

AB069. Peripheral zone volume ratio (PZ-ratio) is relevant with biopsy results and can increase the accuracy of current diagnostic modality

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Background: To validate the diagnostic value of peripheral zone volume ratio (PZ-ratio) and its additional benefit in current diagnostic modality in detecting prostate cancer (PCa) or clinically significant PCa.

Methods: This retrospective study included 247 consecutive patients who underwent initial transrectal ultrasound-guided systematic prostate biopsy from April 2014 to November 2015. Univariate and multivariate regression analyses and linear correlation analyses were performed. Prostate volume was determined by semi-automatic contour in axial T2-weighted image (T2WI). Receiver operating characteristic (ROC) curve analyses and decision curve analyses were performed to evaluate the diagnostic efficacy of PZ-ratio and prediction models with PZ-ratio and MRI-findings.

Results: The median of PZ-ratio was 38.2% [interquartile

range (IQR), 28.8–47.6%] in PCa patients, and 27.7% (IQR, 19.7–38.8%) in biopsy-negative patients ($P=0.0001$). PZ-ratio was inversely correlated with age ($r = -0.36$, $P>0.0001$). The area under the curve (AUC) of all patients and patients with PSA of 4–10 ng/mL were 0.672 and 0.676 in predicting PCa, respectively. Adding PZ-ratio and MRI findings to base model [age, prostate-specific antigen density (PSAD), free PSA percentage (%fPSA)] effectively increased AUC in all patients (0.871 *vs.* 0.812, $P=0.0059$), but not in patients with PSA 4–10 ng/mL (0.863 *vs.* 0.803, $P=0.12$). Similar results were observed in predicting significant PCa. In decision curve analyses, the new model significantly reduced the number of unnecessary biopsies while missing less significant cancers at a probability threshold of 25%.

Conclusions: PZ-ratio is a potential tool in predicting biopsy results. Adding PZ-ratio alone or in combination with MRI findings could increase diagnostic accuracy based on current diagnostic modality.

Keywords: Prostate cancer (PCa); multiparametric magnetic resonance imaging (multiparametric MRI); peripheral zone volume ratio; diagnosis

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