Optimal patient selection for stereotactic body radiotherapy

We read with great interest the acute toxicity findings from the randomised PACE-B trial reported by Douglas Brand and colleagues comparing stereotactic body radiotherapy with either conventionally fractionated or moderately hypofractionated radiotherapy for prostate cancer.[1] We congratulate the authors for undertaking this critically important randomised trial. The authors identified no significant differences in the changes in patient-reported quality-of-life metrics or toxicity by the Radiation Therapy Oncology Group scale between the two treatment groups. These data confirm the hypothesis that stereotactic body radiotherapy and conventionally fractionated to moderately hypofractionated radiotherapy have equivalent acute toxicity and support the contention that stereotactic body radiotherapy is a standard-of-care option for patients with intermediate-risk disease.

Given the depth and prospective nature of the toxicity data collected, we would specifically like to inquire about whether analyses will be done, or have been done, regarding the effect of prostate volume, baseline International Prostate Symptom Score (IPSS), and fractionation schedule. Such analyses could be crucial in supporting, or not supporting, the use of stereotactic body radiotherapy regardless of baseline anatomical and functional characteristics and might guide the choice of the safest fractionation scheme.

Retrospective data suggest that genitourinary toxicity after stereotactic body radiotherapy is increased for patients with larger prostate volumes.[2] Given that in the PACE-B trial 191 (46%) of 415 men treated with stereotactic body radiotherapy and 216 (50%) of 432 men in the control group had prostate volumes of 40 mL or higher, Brand and colleagues might have sufficient data to explore the association between gland size and toxicity, including any differential effect of prostate volume on toxicity between the fractionation schemes. A randomised trial of moderately hypofractionated radiotherapy versus conventionally fractionated radiotherapy found significantly worse late genitourinary toxicity among patients with a baseline IPSS of 12 or higher.[3] Based on the IQRs provided in the appendix (p 47) of the Article by Brand and colleagues, nearly 25% of patients in both treatment groups were known to have had a baseline IPSS of 12 or higher. Finally, longer intervals between stereotactic body radiotherapy fractions have been associated with decreased toxicity in previous studies,[4] and an acute increase in physician-reported gastrointestinal toxicity has been noted with moderate hypofractionation.[5] Notably, 86 (21%) of 415 patients treated with stereotactic body radiotherapy received daily fractionation and 298 (69%) of 432 in the control group received a moderately hypofractionated regimen. Thus, it might be important to dichotomise the control and experimental treatment groups by fractionation schedule, particularly when assessing the effect of treatment time and fractionation for patients treated with stereotactic body radiotherapy.

These post-hoc analyses might assist clinicians and patients select the best possible radiotherapy schedule to minimise acute toxicity.

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