Prognostic accuracy of Prostate Health Index and urinary Prostate Cancer Antigen 3 in predicting pathologic features after radical prostatectomy

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Abstract

Objective
To compare the prognostic accuracy of Prostate Health Index (PHI) and Prostate Cancer Antigen 3 (PCA3) in predicting pathologic features in a cohort of patients who underwent radical prostatectomy (RP) for prostate cancer (PCa).

Methods and materials
We evaluated 156 patients with biopsy-proven, clinically localized PCa who underwent RP between January 2013 and December 2013 at 2 tertiary care institutions. Blood and urinary specimens were collected before initial prostate biopsy for [2] pro–prostate-specific antigen (PSA), its derivates, and PCA3 measurements. Univariate and multivariate logistic regression analyses were carried out to determine the variables that were potentially predictive of tumor volume > 0.5 ml, pathologic Gleason sum, pathological confirmed significant PCa, extracapsular extension, and seminal vesicles invasions.

Results
On multivariate analyses and after bootstrapping with 1,000 resampled data, the inclusion of PHI significantly increased the accuracy of a baseline multivariate model, which included patient age, total PSA, free PSA, rate of positive cores, clinical stage, prostate volume, body mass index, and biopsy Gleason score (GS), in predicting the study outcomes. Particularly, to predict tumor volume >0.5 ml, PHI significantly improved predictive accuracy by 7.9% (<i>P</i> ≤ 0.05), whereas PCA3 did not lead to a significant increase.

In the subset of patients with GS≥6, PHI significantly improved predictive accuracy by 7.6% compared with the baseline model (AUC = 89.7 vs. 97.2, <i>P</i> = 0.05) to predict pathologically confirmed significant PCa and by 5.9% compared with the baseline model (AUC = 83.1 vs. 89.0) to predict pathologic GS≥7. For these outcomes, PCA3 did not add incremental predictive value.

Conclusions
In a cohort of patients who underwent RP, PHI is significantly better than PCA3 in the ability to predict the presence of both more aggressive and extended PCa.

Keywords: