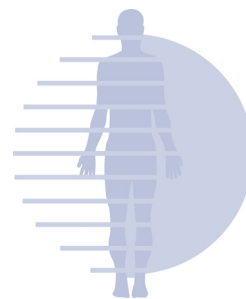


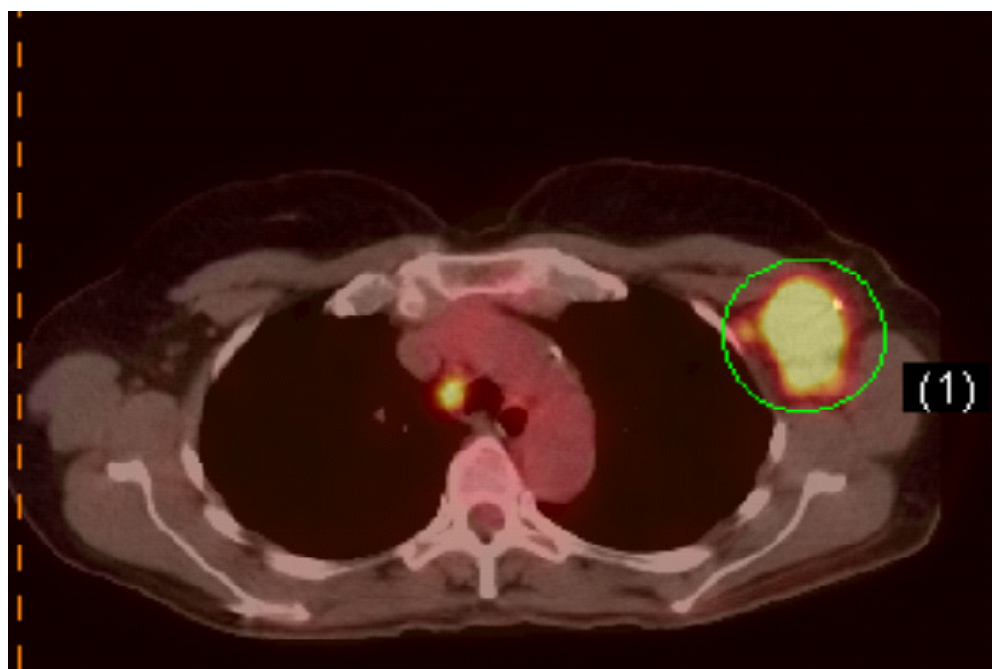
PET/CT

CASE OF THE MONTH



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Imaging for Answers . . .



