

Figure 1: 61-year-old asymptomatic woman. (A) Craniocaudal and (B) mediolateral oblique views from screening mammography demonstrate a 4 cm irregular high-density mass with indistinct margins in the upper outer right breast (arrow) with enlarged right axillary lymph

nodes (arrowhead). Targeted ultrasound of the right breast demonstrates a corresponding irregular, hypoechoic mass with angular margins (C) and an enlarged right axillary lymph node with complete loss of the normal fatty hilum (D). Ultrasound-guided biopsy results showed invasive ductal carcinoma, grade 3, estrogen receptor (ER) negative, progesterone receptor (PR) negative, human epidermal growth factor receptor-2 (HER2) negative and metastatic carcinoma involving the axillary lymph node (clinical stage IIB; T2N1M0). FDG-PET/CT was performed for systemic staging. (E) Maximum intensity projection PET demonstrates intense FDG uptake in the right breast mass (arrow) and multiple right axillary lymph nodes (arrowhead). Fused axial PET/CT images demonstrate increased FDG uptake in (F) the right breast mass (SUV_{max} 15) (arrow) and (G) multiple right level 1 and level 2 axillary lymph nodes (SUV_{max} 11.7-13.0) (arrowhead). There was no imaging evidence of distant metastatic disease.

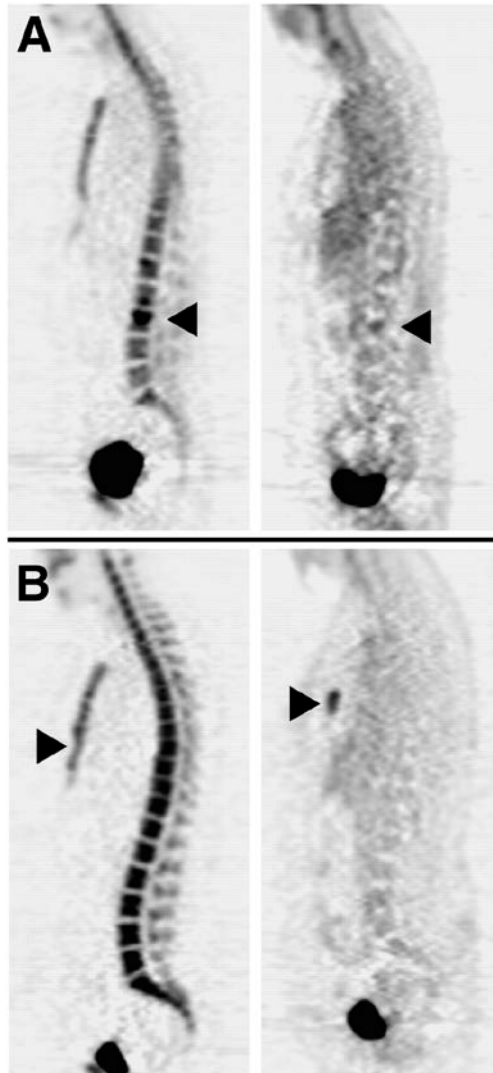


Figure 2: Whole-body PET imaging of two patients with bone-dominant metastatic breast cancer. (A) Patient with a sclerotic lumbar vertebral body metastasis (arrowheads) visible on sagittal ^{18}F -fluoride (left panel) and ^{18}F -FDG (right panel) PET images. (B) Patient with a lytic sternal metastasis (arrowheads) identified as a photopenic region on ^{18}F -fluoride (left panel) and enhanced uptake region on ^{18}F -FDG (right panel) PET images. Reprinted with permission from Doot RK et al, J Nucl Med. 2010;51:521-527. © by the Society of Nuclear Medicine and Molecular Imaging, Inc. <http://jnm.snmjournals.org/content/51/4/521.long>

