Reviewer’s report

Title: IMRT and carbon ion boost for malignant salivary gland tumors: interim analysis of the COSMIC trial

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Reviewer: Ralf Schneider

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This is the first analysis of the prospective phase II trial COSMIC. A carbon ion boost followed by IMRT was performed in a patient cohort with malignant salivary gland tumors. Primary endpoint of this trial is mucositis grade III. Secondary endpoints are local control, progression-free survival and toxicity.

The authors included 29 patients into the analysis. 16 patients underwent radiation therapy after R2-resection and 13 patients after R1-resection.

The sentences and the text body are well constructed. The figures and tables give a good overview and are an appropriate addition to the manuscript.

Minor essential revisions (spelling):

Target volumes / dose prescription and constraints
…dose to any point within the spinal cord should not exceed 5045 Gy…

Treatment planning and radiotherapy
…magnetically deflected so as to scan each of these iso-energetic…

Patients with salivary gland tumors are difficult to treat. High biologic effective doses to extensive volumes frequently involving base of skull are recommended to control efficiently the tumor. High grade acute toxicities are expected in these patients. Nevertheless the presented interim analysis is promising because of moderate acute toxicities especially when taking into account the significant higher RBEs of carbon ions.

Minor essential revisions:

Data with regards to secondary endpoints of this trial are very preliminary after such a short follow-up time. This should be stated in the conclusions in a more clear way.

According to the COSMIC protocol < 5% of CTV 1 or CTV 2 should receive < 90%.

Was it feasible to observe these parameters for the treatment plans of the 29 patients? The authors should present the results.

I recommend the article for publishing after minor essential revisions, even
though median follow-up time was only 3 months for this relatively small cohort and a longer follow-up period with a higher number of patients will be needed.