

¹⁸F-FDG PET/CT Unveiling of Implant Rupture and Clinically Unsuspected Silicone Granuloma in Treated Breast Cancer

Fathima Fijula Palot Manzil and Pradeep G. Bhambhani

Division of Molecular Imaging and Therapeutics, Department of Radiology, University of Alabama at Birmingham, Birmingham, Alabama

¹⁸F-FDG uptake in enlarged lymph nodes is always suspicious, especially in cancer patients. We report a case of hypermetabolic internal mammary lymphadenopathy in a breast cancer patient who was previously treated with bilateral mastectomy and implants. The abnormal nodal uptake turned out to be due to foreign body–induced inflammation, as confirmed histopathologically. Vigilant PET interpretation is required in breast cancer patients who have evidence of breast implant rupture.

Key Words: silicone breast implant; implant rupture; lymphadenopathy; FDG PET/CT; breast cancer

J Nucl Med Technol 2018; 46:394–395

DOI: 10.2967/jnmt.118.211979

Breast cancer patients are often followed up with ¹⁸F-FDG PET/CT to detect local recurrence and metastasis. Any focus of abnormally increased radiotracer uptake should not be overlooked, because the activity may be due to malignancy instead of to benign conditions that cause high cellular metabolism. Silicone-induced lymphadenopathy is an uncommon late complication after breast implant surgery.

CASE REPORT

A 54-y-old woman presented to our hospital with bilateral pain in the chest wall deep to her breast implants. She had undergone bilateral mastectomy with reconstruction 14 y previously. Right mastectomy was done as definitive treatment for ductal carcinoma in situ, and the left mastectomy was prophylactic. She was referred for whole-body PET/CT to rule out tumor recurrence and help reach a more conclusive diagnosis. The PET scan showed nonspecific multifocal moderate hypermetabolic activity around the breast implants, more prominent on the left (Figs. 1A and 1B), possibly representing inflammatory changes. A bilaterally wavelike contour of the breast implants (Fig. 1C) suggested implant

rupture. Moderate hypermetabolic activity was noted (Figs. 1A and 1B) in enlarged right internal mammary lymph nodes (Fig. 1C). No abnormal findings were noted elsewhere. Breast MRI confirmed bilateral breast implant rupture and right internal mammary lymphadenopathy (not shown). The suggestive node was excised. Histopathologic examination showed that the lymph node had a foreign-body giant-cell response.

DISCUSSION

Breast implant rupture is categorized as intracapsular or extracapsular. Intracapsular rupture is often unnoticed clinically because the free silicone is kept in place by a surrounding fibrous capsule. Extracapsular rupture is often associated with silicone migration (1). Leaked silicone can either remain within the breast or migrate to axillary and sometimes internal mammary nodes and even distal nodal and extranodal sites (2).

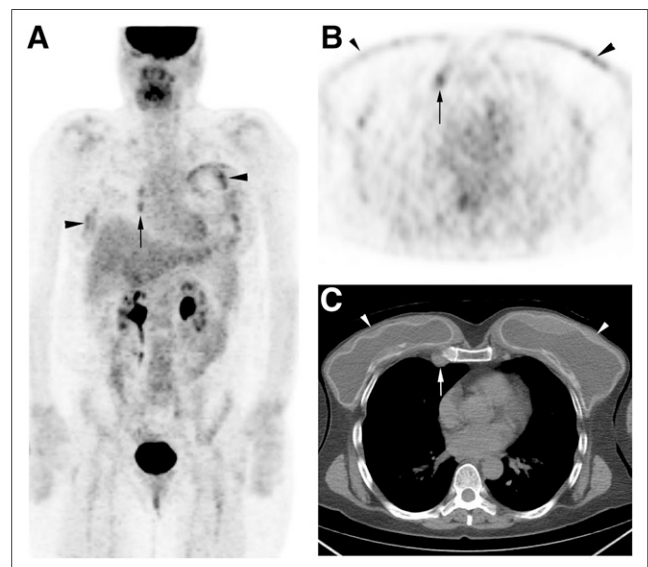


FIGURE 1. (A and B) Maximum-intensity projection (A) and axial (B) ¹⁸F-FDG PET images show patchy activity around breast implants, on left more than on right (arrowheads), and hypermetabolic right internal mammary nodes (arrows). (C) Axial unenhanced CT component of PET/CT image at level of breasts shows bilateral wavy contour of breast implants (arrowheads), suggesting rupture, and enlarged right internal mammary node (arrow).

Received Apr. 8, 2018; revision accepted May 7, 2018.
For correspondence or reprints contact: Fathima Fijula Palot Manzil, Weill Cornell Medical College, P.O. Box 3050, Hamad General Hospital, Doha, Qatar.

E-mail: drfijulasurjith@yahoo.com

Published online Aug. 3, 2018.

COPYRIGHT © 2018 by the Society of Nuclear Medicine and Molecular Imaging.

The differential diagnosis on PET includes cancer recurrence, de novo malignancy, metastasis, and silicone granuloma.

Physical examination is less sensitive to the detection of silicone breast implant rupture, especially when there is no capsular contracture. Dedicated breast MRI is the imaging modality used to detect and evaluate a clinically unnoticed rupture (3). Unfortunately, some women cannot undergo MRI because of contraindications such as having a cardiac pacemaker, another device, or claustrophobia. PET imaging can show increased ^{18}F -FDG uptake in regions of silicone-induced inflammation (4). Histopathologic examination is crucial for a definitive diagnosis (5). Removal of the ruptured implant should be considered to prevent further complications from silicone-gel migration.

CONCLUSION

^{18}F -FDG uptake in nodal or even extranodal sites is non-specific in patients with a history of breast cancer and breast implant rupture. Any uptake should be interpreted

with caution as it may represent a malignancy and not a benign finding such as granulomatous inflammation. Once foci of increased ^{18}F -FDG uptake are found, correlation with histopathologic findings is critical before treatment.

DISCLOSURE

No potential conflict of interest relevant to this article was reported.

REFERENCES

1. Ismael T, Kelly J, Regan PJ. Rupture of an expander prosthesis mimics axillary cancer recurrence. *Br J Plast Surg*. 2005;58:1027–1028.
2. Oh JH, Song SY, Lew DH, Lee DW. Distant migration of multiple siliconomas in lower extremities following breast implant rupture: case report. *Plast Reconstr Surg Glob Open*. 2016;4:e1011.
3. Brenner RJ. Evaluation of breast silicone implants. *Magn Reson Imaging Clin N Am*. 2013;21:547–560.
4. Patel CN, Macpherson RE, Bradley KM. False-positive axillary lymphadenopathy due to silicone granuloma on FDG PET/CT. *Eur J Nucl Med Mol Imaging*. 2010;37:2405.
5. van Diest PJ, Beekman WH, Hage JJ. Pathology of silicone leakage from breast implants. *J Clin Pathol*. 1998;51:493–497.