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Comparing 3-T multiparametric MRI and the Partin tables to predict organ-confined prostate cancer after radical prostatectomy

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Objectives: The purpose of our study was to test our hypothesis that multiparametric magnetic resonance imaging (mpMRI) may have a higher prognostic accuracy than the Partin tables in predicting organ-confined (OC) prostate cancer and extracapsular extension (ECE) after radical prostatectomy (RP).

Methods and Materials: 60 patients were retrospectively reviewed who underwent 3-T mpMRI prior to RP. mpMRI was used to assess clinical stage and the updated version of the Partin tables was used to calculate the probability of OC disease. Sensitivity, specificity, positive predictive value (PPV), and negative predictive value (NPV) of mpMRI in detecting OC and ECE were calculated. Logistic regression models predicting OC pathology were created using either clinical stage at mpMRI or Partin tables probability. The AUC was used to calculate the predictive accuracy of each model.

Results and Conclusion: At mpMRI, clinical stage was defined as cT2a/b, cT2c, cT3a, and cT3b in 11 (18.3%), 23 (38.3%), 21 (35%), and 5 (8.4%) patients, respectively. At final pathology, 38 men (63.3%) had OC disease, whereas 18 (30%) had ECE and 4 (6.7%) had seminal vesicle invasion. The sensitivity, specificity, PPV, and NPV of mpMRI in detecting OC disease were 81.6%, 86.4%, 91.2%, and 73.1%, respectively, whereas in detecting ECE were 77.8%, 83.4%, 66.7%, and 89.7%, respectively. At logistic regression, both Partin tables–derived probability and the mpMRI clinical staging were significantly associated with OC disease (all P<0.01). The AUC of the model built using the Partin tables and that of the mpMRI model were 0.62 and 0.82, respectively (P=0.04). The predictive accuracy of mpMRI in predicting OC disease on pathological analysis is significantly greater than that of the Partin tables. mpMRI had a high PPV (91.2%) when predicting OC disease and a high NPV (89.7%) with regard to ECE. mpMRI should be considered when planning prostate cancer treatment in addition to readily available clinical parameters.

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