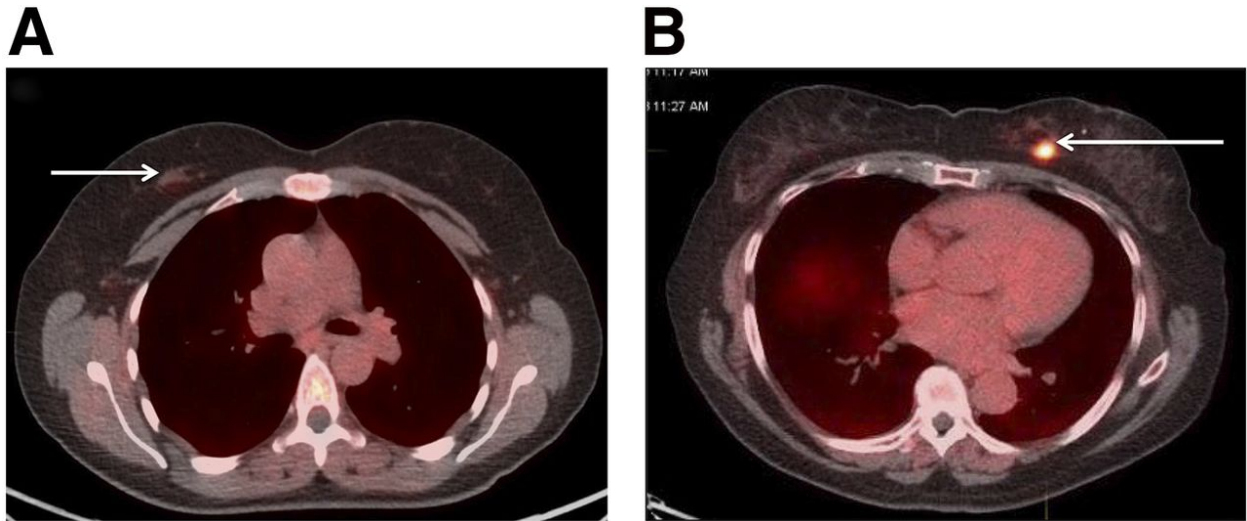


Figure 3: Axial fused FACBC-PET/CT images of (A) benign ductal hyperplasia (arrow) with SUV_{max} of 2.0 and (B) invasive ductal carcinoma (arrow) with SUV_{max} of 9.7. Reprinted with permission from Tade FI et al, J Nucl Med. 2016;57:1357-1363. © by the Society of Nuclear Medicine and Molecular Imaging, Inc. <http://jnm.snmjournals.org/content/57/9/1357.long>

