Serum Human Glandular Kallikrein (hK2) and Insulin-Like Growth Factor 1 (IGF-1) Improve the Discrimination Between Prostate Cancer and Benign Prostatic Hyperplasia in Combination With Total and %Free PSA

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BACKGROUND: There is growing evidence describing an association of hK2 and IGFs with cancer. The aim of this study is to investigate the differences in serum levels of hK2 and IGFs in a large group of patients with benign prostatic hyperplasia (BPH) or prostatic carcinoma (CaP) and to examine the value of these variables, as well as their various combinations with PSA, for discriminating between these two clinical entities.

METHODS: Human glandular kallikrein 2 (hK2), insulin-like growth factor-1 (IGF-1), free and total PSA concentrations were measured with non-competitive immunological procedures. Receiver operating characteristic (ROC) analysis as well as univariate and multivariate logistic regression analysis were performed to investigate the potential utility of the various markers and their combinations for discriminating between BPH and CaP.

RESULTS: hK2 and IGF-1 concentrations were increased in CaP patients, in comparison to BPH patients. hK2/free PSA and free/total PSA ratios (area under the curve, AUC = 0.70) were stronger predictors of prostate cancer than the IGF-1/total PSA ratio (AUC = 0.56) in the group of patients with total PSA <4 microg/L. The hK2/free PSA ratio (AUC = 0.74) was found to have significant discriminatory value in patients with total PSA within the "gray zone" (4–10 microg/L). Multivariate logistic regression models confirmed the observed relationships and identified IGF-1/free PSA and hK2/free PSA as independent predictors of CaP.

CONCLUSIONS: hK2/free PSA and IGF-1/free PSA ratios may be useful adjuncts in improving patient selection for prostate biopsy.

Editorial Comment: hK2 displays significant structural homology to the serine protease prostate specific antigen (PSA). Both are primarily prostate localized and androgen regulated. Moreover, hK2 may have a role in the regulation of PSA. Dysregulation of the mitogenic and anti-apoptotic IGF system may have a role in the etiology of proliferate disorders. In this study hK2 and IGF-1 were increased in prostate cancer compared to BPH. The parameter hK2-to-free PSA ratio had strong discriminatory value in men with serum PSA values of 4 to 10 μg/l. However, despite the potential role of this parameter, it was no better than free-to-total PSA ratio at sensitivity levels greater than 80%. Nevertheless, these parameters either separately or in combination should be studied in large groups of patients to ascertain their use in improving the diagnosis of prostate cancer.

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