Reviewer's report

Title: Case report: PET/CT, a cautionary tale.

Version: Date: 19 October 2006

Reviewer: Mannudeep Kalra

Reviewer's report:

General
Review
Specific Comments:

Abstract
Background: On the contrary, mis-registration has been well reported in the literature. Therefore, I would like to restrict this to just state: “Mis-registration errors are increasingly….. of PET/CT studies.”

Case presentation
Please abbreviate to PET/CT after its first use in the background.
Please state whether PET, CT as well as PET/CT mis-localized the lesion.
Please state if this was Trans-esophageal US or otherwise

Background

There is a lot of background stuff which seems like redundant as this is a case review and not a review article or original research article. Accordingly, I believe that much of the first paragraph can be deleted. The message in the background should highlight the following: PET functional information- poor spatial resolution, CT- anatomic information minus functional information- so PET/CT complement each other- initial image fusion resulted in lot of mis-registration of PET-CT data, with “hardware fusion” registration has improved. Some limitations of PET CT among them image alignment still continues to be an issue with this promising modality.

Case presentation
1. Editors: Please confirm the accuracy/appropriateness of Chemotherapy regime as this is not my area of specialty
2. For imaging description: State that whole body CT (instead of CT body- or was it neck chest abdomen and pelvis- if so specify regions) was performed. Delete scan after MRI.
3. What is the pattern of reporting in your institution: who reports CT component of PET CT? Is PET/CT with contrast or without? Please state if radiologists reviewed the CT component of PET CT as well.

Conclusions:
Good review of salient points.
I would like to add here that in most places nuclear medicine physicians report PET/CT and they may not have been trained specifically in CT interpretation. Therefore, it is important also that radiologists be consulted for interpretation of the study particularly for the CT portion to avoid misinterpretation. Please specify from where authors found 0.5 cm movement in their case.

Figures:
1. It is the image section that I have some concern about. The CT image shows some soft tissue attenuation tissue in the pre-vertebral region.
2. The fused images also show that part of the lesion in the subsequent PET was in the prevertebral region. Please explain if the reporting of PET CT could have been erroneous rather than the finding seen on images. I also consulted another radiologist with much experience in this field as well about this matter- he agreed.
3. I would also like to see MR image of this region included in the report.
4. The reasons for my request are manifold: CT and MR are both superior to endoscopic US and PET for localization of lesion to paravertebral region. Absence of marrow signal intensity on MRI in this region should have provided clue to its extra-vertebral location. Was MR and or CT contrast enhanced or not? A non-contrast CT would not be as sensitive. Who reviewed CT and MR images- Nuclear medicine
physicians or radiologists? If nuclear medicine physicians- please state if they were trained in cross-sectional radiology as well. Were there artifacts on CT and MR from metal clips? If yes, were these artifacts in any way in the region of soft tissue lesion? Was CT performed twice- CT and then with PET/CT as well? Please state why?

Major Compulsory Revisions (that the author must respond to before a decision on publication can be reached)

Minor Essential Revisions (such as missing labels on figures, or the wrong use of a term, which the author can be trusted to correct)

Discretionary Revisions (which the author can choose to ignore)

**What next?:** Reject because too small an advance to publish

**Level of interest:** An article of insufficient interest to warrant publication in a scientific/medical journal

**Quality of written English:** Acceptable

**Statistical review:** No

**Declaration of competing interests:**

I declare that I have no competing interests.