Reviewer's report

Title: Analysis of regional Bone Scan Index measurements for the survival of patients with prostate cancer

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Reviewer: Yozo Mitsui

Reviewer's report:

Comments to author

In this paper, authors investigated if localization of bone metastases calculated by automated bone scan index (aBSI) could be useful as an imaging biomarker for prediction of survival in prostate cancer, using large size number. The manuscript is well written and contains important findings about the localized aBSI although it could not increase the prognostic capability compared to total aBSI. However, I have several queries in your manuscript.

- Major Compulsory Revisions
  #1) Method—study population

In this study, authors evaluated aBSI value using one bone scan imaging performed at “the last” for each patient. So, what means last? Does it mean last follow-up one? There are several situations for prostate cancer patients, for example, 1) at the diagnosis of prostate cancer, 2) during hormone therapy, 3) at the diagnosis of castration-resistance prostate cancer, 4) during chemotherapy, and 5) chemotherapy resistant. The prognosis is different between these situations. According to the mean follow-up period (mean 2.3 years), I think that most patients are at the stage of chemotherapy resistant. But more detailed explanation is required in this paper. If it is not possible, the author should consider this point as a limitation of this study and mention it in the limitation paragraph.

- Discretionary Revisions
  #1) Background: author writes “Recent works have….for prostate cancer patients”. According to author’s references, Kaboteh et al (Reference #6) have showed that aBSI changed could be a prognostic marker in addition to aBSI values. So I suggest something: “Recent works have shown that both total aBSI values and their changes are a prognostic indicator and ….for prostate cancer patients”. In addition, you had better adding the below reference in this sentence. Their work also demonstrated the usefulness of aBSI change in Pca.


#2) Discussion: author discussed that “Yamashita et al found that the localization
of bone metastases were alive after two years compared with only 18% of those with an increase in total BSI change (p=0.03) in the discussion. I think this line should include in the limitation or rewrite like this “Yamashita et al found that the presence of bone metastases outside the pelvis and the lumbar spine is predictive of shorter survival time among the responders to the treatment. Thus, the localization of bone metastases may be a prognostic indicator if information of treatment response is also added. We have not considered therapy response in this study and can therefore not compare our results with theirs. Data obtaining therapy response are needed to clarify the true usefulness of regional BSI.”

- Minor Essential Revisions
#1) Background: you should exclude p-value (p=0.048) in background.
#2) Discussion: “castration-resistant prostate cancer” should be used instead of “hormone-refractory prostate cancer”.

Level of interest: An article of importance in its field

Quality of written English: Acceptable

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.