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Higher diagnostic accuracy of multiparametric MRI using PI-RADSv2 for transitional zone prostate lesions compared to peripheral zone prostate lesions

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Introduction: Multiparametric MRI (mpMRI) utilizing PI-RADSv2 has been recently validated as an adjunct tool to screen for prostate cancer, regardless of location. Our study compares the diagnostic accuracy of PI-RADSv2 for transitional zone (TZ) and peripheral zone (PZ) prostate lesions. Utilizing radiologic-pathologic correlation through mpMRI and a combination of TRUS guided 12-core and MRI/TRUS fusion biopsies, we compared the diagnostic accuracy of mpMRI utilizing PI-RADSv2 for detecting clinically significant cancer in the TZ versus the PZ of the prostate.

Methods: We retrospectively reviewed charts of patients with prostate mpMRI, and subsequent combination biopsy (TRUS-guided 12-core biopsy plus MRI/TRUS fusion biopsy). 136 men with a total of 231 mpMRI lesions were identified. Spearman's correlation, chi-square and ROC analyses were performed.

Results: There was positive correlation between PI-RADSv2 and Gleason scores ($p < 0.001$) in both PZ and TZ. For clinically significant cancer in PZ, mpMRI had an NPV, PPV, sensitivity and specificity of 100%, 31.6%, 100% and 9%, respectively, compared to 100%, 27.1%, 100% and 41.1%, respectively, for TZ lesions. For clinically significant cancer, the PI-RADSv2 AUC for PZ lesions was 0.769 (95% CI 0.684–0.854, $p< 0.001$), compared to AUC=0.844 (95% CI 0.753–0.935, $p< 0.001$) for TZ lesions.

Discussion: MpMRI utilizing PI-RADSv2 achieves an excellent sensitivity and NPV for both PZ and TZ prostate lesions. However, compared to PZ lesions, PI-RADSv2 scores for TZ lesions have a higher specificity and also had a 0.120 larger AUC, indicating a higher diagnostic accuracy for TZ prostate lesions.

Biography

Sara Fardin has completed her Medical School in Tehran University of Medical Sciences and Radiology-Molecular Imaging Research Fellowship in the University of Pennsylvania. She is currently working as a Research Fellow in University of California, Irvine.

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