BASELINE GLEASON PATTERN 4 LENGTH AND RECURRENCE AFTER FOCAL THERAPY FOR PROSTATE CANCER

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Introduction: Focal therapy (FT) has increasingly been used to treat localized prostate cancer (PCa). However, understanding its success rates and prognostic markers remains a clinical challenge, with substantial heterogeneity among intermediate-risk patients. Quantitative assessment of Gleason pattern 4 (GP4) length may refine patient selection for FT and carry prognostic significance. We evaluated whether baseline GP4 length was associated with recurrence in patients undergoing FT.

Methods: We identified men with localized Gleason Grade (GG) 2-3 PCa treated with FT at a single institution. Baseline GP4 length was calculated as the cancer core length by the percentage of GP4, using the core with the highest Gleason grade from the pre-FT biopsy. Per protocol, all patients underwent a 12-month post-FT biopsy. Recurrence was defined as clinically significant PCa (GG≥2) on follow-up biopsy. Groups were compared using the Wilcoxon rank-sum test.

Results: Ninety-three patients with at least one follow-up biopsy were included. Thirty-eight (41%) underwent irreversible electroporation, 32 (34%) cryoablation, and 23 (25%) transurethral ultrasound ablation. The median age at ablation was 66 years; 60 (65%) were GG2, and 33 (35%) were GG3. The median baseline GP4 length was 1.8 mm (IQR 0.5–4.8). Over a median follow-up of 27 months (IQR 18–33), 29 (31%) patients developed a recurrence. The median GP4 length was longer among patients who recurred than those who did not, in both the GG2 (1.2 mm vs. 0.5 mm, p=0.073) and GG3 (6.4 mm vs. 4.8 mm, p=0.12) subgroups. At recurrence, Gleason grade was downgraded in 4 patients (14%), upgraded in 8 (28%), and unchanged in 17 (59%) relative to baseline.

Conclusions: In this cohort, baseline GP4 length trended longer among patients who developed a recurrence after FT across GG2-3 disease, suggesting a potential role as a prognostic marker, though this did not reach statistical significance. Further research is needed to determine whether quantitative GP4 assessment may help refine risk stratification and post-treatment surveillance after FT.