Reviewer’s report

Title: Diffusion weighted magnetic resonance imaging (DW-MRI) as a non-invasive, tissue cellularity marker to monitor cancer treatment response

Version: 0 Date: 10 Jun 2019

Reviewer: Federica Scalorbi

Reviewer's report:

The manuscript is well structured but the sample size is too small to draw final considerations.

Mayor criticism:

- METHODS:

TUMOR MODEL: sample size, specify the number of female/male mice, explain the motivations that brings the authors to treat mice with 10 Gy or 15 Gy (literature references);

MRI PROTOCOL:

Clarify how the ROI has been drawn

STATISTICAL ANALYSIS:

Considering the sample size it's fundamental to apply not-parametric analysis (ANOVA and Person's are parametric tests) and specify median as well as mean values. I encourage to apply Spearman's test to evaluate correlations between data sets. Specify the data sets (ex percentage of apoptosis, ADC values etc)

FIG 1: boxplot could be use an alternative method to show the trends. Please, add median, max and min values to the graphs. Please, change x-axis: from day 0 to day 4.

- RESULTS:

line 151: replace the sentence "reduction in tumors size in the two treatment groups compared to the untreated control" with "Successful tumor inhibition is seen in all treatment groups for both models over time given by a significant increase in tumor size for the control groups, which is absent in all treatment groups". Indeed, there is no significant change in tumor size.

lines 168-169: replace the sentence "ADC results are presented in relative values to describe the systematical changes in tissue after treatment, and describe a mean.." with "ADC results are presented in relative values to describe the systematical changes in tissue after treatment. There is a mean increase..."
In our study the total level of apoptotic cells, both at an early and at a late time point, correlated to ADC-values, but if you consider figure 3 there are shown only the results at day 4.

FIG 3C, 3D: reverse the variables with respect to the axes

**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.

Yes

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

Yes

**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 recommend additional statistical review

**Quality of written English**
Please indicate the quality of language in the manuscript:

Acceptable
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