

Letter to the Editor

In Response to “Caution in comparing keloid treatment regimens through linear quadratic model”

Misbah Ahmad, Habib Ahmad

Institute of Radiotherapy and Nuclear Medicine (IRNUM), Peshawar, Pakistan

First published online 8 January 2018

Dear Editor,

We have read with interest the Letter to the Editor titled “Caution in comparing keloid treatment regimens through linear quadratic model” by Ahmad and Rauf Khattak.¹ In this letter the authors comments on our article² and raise pertinent points regarding the selection of α/β value and time/repopulation correction factor while comparing the results of different treatment regimens. We would like to thank the authors for their interest in our publication and we appreciate the opportunity to respond to their letter.

First of all, we need to clarify that in our *retrospective* study the biological effective dose (BED) of each scheme was calculated using a linear quadratic model in order to compare the clinical outcomes in terms of success rate. The linear quadratic-BED was introduced to circumvent the differences in different radiation dose regimens. The radiation doses of different regimens have been normalised to BEDs to be able to compare the success rates on the *same scale*, that is *BED*. The selection of α/β value seems to have no influence on the clinical outcomes in our study; rather it worked just as a scaling factor. Nevertheless, it is important to point out that the selection of α/β value has importance in clinical practice, specifically when performing radiobiological analysis in different cells and tissues,³ but this was not among the objectives of our study.

Correspondence to: Misbah Ahmad, Institute of Radiotherapy and Nuclear Medicine (IRNUM), Peshawar, Khyber Pakhtunkhwa, Pakistan.
E-mail: misbahirnum@gmail.com

Ahmad and Rauf Khattak,¹ also raised an important question regarding time/repopulation correction factor. The time/repopulation correction factor is crucial, specifically in a situations when the overall treatment time (OTT), defined as the time period between surgery and the last radiation dose is >7 days.^{4–6} When OTT exceeds 7 days, a time/repopulation correction factor for accelerated proliferation, needs to be applied to the BED, as suggested by the authors of the letter. *Importantly* in our study the OTT for all patients treated with different radiation dose regimens was ≤ 3 days as discussed in the *Dose Regimen* section of our article. We therefore, respectfully disagree with the author’s of the letter stating that “this factor (time/repopulation correction) is completely ignored in the comparative study”. In fact, the time/repopulation correction factor has been considered, but as the OTT was ≤ 3 days therefore, this factor was hardly interesting in our study.

We hope these comments and explanation are helpful. We would furthermore like to express our gratitude to both the letter authors and the Journal Editor, to have the opportunity to include this discussion.

References

1. Ahmad I, Rauf Khattak M. Caution in comparing keloid treatment regimens through linear quadratic model. *J Radiother Pract* 2017; 16 (4): 478.
2. Ahmad M, Ahmad H, Khattak M R et al. Postoperative single versus multiple fractions high-dose rate iridium-192 surface mould brachytherapy for keloid treatment: a

- comparative study. *J Radiother Pract* 2017; 1–6. <https://doi.org/10.1017/S1460396917000395>.
3. Karagounis I V, Skourti E K, Liouisia M V, Koukourakis M I. Assessment of radiobiological α/β ratio in lung cancer and fibroblast cell lines using viability assays. *In Vivo (Brooklyn)* 2017; 31 (2): 175–179.
 4. Flickinger J C. A radiobiological analysis of multicenter data for postoperative keloid radiotherapy. *Int J Radiat Oncol Biol Phys* 2011; 79 (4): 1164–1170.
 5. Hoang D, Reznik R, Orgel M, Li Q, Mirhadi A, Kulber D A. Surgical excision and adjuvant brachytherapy vs external beam radiation for the effective treatment of keloids: 10-year institutional retrospective analysis. *Aesthetic Surg J* 2017; 37 (2): 212–225.
 6. Kal H B, Veen R E. Biologically effective doses of postoperative radiotherapy in the prevention of keloids dose–effect relationship. *Strahlenther Onkol* 2005; 181 (11): 717–723.