, with cervical lymph node metastases and distant metastases in the liver, abdomen, spine, sacrum, inguinal and femoral nodes, and right femur.

How Did PET Imaging help?

PET provides whole-body imaging (usually from the base of the skull to the mid thighs, although there are indications that routine whole-body PET may soon give heel-to-head coverage) with examination of most organ systems for both primary and metastatic disease in a single procedure. In this case, PET showed the full extent of the disease, including many distant metastases. In a recent review article, PET was found to be sensitive (60%–94%) in the detection of recurrent or metastatic thyroid cancer in patients with negative $^{131}$I scans (Br J Radiol. 2003;76:690–695). A number of new tracers are under investigation for use in PET diagnosis and monitoring of therapy in a range of thyroid carcinomas.

About Views You Can Use

This case was provided by Gabriel Soudry, MD, director of nuclear medicine at Franklin Square Hospital in Baltimore, MD. He regularly features examples of the benefits of PET on his outreach Web site at www.petcases.com. “Many of us in imaging are accustomed to seeing teaching cases that are unusual or rare,” he told the PCOE Newsletter. “But I select our PET cases precisely because they are commonplace. We want to have a battery of examples of the kinds of cases that our referring physician community commonly encounter in their daily practice so that they can see how PET can benefit their patients. We want them to think of PET as a routine, useful adjunct to the work-up of their patients.” In addition to the Web site, Soudry also mails printed versions of his example cases to the referring physicians both within Franklin Square and in the surrounding community.

Working with Soudry and other PET specialists, the PCOE Web site (www.snm.org/PET) will feature regular “Views You Can Use,” single-sheet PDFs that include specific cases, images, and references to supporting documentation. As a PCOE member, you can add your own contact information to these sheets and distribute them electronically or by printed hardcopy to referring physicians for educational purposes.