Thrombospondin 1 and cathepsin D improve prostate cancer diagnosis by avoiding potentially unneeded prostate biopsies

Thomas Steuber, Pierre Tennstedt, Annalisa Macagno, Alcibiade Athanasiou, Anja Wittig, Ramy Huber, Bruno Golding, Ralph Schiess & Silke Gillessen Sommer

OBJECTIVES
To investigated and further validate if two novel cancer-related glycoproteins - discovered by a genetic-guided proteomics approach - can distinguish benign disease from prostate cancer (PCa) in men with enlarged prostates.

PATIENTS AND METHODS
A retrospective study was performed that included men with a total PSA of 2.0-10 ng/ml, negative digital rectal examination (DRE) and enlarged prostate volume (≥35 ml). Serum samples were collected between 2011 and 2016 at a single centre from 474 men before undergoing prostate biopsy. Serum concentrations of thrombospondin 1 (THBS1) and cathepsin D (CTSD) glycoproteins were combined with the percentage of free PSA to total PSA (%fPSA) to predict any or significant cancer at biopsy.

RESULTS
The multivariable logistic regression model including THBS1, CTSD and %fPSA discriminated among biopsy-positive and -negative patients in the validation set with an AUC of 0.86 (P <0.001, 95% CI, 0.82-0.91), while %fPSA alone showed an AUC of 0.64 (P <0.001, 95% CI, 0.57-0.71). At 90% sensitivity for PCa, the specificity of the model was 62%, while %fPSA had a specificity of 23%. For high-grade (GS≥7 in prostatectomy specimen) PCa, the specificity was 48% at 90% sensitivity with an AUC of 0.83, (P <0.001, 95% CI, 0.77 to 0.88). Limitations of the study include the retrospective setup and a single center cohort.

CONCLUSIONS
A model combining two cancer-related glycoproteins (THBS1 and CTSD) and %fPSA can improve PCa diagnosis and may reduce the number of unnecessary prostate biopsies due to its improved specificity for PCa when compared to %fPSA alone. This article is protected by copyright. All rights reserved.
type: journal paper/review (English)
date of publishing: 14-09-2018
journal title: BJU Int
ISSN electronic: 1464-410X