Reviewer's report

Title: Complementary role of 18F-FDG PET/CT in detection of biliary tract cancer recurrence after curative resection

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Reviewer: Ambros J Beer

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In this manuscript, the authors describe the potential role of FDG-PET/CT in comparison to ceCT in detection of recurrence of biliary tract cancer after curative resection. An additional FDG-PET/CT after a ceCT significantly improved the sensitivity for detecting tumour recurrence.

In general this is a relevant and interesting topic. Some methodological aspects should be addressed. Especially, blinded reading should be performed for all studies and the level of confidence for each finding should be noted for each modality and the combination of ceCT and PET, e.g. using a 5 point scale. By doing so, a ROC analysis could be performed and the AUC for all modalities could be compared. Moreover, the % change in patient management should be noted which was achieved by adding PET to ceCT.

Abstract:

one could mention that FDG-PET/CT showed higher sensitivity and accuracy compared to CT, but the results did not reach statistical significance, probably due to the low number of patients.

Methods:

- Patients: concerning the criteria for a FDG-PET/CT: was one of the four sufficient? because it says “any combination” of these criteria, which would mean at least two have to be present? Please clarify.
- blinded reading should definitely be performed for all scans
- what is the definition of a benign finding?
- please show exact data for the follow up: mean, min, max, std-deviation;
- what is recurrence in “vascular areas”?
- how is the site-specific specificity calculated? What were the negative reference areas / lesions? Please clarify

Results:

- how can the low specificity of combined ceCT and PET/CT be explained? This is also contradictory to the discussion
- how many patients had a larger interval than 3 weeks for CT and PET/CT? This might influence the results
- please clarify what a “vascular area” is

Discussion:
- there is definitely a trend that PET/CT is better than ceCT in my opinion, probably the number of patients is just too low to reach statistical significance
- it should be mentioned at some point, that most modern PET/CT scanners allow for fully diagnostic ceCT scans as well, so would the authors recommend contrast enhanced diagnostic PET/CT as the primary modality of choice in case of suspected recurrence?
- 5 false positives in ceCT were correctly identified as negative in PET/CT, so how comes the low specificity of ceCT plus PET/CT in table 4? Please clarify.

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