Reviewer's report

Title: Superiority of Intensity Modulated Radiotherapy in recurrent T1-2 nasopharyngeal carcinoma: A retrospective study.

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Reviewer: Volker Rudat

Reviewer's report:

In this retrospective study the authors report about the outcome of four different salvage radiotherapy techniques of 168 patients with recurrent rT1-2 nasopharyngeal carcinoma. Goal of the study was to find out the best salvage radiation technique in terms of tumor control and late toxicity: 3D-CRT versus IMRT versus brachytherapy versus brachytherapy combined with external radiotherapy.

The median follow-up time was 28 months. The 1-, 2-, and 3-year LC, DFS, and OS rates were around 83%, 51% and 35%. On univariate analysis no significant difference of the LC, DFS or OS was observed between the four salvage radiation techniques. Three months after salvage radiotherapy grade 3 and 4 radiation complications were observed in 5.3% to 27.4% of the patients. Patients treated with 3D-CRT or IMRT showed significantly less toxicity compared to patients treated with brachytherapy alone or combined with external radiotherapy. The authors concluded that IMRT is superior for the treatment of rT1-2 NPC.

Major Compulsory Revisions

This is an interesting data set but there are several major issues.

1. For the analysis toxicity assessed three months after radiotherapy was used. The majority of severe late reactions usually develop later than three months after radiotherapy and therefore the data do not fully represent late toxicity after re-irradiation. The median follow-up was 28 months and patients were assessed every three months during the follow-up. Why didn't the authors perform an actuarial analysis of late reactions?

2. One of several important factors for the development of late reactions is the total dose applied. The authors did not present any data of the primary radiotherapy nor the cumulative dose of the primary and salvage radiotherapy. In addition, no selection criteria for the application of the four different salvage therapies were presented. Interpretation of the observed differences in toxicity is therefore very difficult. For example, the authors cannot exclude that the observed increased toxicity of patients treated with brachytherapy is mainly due to a patient selection bias and not to a possibly inferior radiation technique.

3. The authors did not compare the observed LC, DFS and OS of the four
salvage radiotherapy techniques with a corresponding patient group without salvage radiotherapy. Therefore the exact extent of the benefit in tumor control by salvage radiotherapy is unclear.

4. The conclusion of the authors that IMRT is superior for the treatment of rT1-2 NPC compared to the other savage radiation techniques is not supported by the data. The statistical analysis showed no significant difference of the LC, DFS or OS between the compared groups, and the statistical analysis of toxicity did not differentiate between 3D-CRT or IMRT. Furthermore, interpretation of the toxicity is very limited due to the reasons discussed in paragraph 1 and 2.

5. The text needs thorough revision by an English native speaker.

Minor Essential Revisions

What kind of model selection was used for the multivariate analysis?
What was the median dose of the patient groups <60 Gy and >=60 Gy?
Figure 6: is the correct title really "recurrent T classification" or should it be "T classification at diagnosis".
In my opinion figure 3 to 6 can be deleted.

Level of interest: An article whose findings are important to those with closely related research interests

Quality of written English: Not suitable for publication unless extensively edited

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