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Prostate

Biparametric Prostate MRI and Clinical Indicators Predict Clinically Significant Prostate Cancer in Men With "Gray Zone" PSA Levels

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PURPOSE:

To predict clinically significant prostate cancer (cs-PCa) by combining the Prostate Imaging Reporting and Data System version 2 (PI-RADS v2) score based on biparametric magnetic resonance imaging (bp-MRI) and clinical indicators in men with prostate-specific antigen (PSA) levels in the grey zone of 4-10 ng/ml.

METHOD:

We retrospectively analysed 364 patients with elevated PSA levels in the grey zone who had pathologically confirmed disease and had undergone MRI examinations from January 2015 to October 2019; a training group (n = 255) and validation group (n = 109) were randomly established. Multivariate logistic regression analysis of the training group was performed to identify the independent predictors for cs-PCa, thereby establishing a predictive model that was evaluated in the training and validation groups by analysing the receiver operating characteristic (ROC) curve.

RESULTS:

In the training group, the PI-RADS v2 score and prostate volume (PV) were independent predictors of cs-PCa ($P < 0.05$). The prediction model comprising the PI-RADS v2 score and PV had a larger area under the curve than the other predictors alone in the training group. The diagnostic sensitivity and specificity of the prediction model were 84.1 % and 83.4 %, respectively. The prediction model was indicated to have better predictive performance in the validation group.

CONCLUSIONS:

The prediction model exhibits a satisfactory predictive value for cs-PCa in men with PSA levels in the grey zone. PI-RADS v2 is the strongest univariate predictor for the detection of cs-PCa in men with PSA in the grey zone, but combining this with the PV can provide superior predictive ability.