PET-CT CASE OF THE MONTH

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Fig. 1

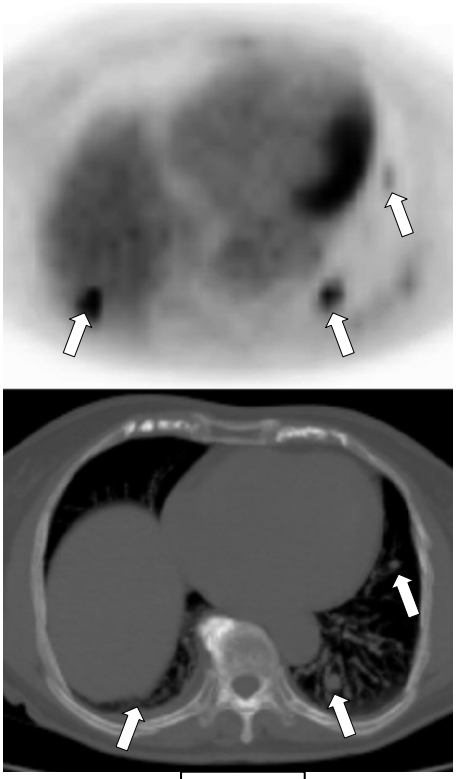

Fig. 2

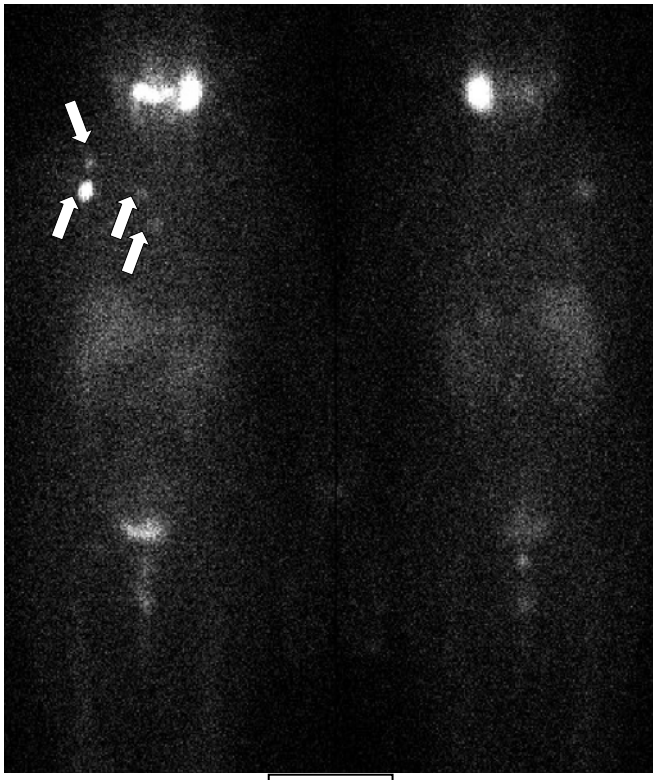

Fig. 3

This 79 year old woman had presented with a neck mass one year earlier which proved to be papillary thyroid cancer, with local invasion and regional lymph node metastases. Chest CT scan showed several small nodules that were felt to be pulmonary metastases. She was treated with thyroidectomy and 200 mCi I-131 therapy. Follow-up at one year showed elevated thyroglobulin, and an I-131 body scan was performed which was negative. A PET-CT scan was then done (Figs. 1,2) and showed multiple areas of uptake in the neck, mediastinum, and lungs. She was treated with another 200 mCi of I-131. A whole body scan was obtained one week post therapy (Fig. 3), which showed uptake in the right axilla and mediastinum.

How did the PET-CT help? :

The PET-CT scan was able to show multiple metastatic foci in this patient with a negative I-131 diagnostic whole body scan. The ability of PET-CT to detect iodine-negative disease and its lower sensitivity for iodine-positive sites is thought to reflect the higher metabolic activity of dedifferentiated metastases which no longer organify iodine. Comparison of the PET-CT and post therapy I-131 body scan illustrates this "flip-flop" phenomenon.

PET-CT imaging has shown to be effective in detecting thyroid cancer metastases in patients with elevated thyroglobulin levels who have negative I-131 whole body scans[1,2].

(1) Ann Surg Oncol 2008;15:286-92
(2) Q J Nucl Med Mol Imaging. 2006;50:78-87

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This case and previous ones can be seen at **www.petcases.com**