Reviewer’s report

Title: Development of a Disease-Specific Graded Prognostic Assessment index for the management of Sarcoma patients with Brain Metastases (Sarcoma-GPA).

Version: 0 Date: 06 Aug 2019

Reviewer: Anthony D. Elias

Reviewer's report:

I applaud the effort to develop a prognostic model for sarcoma patients with brain metastases. This does have the potential to encourage treatment for these patients. The population is very diverse, presenting major challenges to come up with a single model.

1. pg 7/34, line 20: However, since treatment affected outcomes significantly (surgery, chemotherapy, SRS, WBRT) as outlined in the original database (reference 17 in this paper) and were, by far, the most relevant variables, the exclusion of treatment in the analysis and development of a model does not make sense. It would make more sense to analyze the factors that led to the 18% being untreated, and other groups with various types of treatment. Certainly from a clinical point of view (at least mine), I would be taking into account histology, PS, prior treatment (eg, active agents that have not yet been given and anticipated benefit), ability to give SRS or surgery rather than WB (which is far less likely to control disease for long).

2. It is of course the case that the treatment is outdated, given the extended period of the patient cohort, particularly in the form of SRS vs WB. Only 16% had >5 lesions. Today it would be very uncommon to use WB for treatment except in patients perhaps with >10 lesions.

3. The various histology cohorts are enormously diverse: for example, group H3 contains bad actors such as synovial sarcoma, epithelioid sarcoma, small round cell tumors, as well as relatively indolent tumors such as phyllodes. These groupings are likely happenstance (eg, have similar OS, due to different treatment), rather than being biologically coherent.

4. Figure 1 figures and figure 3B are blurry.
Are the methods appropriate and well described?
If not, please specify what is required in your comments to the authors.

Yes

Does the work include the necessary controls?
If not, please specify which controls are required in your comments to the authors.

No

Are the conclusions drawn adequately supported by the data shown?
If not, please explain in your comments to the authors.

No

Are you able to assess any statistics in the manuscript or would you recommend an additional statistical review?
If an additional statistical review is recommended, please specify what aspects require further assessment in your comments to the editors.

I am able to assess the statistics

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