Reply To: Safety and Efficacy of Y-90 Radioembolization After Prior Major Hepatic Resection: Dosimetric Consideration

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We appreciate the comments put forward in response to our article, “Safety and Efficacy of Y-90 Radioembolization After Prior Major Hepatic Resection” [1]. As the authors of this letter accurately point out, certain characteristics of our patient cohort, such as the relatively large average remnant liver volume and hypervascular tumor entities in a majority of patients, likely had a positive influence on the safety outcome in our study. However, we do not think these are unusual patient characteristics. From our personal experience at a large academic hepatobiliary center, a majority of patients develop significant hypertrophy (almost up to near-normal volumes) of the liver remnant after hepatectomy during mid- to long-term follow-up (several months to years). Additionally, our results are in line with those of a previously published study by Kessler et al. [2] albeit their patient cohort included patients treated with less extensive liver surgery.

That being said, we do acknowledge the fact that our limited sample size limits the ability to draw definitive conclusions about the applicability of these results to the general population and that there remains a risk of overdosing in patients with less hypertrophy of the remnant liver—although we did not observe such a case in our study.

We absolutely agree with the call for a more personalized dosing method for Y-90 RE, since the correlation of BSA with the actual liver volume has been questioned in several studies. The other currently accepted method is the

partition model. While this model considers the actual liver mass and a mean absorbed dose in a volume of interest, it is severely limited by the fact that it can only be used in patients with a discrete tumor mass in the liver. In patients with a diffusely infiltrating tumor or multiple metastases, both not uncommon scenarios in patients undergoing Y-90 RE, this model cannot be applied since the target volume cannot be clearly defined. Because of these reasons and the lack of other alternatives, the BSA-based dosing method remains the probably most commonly used dosing method and further investigations are clearly needed to develop alternative, more personalized dosing methods.

Compliance with Ethical Standards

Conflict of interest On behalf of all authors, the corresponding author states that there is no conflict of interest.

References

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2. Kessler J, Lewis A, Gagandeep S, Ituarte PH, Park JJ. Radioembolization following liver resection: safety and dosing considerations. *J Vasc Interv Radiol JVIR*. 2016;27(1):46–51.

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