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LETTER TO THE EDITOR

Stereotactic body radiotherapy for central lung tumours: Author reply

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(The Editors do not hold themselves responsible for opinions expressed by correspondents)

To the Editor,

We would like to thank Dahele et al¹ for addressing the important issue of the accurate definitions of central lung tumours in their letter entitled “Stereotactic body radiotherapy for central lung tumours”. We absolutely agree with the authors regarding the importance of distinguishing between “moderately central” and “very central” lung tumours. The EORTC 22113-08113 LungTech trial only allows the inclusion of patients with moderately central locations. Patients with tumours with very central locations, e.g. adjacent to the oesophagus or overlapping the central airways and for whom dose constraints cannot be achieved, are explicitly excluded.²

The dose and fractionation used in the LungTech trial is derived from the important and promising data from VU University Medical Center, Amsterdam, Netherlands.³ Implementing the dose constraints in our trial, those routinely used at the VU University Medical Center have been considered; however, not all of their constraints have been adopted. Thus, whereas the VU used 8×5.5 Gy to a maximum point dose,³ the central airway constraint provided in our article (eight fractions of 5.5 Gy to 0.5 cm^3)² refers to the LungTech trial only. We apologize for the misunderstanding and that the constraint for the central airway was not clearly quoted in table 1 of our review.²

One of the aims of LungTech is to define the therapeutic limits for moderately central lung tumours. Therefore,

details as to how the organs at risk are defined and delineated and which dose–volume histogram parameters are used may have a large influence on local control and toxicity. For this very reason, within the LungTech trial, we are implementing a rigorous radiation therapy quality assurance program. We are conducting delineation training sessions, and we will be collecting all planning data and cone beam CT data. This will enable us to calculate the actual given dose and may help us to find better normal tissue complication probability and tumour control probability model parameters.

We agree with Dahele et al that it is important to explicitly define and distinguish tumour location in order to prevent transfer of the results from moderately central to very central tumours and thus potentially avoid severe toxicity. Unfortunately, in the currently available literature on stereotactic body radiation therapy (SBRT) for central tumours, the anatomical description of tumour location is generally not sufficient to categorize tumours in moderately central and very central. Such clear definitions as recently provided by Chaudhuri et al⁴ are essential to ensure the safety of SBRT. We are therefore very grateful to Dahele et al for describing the general selective approach to central lung SBRT at their centre, e.g. applied in the cohort published by Haasbeek et al.³ They stated that “patients are not excluded from receiving eight-fraction lung SBRT”, even if “there is overlap between the planning target volume (PTV) and selected central structures”. In these cases,

“Dose reductions of the PTV to spare overlapping critical structures were not used”.³ On the other hand, we also learn from Dahele’s letter that in clinical practice, they were rather conservative in exposing the most central portion of the airways to the full dose, thus including only a very small number of patients with very central tumours in their cohort.

However, where does “being conservative” start? Where is this explicit border to too central tumours? And if we exclude them from SBRT with 8×7.5 Gy, even in trials, how shall we treat them? Even Chaudhuri et al⁴ explicitly excluded the oesophagus

abutting tumours as well as tumours that were within the mediastinum from the group of “ultra central” lung tumours with gross tumour volumes abutting the proximal bronchial tree or trachea.

We acknowledge that the LungTech will not provide data on the safety of treating very central lung tumours with SBRT. Therefore, we strongly support any initiative to set up prospective trials for this group of patients, *e.g.* in a dose escalation Phase I setting with meticulous toxicity follow-up and/or in comparison with conventionally fractionated radiotherapy.

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