

# Asymmetrical F-18 Fluorodeoxyglucose uptake in the breasts: A dilemma solved by patient history

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## ABSTRACT

The present case highlights the importance of history taking in solving the dilemmas of variant F-18 FDG uptake on PET/CT. Asymmetrically increased, abnormal looking, FDG uptake in the right breast of our patient was related to her breast feeding practice. Because of personal preference the patient suckled her child from the right breast only. This resulted in asymmetry of size, increase in glandular breast parenchyma and FDG uptake in the breast that was suckled.

**Keywords:** Breast, F-18 fluorodeoxyglucose, lactating, positron emission tomography/computed tomography

A 35-year-old female, 6 months postpartum, was referred to our department for a whole-body F-18 fluorodeoxyglucose (FDG) positron emission tomography/computed tomography (PET/CT) study because of fever of unknown origin. She had a previous history of molar pregnancy. A PET/CT study was done following intravenous injection of 222 MBq (6 mCi) of F-18 FDG. The maximum intensity projection image [Figure 1a-arrow] revealed abnormal, increased FDG uptake in the right breast region. The fused PET/CT images revealed enlargement of the right breast with dense glandular parenchyma showing increased FDG uptake [Figure 1b] with no definite mass identifiable on CT [Figure 1c]. The patient was questioned regarding her lactating status, and she revealed that due to her personal comfort and preference, she was feeding the child from the right breast only. The right breast was enlarged compared to the left but there were no signs of inflammation or underlying tenderness. The increased FDG uptake was thus interpreted to be related to lactation from the right breast

only. Patterns of FDG uptake in lactating breasts has been described in literature.<sup>[1,2]</sup> This uptake is usually bilateral, diffuse and symmetric. Breast FDG uptake was not noted in a woman who had not begun breastfeeding her 2 days infant and neither was she receiving medication to suppress lactation/prolactin production.<sup>[1]</sup> Thus, FDG uptake in lactating breasts is related to suckling rather than prolactin production. Experimental studies in rats have revealed that there is increased expression of glucose transporter-1 (GLUT-1) in the lactating breast, and this expression decreases rapidly after cessation of suckling.<sup>[3,4]</sup> A few authors<sup>[1,5-7]</sup> have reported unilateral breast uptake related to breastfeeding practice preferentially from the same breast. This is due to the increased GLUT-1 expression in the suckled breast compared to the nonsuckled side. We, therefore, need to be aware of this possibility while reporting an F-18 FDG PET/CT study in a lactating patient. The other differentials or diffuse FDG uptake in unilateral breast are advanced breast cancer, lymphoma, and inflammatory conditions.<sup>[8]</sup> All these were ruled out by concomitant CT in our case as there was no significant mass lesion/distortion in normal architecture. Proper

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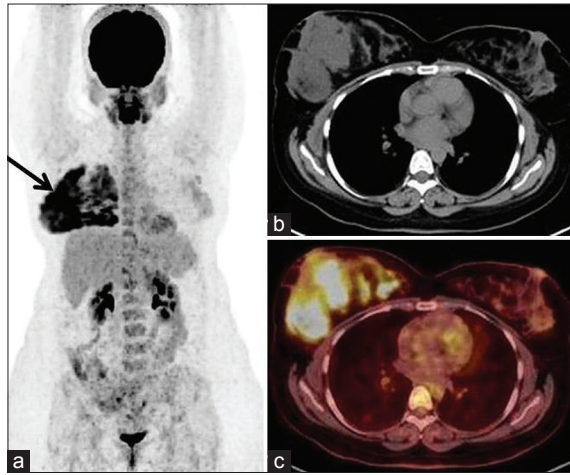
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**Figure 1:** The maximum intensity projection image (a-arrow) revealed abnormal, increased fluorodeoxyglucose uptake in the right breast region. The fused positron emission tomography/computed tomography images revealed enlargement of the right breast with dense glandular parenchyma showing increased fluorodeoxyglucose uptake (b) with no definite mass identifiable on computed tomography (c)

history was taken, and enquiry about lactation and breastfeeding was done before PET/CT was done. The patient denied of any breastfeeding since last 2 days as the baby was started with weaning. After reviewing the scan again, she was asked about lactation and breastfeeding. She informed that she used to breast feed the baby only on the right side due to better positional comfort. Hence, proper history including lactation history and

pattern of breastfeeding should be enquired, especially when dealing with women of reproductive age group.

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### Conflicts of interest

There are no conflicts of interest.

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