The diagnostic and prognostic ability of selected serum and urinary markers of prostate cancer

Abstract

Serum prostate specific antigen (PSA) is the only widely approved marker in prostate cancer (PC) diagnosis and follow up after treatment. Its role has remained controversial due to lack of specificity and the risk of overdiagnosis of insignificant PC. The aim of this work was to explore promising markers of PC and to improve current patient stratification to adjuvant treatment. Three main studies were performed using different media (urine and serum). The first study included the evaluation of Engrailed-2 (EN2) – a urinary marker of interest – in 90 patients with localized PC, 30 healthy controls, and 40 patients indicated for prostate biopsy. The second study evaluated 205 men with high-risk PC-features who underwent radical prostatectomy (RP) and were subject to a strict follow-up protocol of ultrasensitive PSA (UPSA) at close time intervals. The ability of particular measurements to predict biochemical recurrence (BCR) and thus the need for adjuvant therapy was assessed using the area under the curve (AUC) and a stratification model was created. The third study involved 128 patients who underwent RP. PSA and its serum isoforms normally used in the diagnostic context were evaluated both preoperatively and postoperatively to determine their ability to predict BCR. Analysis of EN2 in the urine did not show any clinical usefulness in the detection of PC. UPSA as early as day 30 after RP is a good predictor of BCR in men with adverse pathological features and can decrease overtreatment with adjuvant radiotherapy. Another results imply that serum PHI and [–2]proPSA outperforms conventional serum PSA in the prediction of BCR and the use of these novel biomarkers in clinical prediction models and nomograms would be most likely of a great value. On the other hand, there is probably no role for PSA isoforms in the follow up of PC patients after RP.