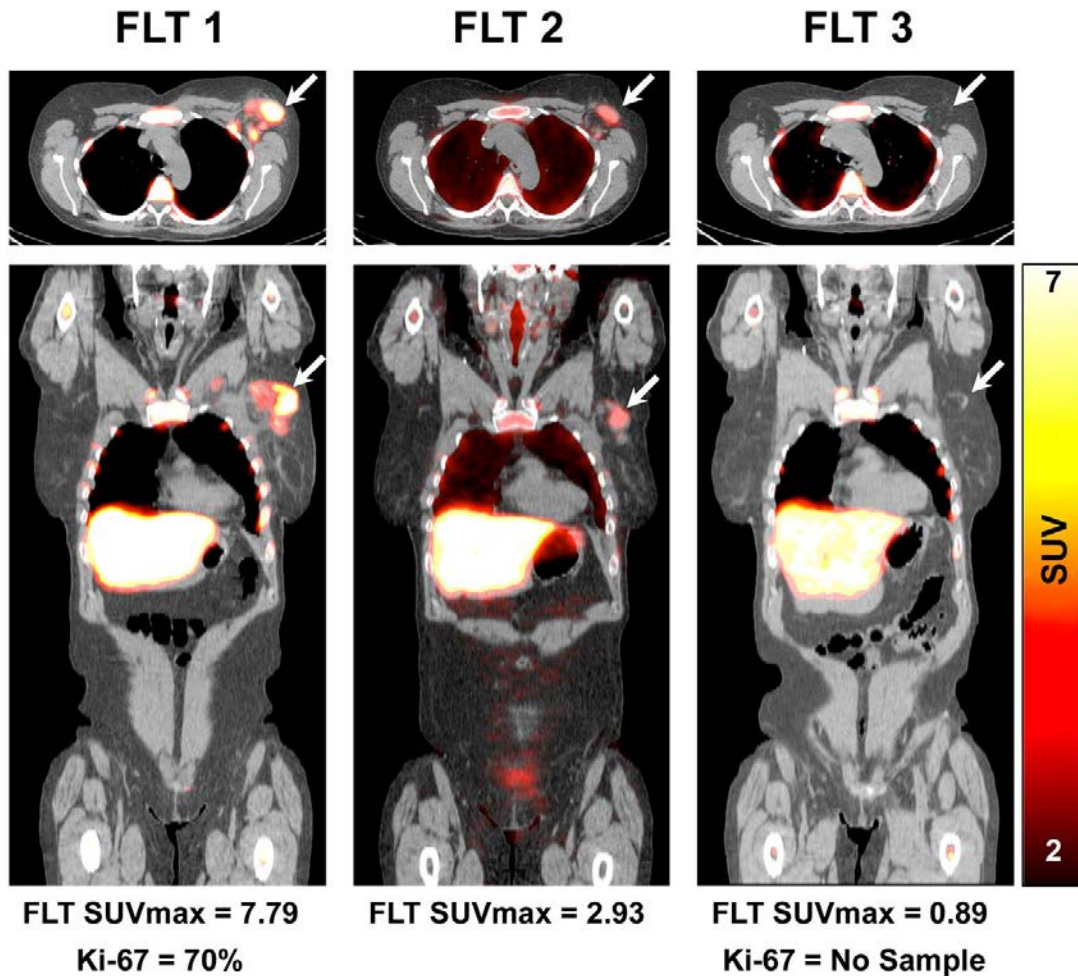


Figure 4: Axial (upper panel) and coronal (lower panel) ^{18}F -FLT PET/CT images demonstrating increased FLT uptake in a left upper outer quadrant primary breast cancer (arrow) and axillary lymph node metastasis before neoadjuvant chemotherapy (“FLT 1”, left panel). After one cycle of chemotherapy, there is a substantial reduction in FLT uptake (arrows, “FLT 2”, middle panel). After completion of therapy, increased FLT uptake is resolved (arrows, “FLT 3”, right panel). Pathologic complete response was confirmed at surgery. Reprinted with permission from Kostakoglu L et al, J Nucl Med. 2015;56:1681-1689. © by the Society of Nuclear Medicine and Molecular Imaging, Inc.

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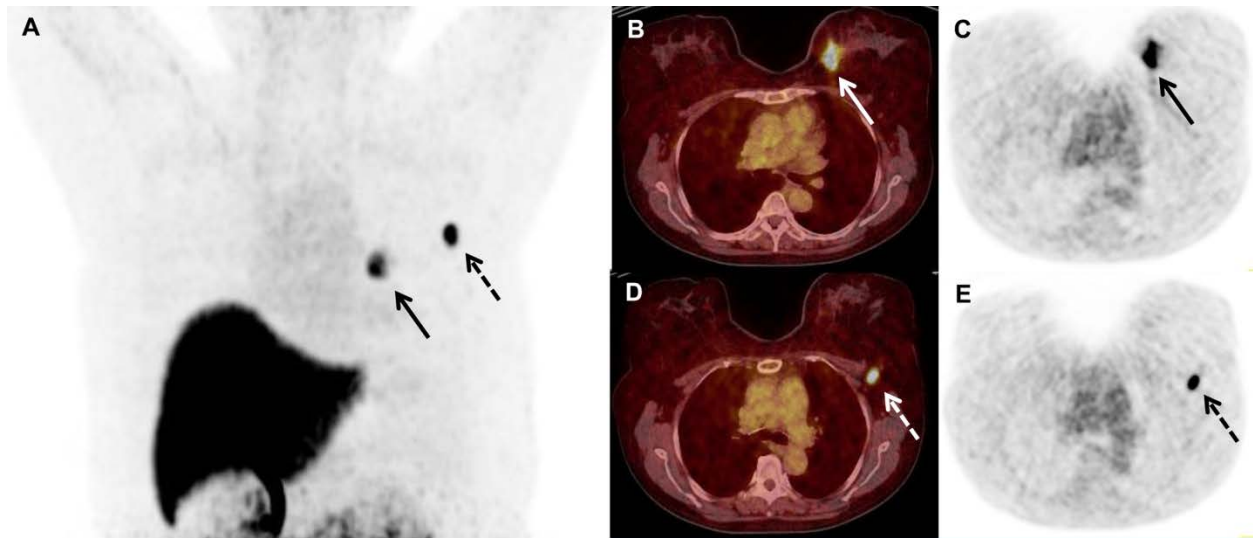


