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Abstract
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Stereotactic Ablative Radiation Therapy to the Prostate Bed: Toxicity Profile and Patient-Reported Outcomes in the POPART Multicentric Prospective Study

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Abstract

Objectives:

While Stereotactic Body Radiotherapy (SBRT) for localized prostate cancer has become a valuable option as a radical treatment, limited data support its use in the postoperative setting. Here, we report the updated results of the multicentric POst-Prostatectomy Ablative Radiation Therapy (POPART) trial, investigating possible predictors of toxicities and patient-reported outcomes.

Methods:

Patients with PSA levels between 0.1–2.0 ng/mL after radical prostatectomy underwent Linac-based SBRT treatment to the prostate bed, delineated according to the Francophone Group of Urological Radiotherapy (GFRU) guideline. SBRT was delivered in five fractions every other day for a total dose of 32.5 Gy (EQD2 1.5 =74.3 Gy). Late toxicity was assessed using Common Terminology Criteria for Adverse Events version 5 (CTCAE v.5) scale. Quality of life (QoL), including sexual, rectal and urinary domains, and biochemical control have been evaluated through EPIC-CP, ICIQ-SF, IIEF 5 questionnaires and PSA serum levels, respectively. Paired t-test was used to compare pre-treatment and post-treatment questionnaire scores, with minimally important differences (MID) established as a change in the questionnaire scores of > 0.5 pooled standard deviation (SD) from the baseline. A logistic regression analysis was performed to evaluate potential associations between specific patient/tumor/treatment factors and outcome deterioration.

Results:

From April 2021 to April 2023 a total of 50 patients were enrolled and treated. Median age at the time of SBRT was 70 (52-83) years. Median follow-up was 12.2 (3-27) months. No late ⩾G2 gastrointestinal (GI) or genitourinary (GU) toxicity was registered. Late G1 urinary and rectal toxicities were documented in 44% and 4% of patients, respectively. The MID analysis of overall QoL outcome for the 47 patients completing all EPIC-CP domains indicated clinical worsening in four (9%) patients. A deterioration in the IIEF 5 questionnaire was found in eleven (26%) patients. A significant correlation was observed between the decline in erectile function and the dose received by 2% of the PTV (OR, 2.560; 95% CI, 1.186-4.335; P=0.032). At multivariate analysis, only bladder wall D10cc (OR, 1.250; 95% CI, 1.017-1.537; P=0.034) independently correlated with late G1 GU toxicity incidence. Median post-treatment PSA nadir was 0.04 ng/mL (0.00 – 0.84). At the last follow-up, six patients presented with biochemical failure, including two nodal relapses.

Conclusion(s):

Our findings show that post-prostatectomy SBRT did not result in increased toxicity nor a significant decline in QoL measures, thus showing that it can be safely extended to the postoperative setting. Long-term follow-up and randomized comparisons with different radiotherapy schedules are needed to validate this approach.