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Nuclear Medicine

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Breast Carcinoma

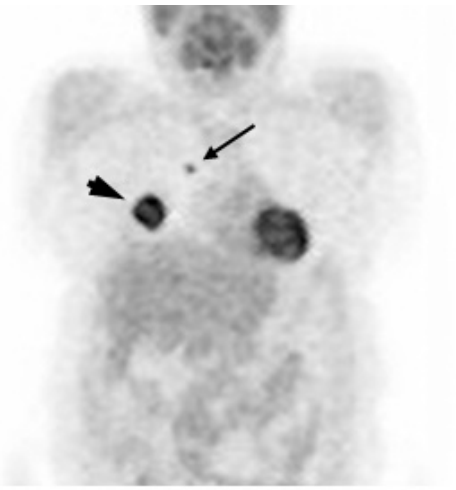

Fig. 1

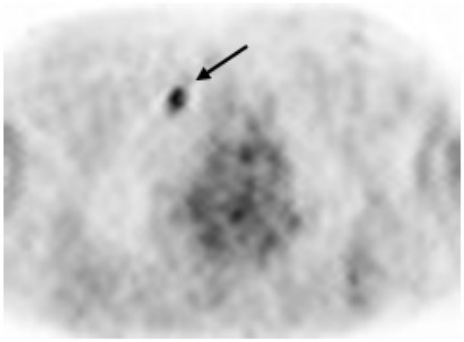

Fig. 2

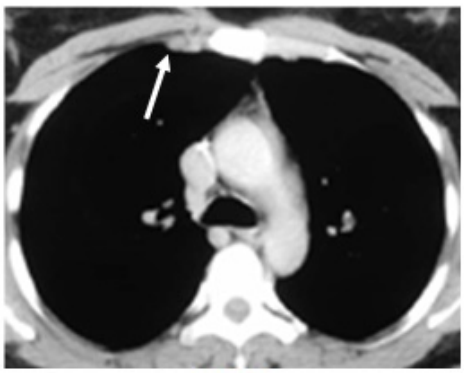

Fig. 3

This 42 year old woman presented with a 3 cm. right breast lump. On physical exam there were no palpable axillary lymph nodes. A core biopsy showed a high grade, poorly differentiated right **breast carcinoma**. The tumor was negative for both estrogen and progesterone receptors.

Because of the unfavorable histology and the size of the tumor, a PET scan (Figs. 1 and 2) was obtained for staging, which showed FDG uptake in the breast mass (arrowhead) and a small focus of FDG uptake in the right internal mammary region (arrow). No other areas of abnormal FDG uptake were present. A chest CT scan was obtained (Fig. 3) that showed a one centimeter internal mammary lymph node (arrow) in a location corresponding to the uptake on the PET scan.

How did the PET help?

On the basis of the pre-PET information, this patient would have been classified as Stage II (tumor size between 2 and 5 cm, no evidence for axillary nodal metastases). With the evidence of internal mammary lymph node metastasis on the PET scan, she was upstaged to Stage IIIB.

Recent studies have shown that FDG PET shows internal mammary nodal metastases in approximately 25% of patients with Stage III and IV breast cancer[1,2]. Another recent study has shown that the radiotherapy plan is changed by PET results in 11% of patients[3].

(1) Breast Cancer Res Treat. 2002 Sep;75(2):135-46.
(2) Am J Clin Oncol. 2004 Aug;27(4):407-10
(3) J Nucl Med. 2003 Jan;24-29