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Pathological Disparities in Patients Diagnosed with Prostate Imaging Reporting and Data System 3 Lesions: A Retrospective Study in a High-Volume Academic Center

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Abstract : Introduction: Prostate biopsy is the most reliable diagnostic method for choosing the appropriate management of prostate cancer. However, discrepancies between Gleason grade groups (GG) of different biopsies remain a significant concern. This study aims to assess the association of the radiological factors with GG discrepancies in patients with index Prostate Imaging Reporting and Data System (PI-RADS) 3 lesions, using radical prostatectomy (RP) specimens as the most accurate and informative pathology. Methods: This single-institutional retrospective study was performed on a total of 2289 consecutive prostate cancer patients with combined targeted and systematic prostate biopsy followed by radical prostatectomy (RP). The database was explored for patients with the index PI-RADS 3 lesions version 2 and 2.1. Cancers with PI-RADS 4 or 5 scoring were excluded from the study. Patient characteristics and radiologic features were analyzed by multivariable logistic regression. Number-density of lesions was defined as the number of lesions per prostatic volume. Results: Of the 151 prostate cancer cases with PI-RADS 3 index lesions, 27% and 17% had upgrades and downgrades at RP, respectively. Analysis of grade changes showed no significant associations between discrepancies and the number or the number density of PI-RADS 3 lesions. Moreover, the study showed no significant association of the GG changes with race, age, location of the lesions, or prostate volume. Conclusions: This study demonstrated that in PI-RADS 3 cancerous nodules, the chance of the pathology changes in the final pathology of RP specimens was low. Furthermore, having multiple PI-RADS 3 nodules did not change the conclusion, as the possibility of grade changes in patients with multiple nodules was similar to those with solitary lesions.

Keywords : prostate, adenocarcinoma, multiparametric MRI, Gleason score, robot-assisted surgery
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