Prostate zonal anatomy correlates with the detection of prostate cancer on multiparametric magnetic resonance imaging/ultrasound fusion-targeted biopsy in patients with a solitary PI-RADS v2-scored lesion

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Abstract

Purpose: To evaluate the positive predictive value (PPV) of the Prostate Imaging Reporting and Data System version 2 (PI-RADS v2) assessment method in patients with a single suspicious finding on prostate multiparametric magnetic resonance imaging (mpMRI).

Patients and methods: A total of 176 patients underwent MRI/ultrasound fusion-targeted prostate biopsy after the detection of a single suspicious finding on mpMRI. The PPV for cancer detection was determined based on PI-RADS v2 assessment score and location.

Results: Fusion biopsy detected prostate cancer in 60.2% of patients. Of these patients, 69.8% had Gleason score (GS) ≥7 prostate cancer. Targeted biopsy detected 90.5% of all GS≥7 prostate cancer. The PPV for GS≥7 detection of PI-RADS v2 category 5 (P5) and category 4 (P4) lesions was 70.2% and 37.7%, respectively. This increased to 88% and 38.5% for P5 and P4 lesions in the peripheral zone (PZ), respectively. Targeted biopsy did not miss GS≥7 disease compared with systematic biopsy in P5 lesions in the PZ and transition zone.

Conclusion: The PPV of PI-RADS v2 for prostate cancer in patients with a single lesion on mpMRI is dependent on PI-RADS assessment category and location. The highest PPV was for a P5 lesion in the PZ.