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: 10 Aug 2019

Reviewer: Sandro Pasquali

Reviewer's report:

This is an interesting manuscript on an under reported topic.

Major points

Study endpoints are OS and TTBM. Did patients experience disease progression at sites other than brain? Did this progression influence prognosis? In this regard would a competitive risk analysis be more appropriate?

The authors consider time to first metastasis, time to brain metastasis in the prognostic model. This is not fully appropriate as these events are unknown at the date of brain metastasis, that is the starting date for calculating OS in this analysis. In this regard it is of interest that TTBM lowered the prognostic value of the model.

Results. It is unclear how cut-offs were selected. It seems that Authors looked for the best cut off in order to make variables statistically significant. Please provide more information in the method section.

Figures are poor. The SPSS output table in the diagram of the survival curves has to be removed.

Figure 1 is useless as it reports univariate analysis. Upon authors decision this figure may go in Supp matherial.

Figure 3 should be only the Kaplan Meier curves, again the SPSS table has to be cancelled as well as the embedded tables.
Table S1 is important and should go in the manuscript.

There should be also a table that highlight the features of the prognostic index with the score for each variable. This should be the main table of the manuscript together with figure 3.

Authors should report in the discussion that the main limitation is the lack of a validation of the prognostic index in an independent set. Do they have any plan for future validation?

Minor points

Abstract. GPA index should be introduced.

Introduction. Overall the issue of brain mts in sarcoma is under-described. For instance, please report rate of brain metastasis for sarcoma patients. Also, a sentence should be added reporting sarcoma histologies more likely to develop brain metastasis. In this regard the Authors stated that "The French Sarcoma Group (GSF-GETO) has recently published the largest series to date of sarcoma patients with brain metastases, describing their characteristics, treatment modalities, prognostic factors and outcome". It would be advisable to report some of these data in the introduction.

Introduction. "The development of this sarcoma-specific index was done in collaboration with the team that described the original and disease-specific GPA indices." This should go in method section.

Are the methods appropriate and well described?
If not, please specify what is required in your comments to the authors.

No

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

Unable to assess
Are the conclusions drawn adequately supported by the data shown?
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Yes

Are you able to assess any statistics in the manuscript or would you recommend an additional statistical review?
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Quality of written English
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