Reviewer's report

Title: Utility of 18F-fluorodeoxyglucose emission tomography/computed tomography fusion imaging in combination with ultrasonography for axillary staging in primary breast cancer

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Reviewer: Christian Cohade

Reviewer's report:

The authors prospectively evaluated diagnostic accuracies of PET/CT and US for detection of axillary node metastases in breast cancer patients. PET and CT demonstrated limited sensitivity. The authors concluded that candidates for SNB were more appropriately selected using combined US and PET/CT.

MAJOR COMPULSORY REVISIONS

1. The reported sensitivities of PET/CT and US are limited (58% and 54% respectively). Even combined PET/CT and US showed a limited 64% sensitivity which is too low to make these modalities part of the routine evaluation of pre-operative breast cancer patients. 15% of patients had axillary node involvement when PET and US were negative.

2. The authors acknowledge that they use US to detect patients with massive tumor burden. The role of non-invasive in breast cancer patient would be to identify patients with massive tumor burden and to send these patients to axillary dissection instead of sentinel node biopsy. Since most recent studies demonstrated limited utility of PET/CT for axillary staging, what would be the added value of PET/CT for this role? Would not it be more appropriate to perform PET/CT only in patients in whom US showed massive tumor burden?

3. In the section describing PET/CT, essential technical details are lacking regarding PET/CT acquisition: (type of PET/CT camera, 2D vs. 3D mode, uptake time, and acquisition time per field position). Details on CT acquisition should also be provided (CT current, pitch, contrast enhancement).

4. Blood sugar level should be indicated.

5. The number of patients for categories 2 and 3 is limited. This restricts the conclusions that can be drawn for these two categories.

6. Lobular and mucinous carcinomas are reported to show limited PET sensitivity due to low cellular density. What was the performance of US and PET/CT for these carcinomas?

MINOR ESSENTIAL REVISIONS

7. US is reported to be operator dependent. An experienced ultrasonographer
performed the axillary examination. Can the conclusions apply to the average ultrasonographer?

8. Table 1 Legend: ILC means Invasive Lobular carcinoma.

9. Table 3: Line 8 Total should be written instead of tatal.

10. P 18. ‘AUS showed excellent sensitivity’. Limited would be more appropriate.

11. SUV means Standardized Uptake Value not Standard Uptake Value.

DISCRETIONARY REVISIONS

12. The authors could discuss the cost effectiveness of their proposed assessment of nodal status with PET/CT and US. Considering their limited sensitivities, it is more likely that US will be more cost-effective in detecting massive axillary tumor burden.

13. There are numerous factors that will influence SUV results. The limited role of SUV in breast cancer staging could be indicated.

14. PET/CT could have a role in staging high risk breast cancer patients and in detecting other areas of lymph node metastases. The authors reported cases of parasternal and infraclavicular lymph node metastases. Did the authors detected distant metastases in the population.

What next?: Unable to decide on acceptance or rejection until the authors have responded to the major compulsory revisions

Level of interest: An article whose findings are important to those with closely related research interests

Quality of written English: Needs some language corrections before being published

Statistical review: No, the manuscript does not need to be seen by a statistician.

Declaration of competing interests:

I declare that I have no competing interests