Figure 5: Maximum intensity projection PET (A), fused prone axial PET/CT (B and D), and prone axial PET (C and E) images demonstrate increased ^{18}F -fluoroestradiol uptake in a left primary breast cancer (solid arrow) and left axillary lymph node metastasis (dotted arrow).

Histology was grade 2 invasive carcinoma, estrogen receptor (ER) positive, progesterone receptor (PR) negative, human epidermal growth factor receptor-2 (HER2) negative. FES uptake can be seen in the hepatobiliary system due to physiologic clearance. Reprinted with permission from Chae SY et al, J Nucl Med. 2016 Sep 29. pii: jnumed.116.178368. [Epub ahead of print]. © by the Society of Nuclear Medicine and Molecular Imaging, Inc.

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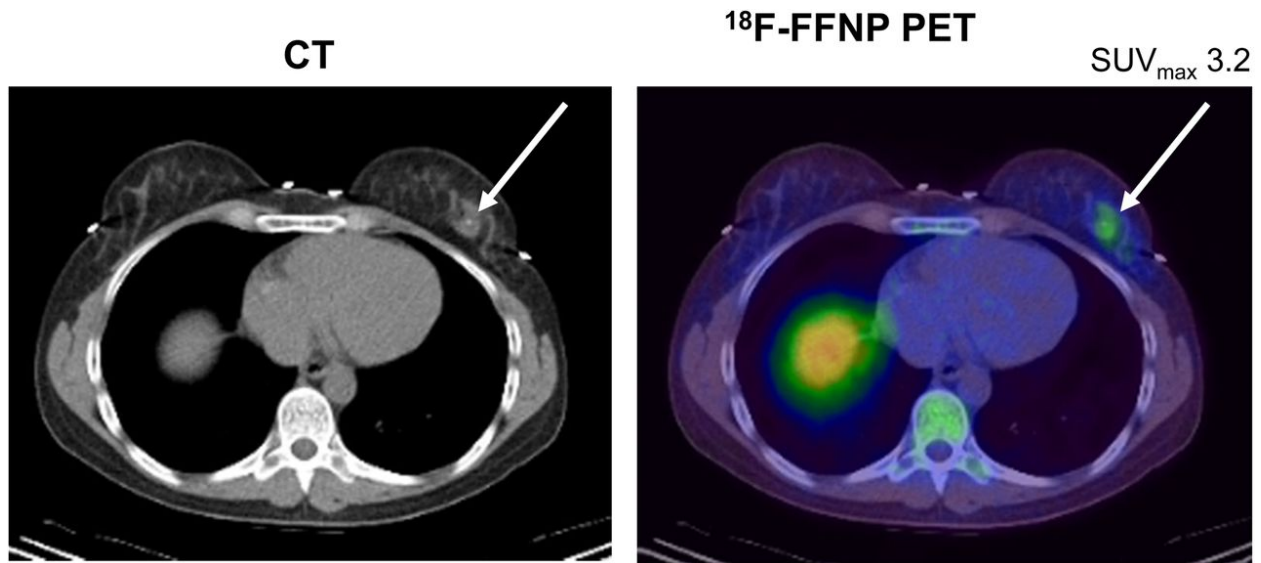


Figure 6: Axial PET/CT images demonstrate focally increased $^{21-18}\text{F}$ -fluoro- $16\alpha,17\alpha$ -[(R)-(1'- α -furylmethylidene)dioxy]-19-norpregn-4-ene-3,20-dione (FFNP) uptake in patient with biopsy-proven PR-positive left breast cancer (arrows). FFNP uptake can also be seen in the liver due to physiologic clearance. Reprinted with permission from Fowler AM et al, J Nucl Med.

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