Reviewer’s report

Title: Fractionated palliative thoracic radiotherapy in non-small cell lung cancer - futile or worthwhile?

Version: 0 Date: 14 Aug 2017

Reviewer: Joshua Jones

Reviewer's report:

The authors are to be commended on their retrospective review of patients receiving palliative radiotherapy with a goal of determining whether some treatments are worthwhile. This is a particularly complicated topic, as there are questions of efficacy, survival and patient preference that all need to be incorporated into the equation. Take, for example, a patient who has newly diagnosed stage IV non-small cell lung cancer and a PS of 2. That patient could have a prolonged survival and benefit significantly from radiotherapy if an EGFR mutation is present; however, the same patient with multiple prior courses of chemotherapy and multiple comorbidities might not benefit from palliative radiotherapy. Thus, the authors' attempt to determine factors that impact whether radiotherapy is worthwhile or not is to be commended. The study should be published, but more analysis would be helpful prior to publication. Specifically, the authors should address the following questions:

1. The authors describe looking for EGFR mutation status in their paper, but then do not analyze that data. Is there data on EGFR or ALK mutation status? That data should be presented and should be analyzed in the context of symptom relief as well as survival.

2. The authors describe "primary treatment" in table 1. That characteristic should be explained. Is this the primary treatment at diagnosis? How is it defined? What was the timing of this primary treatment in relation to timing of palliative radiotherapy?

3. The authors have a number of patients in their study who could theoretically be candidates for radical radiotherapy (stage I, stage II and a subset of stage III patients). How was the decision made to proceed with palliative radiotherapy rather than curative radiotherapy in these patients? This deserves some explanation.

4. As described in the initial paragraph, the timing of palliative radiotherapy and availability of other treatments could potentially have a significant impact on survival. Was data about prior chemotherapy courses available? The data suggests that a number of patients had >1 and even >3 prior chemotherapy courses. What was the impact of number of prior chemotherapy courses on survival? This data would also be very helpful in thinking about when and how to offer palliative thoracic radiotherapy.
5. As the authors describe, there is literature that suggests a dose-response relationship with improved overall survival for patients with a good performance status who receive a BED of at least 30 Gy in 10 fractions. The authors present data on survival based on performance status and separate data on dose-fractionation scheme and survival (in supplementary data). If the numbers are not too small, it would be helpful to present data on survival for patients with PS 0-1 based on dose-fractionation scheme as well as PS >2 based on dose-fractionation scheme.

6. With regard to symptom control, the authors describe that only a small number of patients received the suggested dose prescription of 15 Gy in 3 fractions for hemoptysis. Did those patients have other comorbid symptoms (dyspnea, pain, etc.)? If so, it would suggest these patients might be good candidates for fractionation schemes other than 15 Gy in 3 fractions.

Overall, this report represents an important contribution to the literature, but it will better answer questions about how to offer palliative radiotherapy with responses to the questions above.

**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 am able to assess the statistics

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

Needs some language corrections before being published
**Declaration of competing interests**

Please complete a declaration of competing interests, considering the following questions:

1. Have you in the past five years received reimbursements, fees, funding, or salary from an organisation that may in any way gain or lose financially from the publication of this manuscript, either now or in the future?

2. Do you hold any stocks or shares in an organisation that may in any way gain or lose financially from the publication of this manuscript, either now or in the future?

3. Do you hold or are you currently applying for any patents relating to the content of the manuscript?

4. Have you received reimbursements, fees, funding, or salary from an organization that holds or has applied for patents relating to the content of the manuscript?

5. Do you have any other financial competing interests?

6. Do you have any non-financial competing interests in relation to this paper?

If you can answer no to all of the above, write 'I declare that I have no competing interests' below. If your reply is yes to any, please give details below.

I declare that I have no competing interests.

I agree to the open peer review policy of the journal. I understand that my name will be included on my report to the authors and, if the manuscript is accepted for publication, my named report including any attachments I upload will be posted on the website along with the authors' responses. I agree for my report to be made available under an Open Access Creative Commons CC-BY license (http://creativecommons.org/licenses/by/4.0/). I understand that any comments which I do not wish to be included in my named report can be included as confidential comments to the editors, which will not be published.

I agree to the open peer review policy of the journal