Reviewer's report

Title: Radiation-induced temporal lobe injury after intensity modulated radiotherapy in nasopharyngeal carcinoma patients: a dose-volume-outcome analysis

Version: 2 Date: 15 May 2013

Reviewer: Jeffrey Tuan

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Major Compulsory Revisions

In a paper published in RO in 2013: Su et al.: Analysis of dosimetric factors associated with temporal lobe necrosis (TLN) in patients with nasopharyngeal carcinoma (NPC) after intensity modulated radiotherapy. Radiation Oncology 2013 8:17.)

, and


The authors looked at 870 NPC patients treated with IMRT from 2001 to 2008 at the Cancer Centre of Sun Yat Sen University.

1. Can the authors of this paper clarify if this current study population is a subset of the 870 NPC patients or is it a separate pool of patients? The subject of study in the current and above mentioned studies seem to be similar. Can the authors elaborate how the current study adds to the published literature the recently published 2 studies?

2. The median follow up is not stated. In this group of patients from 2003-2006, is there sufficient follow time to pick up the TLI bearing in mind the latency period of the TLN can be up to 5 years?

3. In the discussion it was mentioned that the area receiving 68 Gy correlated to the nidus of the TLI. As can be seen by the MRI, there are some areas receiving almost 76Gy. Why is that these areas do not develop TLI if the conclusion that D0.5cc or any small volume receiving >68gy will be at high risk of TLN?

4. In the discussion, the authors commented the as D0.5cc was the only independent predictor of TLI, this lends support to the theory that temporal lobes is a serial structure. This contradicts other published data that classifies temporal lobes as parallel structure. Are there any published data to support this hypothesis of temporal lobes being a serial structure or against temporal lobes being parallel structures? Was there any correlation of D0.5cc to functional status i.e. symptoms from TLN?
5. The current study aims at correlating dose volume parameters in the affected temporal lobes to the corresponding non affected temporal lobes. As NPC is usually a midline cancer, one would expect that dose distributions to bilateral temporal lobes should be similar (any difference should not be too much; in this data set the maximum difference for all the parameters is <15Gy). How often will the dose distribution be significantly higher on 1 temporal lobe to cause unilateral TLN such that we can be certain that the TLN is attributed to the unequal dose distribution? How does the data compare to the one in the paper by Su et al. Are there also data for well lateralised cancer, where 1 temporal lobe is certain to receive a much higher dose than the other lobe?

6. The current paper is interesting and hypothesis generating, by attempting to correlate a dose parameter (D0.5cc) to an effect (TLI). It would be interesting to see if the hypothesis can be supported by other studies (su et al states 10% risk if Dmax>70gy, maybe in different cohort or types of tumors, skull base chordomas for example), i.e. if D0.5cc exceeds 69Gy what will be the risk of developing TLI. Also as each patient is his own control (by comparing the affected lobe to the contralateral non-affected lobe), how is this different when we compare 2 different patients (1 with TLN and 1 without).

Level of interest: An article of limited interest

Quality of written English: Acceptable

Statistical review: Yes, but I do not feel adequately qualified to assess the statistics.

Declaration of competing interests:

I declare that I have no competing interests