Reviewer's report

Title: The early response of renal cell carcinoma to tyrosine kinase inhibitors evaluated by FDG PET/CT was not influenced by metastatic organ

Version: 2 Date: 4 March 2014

Reviewer: Guido Davidzon

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Overall: I enjoyed reading the paper and although it does not touch upon a major topic in nuclear medicine or molecular imaging, I think the findings of the authors deserved publication after all revisions are made. Specifically, I think they have to be more descriptive/detail on the technical aspects of the study. Also, authors should acknowledge the limitations of a retrospective study and that these findings should be confirm in a larger prospective study.

Comments

• Major Compulsory Revisions

1) Could you please thoroughly explain how ROIs (VOIs) were acquired (shape, size, 3D or not, etc.). Did you choose this ROI based on established criteria? Also, were ROIs acquired by a solo physician or multiple physicians? Which of the authors worked on the ROIs?

2) The imaging section under methods mentioned SUV values were calculated based on patient’s weight. Did you use total body weight or lean body weight? I ask this because is well known that when lean body weight is used, SUV values a more accurate for comparison among different patients and also within a same patient between baseline and follow-up study. SUV values can me underestimated in large patients since FDG doesn’t concentrate in fat as much as it does in other tissues.

3) It is interesting that SUVmax values were significantly different between lung and non-lung metastases and that lung metastases showed lower FDG uptake. Was this analysis adjusted for the size of the lung lesions? I’m curious to know if there is something special about the lung metastases or if SUVmax values are underestimated due to partial volume effects.

4) On page 12 of the discussion you said: “it is well known that RCC patients with lung metastasis only show longer survival than other RCC patients”; were you implying that the patients in your cohort who have lung metastases also have lung only metastases? Do they?

5) I am impressed that all 96 PET/CTs (baseline and 1 month follow-up for 48 patients) were acquired at 60 minutes following the i.v administration of F18-FDG, given this is a retrospective (uncontrolled) study. Could you please clarify if this is the case or if 60 minutes is an approximation? If the latter, could you please provide the range for uptake time. As you probably know there are
many variables affecting SUVmax values and uptake time is one of them. So if the range is large, meaning some patients were scanned at later than 70 minutes, ideally you should correct for this and/or acknowledge the limitation.

6) How did you work around the high background issue for ROIs on primary renal lesions and contralateral renal metastases? Did you encounter any problems? Is so, in how many lesions? –For e.g. patient F in Figure 4 has a large primary tumor in the left kidney. How did you assure that your SUV measurements weren’t affected by surrounding (and sometimes bleeding in) urine activity?

• Minor Essential Revisions

1) Figures 2 and 3 have missing values in their Y and X axis.

• Discretionary Revisions

None.

Level of interest: An article of importance in its field

Quality of written English: Not suitable for publication unless extensively edited

Statistical review: Yes, but I do not feel adequately qualified to assess the statistics.