UNSUSPECTED METASTATIC BREAST CANCER



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Breast Cancer

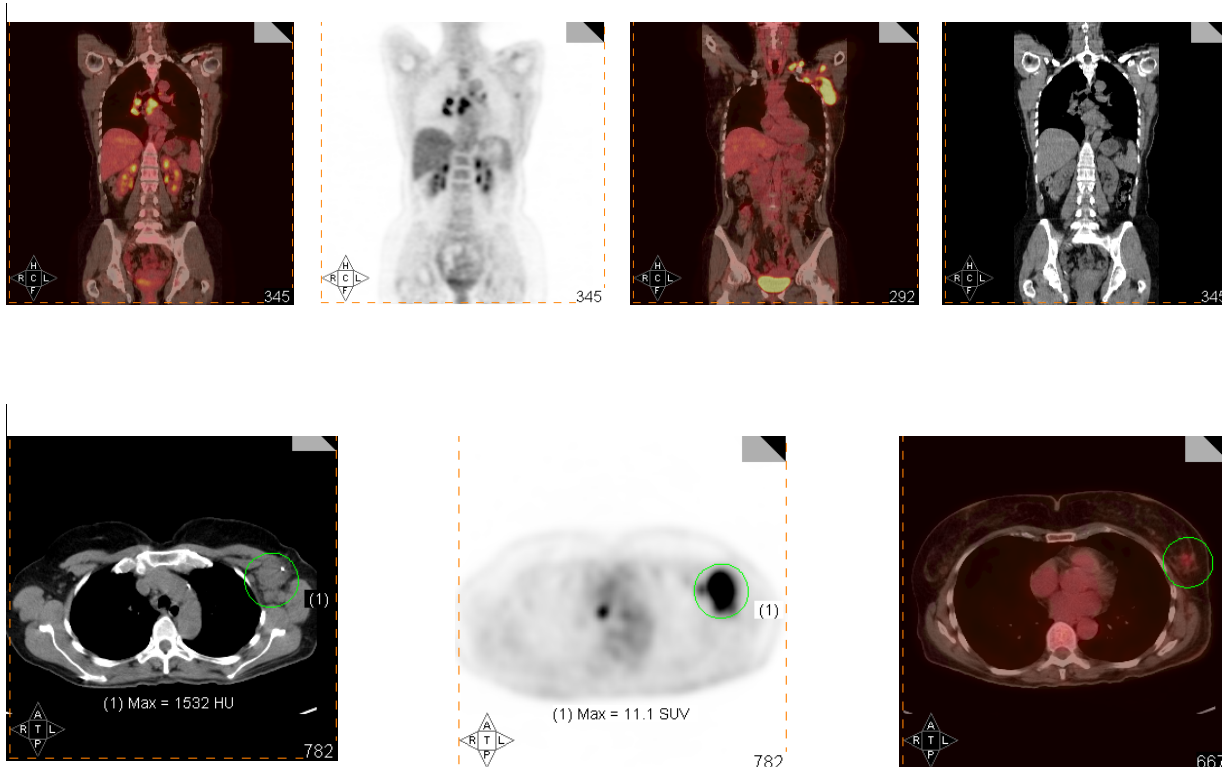
February 2008 Case Study

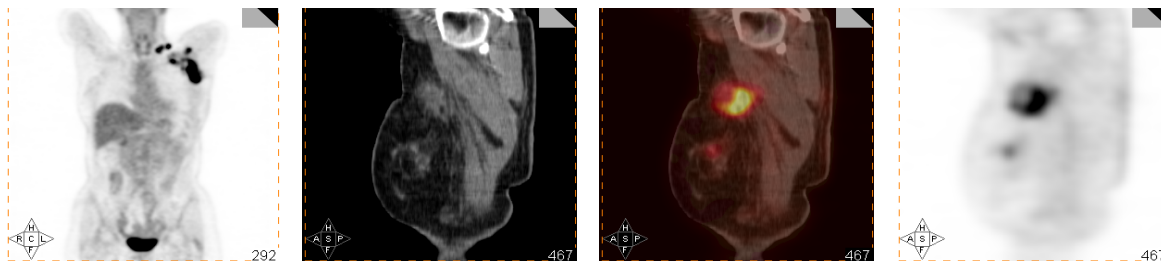
Patient History

The patient is a 66 y/o female status post exploratory surgery of left axillary lymph nodes. Pathology showed a poorly differentiated breast carcinoma. The patient was sent for a PET/CT exam to assist in staging.

Staging with Conventional Techniques: Stage II, T1-N1-M0

PET/CT Images:





PET/CT Findings

Extensive lymph node metastases from the patient’s poorly differentiated breast carcinoma, including bulky left axillary and retro-pectoral lymph nodes, small left supra-clavicular, bilateral hilar, and mediastinal lymphadenopathy consistent with metastatic disease. A small focus of increased activity in the tail of the left breast also was noted, which may represent the patient’s primary tumor and/or post-procedural change. A moderately hypermetabolic area in the sigmoid colon was suspicious for metastases - later confirmed by biopsy.

Tissue Diagnosis

Metastatic Breast Carcinoma

New Clinical Stage after PET/CT: Stage IV

Sensitivity and Specificity

	SENSITIVITY	SPECIFICITY	NPV	PPV	ACCURACY
<u>Staging</u>					
PET/CT	93% ⁴	88% ⁴	97% ⁴	76% ⁴	90% ⁴
CT	63% ⁴	96% ⁴	92% ⁴	74% ⁴	90% ⁴
<u>Recurrence</u>					
PET	93% ¹	84% ¹	84% ¹	93% ¹	90% ¹
CT*	79% ¹	68% ¹	59% ¹	85% ¹	75% ¹

*Conventional imaging: CT, MRI, mammography, ultrasound

MEDICARE RECOGNIZES PET/CT UTILITY IN BREAST CANCER

- Staging
- Restaging
- Monitoring therapy

PET/CT Case Study - Unsuspected Breast Cancer

(continued)

Discussion

Common site of metastasis such as lymph nodes or bone marrow are not easily depicted by conventional imaging, resulting in misdiagnosis and inappropriate therapeutic intervention.¹

- 45% of women diagnosed with breast cancer will either have metastatic disease at the time of diagnosis or develop recurrent disease following localized treatment.²
- Conventional imaging modalities have limited ability to detect distant or regional disease when no disturbance in anatomy is present.³

Clinical Questions Answered

This scan demonstrates the utility of PET/CT for selected breast cancer cases. Although PET/CT is not appropriate for screening or diagnosis of primary breast disease, PET/CT is invaluable for staging patients with locally advanced breast carcinoma or carcinomas in the medial aspect of the breast. PET/CT provides more accurate staging information in these patients at higher risk for distant metastases than conventional imaging techniques. In addition, PET/CT has utility in bone-scan negative, bone-centric metastatic bone cancer, especially if it manifests with lytic bone disease.

PET/CT differentiates chemotherapy responders from non-responders earlier than conventional imaging or physical examination in patients with locally advanced and/or metastatic breast cancer.⁵ This allows appropriate modifications of chemotherapy for improved response and prevention of chemotherapy related complications such as cardiomyopathy.

Points to Remember

- **PET/CT REVEALS EXTENT OF DISTANT METASTASES WHILE ALSO EVALUATING THE PRIMARY SITE IN A SINGLE WHOLE-BODY SCAN.**
- **PET/CT CAN PLAY A CRITICAL ROLE IN MONITORING RESPONSE TO THERAPY**
 - FUNCTIONAL CHANGES PRECEDE ANATOMIC CHANGES;
 - THEREFORE, EARLIER ASSESSMENT OF THERAPEUTIC RESPONSE IS ACHIEVABLE

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