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1.5T MR-guided daily-adapted stereotactic body radiotherapy for prostate re-irradiation: A preliminary report of toxicity and clinical outcomes

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Introduction & Objectives: Prostate re-irradiation is an attractive treatment option in the case of local relapse after previous radiotherapy, either in the definitive or in the post-operative setting. In this scenario, the introduction of MR-linacs may represent a helpful tool to improve the accuracy and precision of the treatment.

Materials & Methods: This study reports the preliminary data of a cohort of 22 patients treated with 1.5T MR-Linacs for prostate or prostate bed re-irradiation. Toxicity was prospectively assessed and collected according to CTCAE v5.0. Survival endpoints were measured using Kaplan-Meier method.

Results: From October 2019 to October 2021, 22 patients received 1.5T MR-guided stereotactic body radiotherapy for prostate or prostate-bed re-irradiation. In 12 cases SBRT was delivered to the prostate, in 10 to the prostate bed. The median time to re-RT was 72 months (range, 12-1460). SBRT was delivered concurrently with ADT in 4 cases. Acute toxicity was: for GU G1 in 11/22 and G2 in 4/22; for GI G1 in 7/22, G2 in 4/22. With a median follow-up of 8 months (3-21), late G1 and G2 GU events were respectively 11/22 and 4/22. Regarding GI toxicity, G1 were 6/22, while G2 3/22. No acute/late G \geq 3 GI/GU events occurred. All patients are alive. The median PSA-nadir was 0.49 ng/ml (0.08-5.26 ng/ml), for 1-year BRFS and DPFS rates of 85.9%. Twenty patients remained free from ADT with 1-year ADT-free survival rates of 91.3%.

Conclusions: Our experience supports the use of MR-linacs for prostate or prostate bed re-irradiation as a feasible and safe treatment option with minimal toxicity and encouraging results in terms of clinical outcomes.