Risk Stratification by Urinary Prostate Cancer Gene 3 Testing Before Magnetic Resonance Imaging-Ultrasound Fusion-targeted Prostate Biopsy Among Men With No History of Biopsy

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- PMID: 27562202
- DOI: 10.1016/j.urology.2016.08.022

Abstract

Objective: To determine whether a combination of prostate cancer gene 3 (PCA3) and magnetic resonance imaging (MRI) suspicion score (mSS) could further optimize detection of prostate cancer on MRI fusion-targeted biopsy (MRF-TB) among men with no history of biopsy.

Materials and methods: We included in this study 187 men presenting to our institution between June 2012 and August 2014 who underwent multiparametric MRI (mpMRI) and PCA3 before MRF-TB. Biopsy results, stratified by biopsy indication and PCA3 score, were recorded. Receiver operating characteristics curves and multivariable logistic regressions were used to model the association of PCA3 and mSS with cancer detection on MRF-TB.

Results: PCA3 is associated with cancer detection on MRF-TB for men with no prior biopsies (area under the curve: 0.67, 95% confidence interval: 0.59-0.76). Using a cutoff of ≥35, PCA3 was associated with cancer risk among men with mSS 2-3 (P = .004), but not among those with mSS 4-5 (P = .340). The interaction of PCA3 and mSS demonstrated significantly higher discrimination for cancer than mSS alone (area under the curve: 0.83 vs 0.79, P = .0434).

Conclusion: Urinary PCA3 is associated with mSS and the detection of cancer on MRF-TB for men with no prior biopsies. PCA3 notably demonstrates a high negative predictive value among mSS 2-3. However, in the case of high-suspicion mpMRI, PCA3 is not associated with cancer detection on MRF-TB, adding little to cancer diagnosis. Further studies are needed to evaluate the utility of PCA3 in predicting cancer among men with normal mpMRI.