UROLOGICAL ONCOLOGY: PROSTATE CANCER

Autoantibody Signatures in Prostate Cancer

X. Wang, J. Yu, A. Sreekumar, S. Varambally, R. Shen, D. Giacherio, R. Mehra, J. E. Montie, K. J. Pienta, M. G. Sanda, P. W. Kantoff, M. A. Rubin, J. T. Wei, D. Ghosh and A. M. Chinnaiyan, *Departments of Pathology, Biostatistics, Urology and Internal Medicine, and Comprehensive Cancer Center, University of Michigan Medical School, Ann Arbor, Michigan, and Beth Israel–Deaconess Medical Center, Dana–Farber Cancer Institute, and Brigham and Women's Hospital, Harvard Medical School, Boston, Massachusetts*

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Background: New biomarkers, such as autoantibody signatures, may improve the early detection of prostate cancer. Methods: With a phage-display library derived from prostate-cancer tissue, we developed and used phage protein microarrays to analyze serum samples from 119 patients with prostate cancer and 138 controls, with the samples equally divided into training and validation sets. A phage-peptide detector that was constructed from the training set was evaluated on an independent validation set of 128 serum samples (60 from patients with prostate cancer and 68 from controls). Results: A 22-phage-peptide detector had 88.2 percent specificity (95 percent confidence interval, 0.78 to 0.95) and 81.6 percent sensitivity (95 percent confidence interval, 0.70 to 0.90) in discriminating between the group with prostate cancer and the control group. This panel of peptides performed better than did prostate-specific antigen (PSA) in distinguishing between the group with prostate cancer and the control group (area under the curve for the autoantibody signature, 0.93; 95 percent confidence interval, 0.88 to 0.97; area under the curve for PSA, 0.80; 95 percent confidence interval, 0.71 to 0.88). Logistic-regression analysis revealed that the phage-peptide panel provided additional discriminative power over PSA ($P < 0.001$). Among the 22 phage peptides used as a detector, 4 were derived from in-frame, named coding sequences. The remaining phage peptides were generated from untranslated sequences. Conclusions: Autoantibodies against peptides derived from prostate-cancer tissue could be used as the basis for a screening test for prostate cancer.

Editorial Comment: It has been known for some time that patients with cancer produce autoantibodies against antigens in their tumors. In this study Wang et al used this principle to look for antibodies to a set of 22 peptides in the blood of men with and without prostate cancer. Using this technique, they were able to show that it was far superior to PSA; using receiver operating characteristic curves the area under the curve for the antibody signature was 0.93 compared to 0.56 in men with PSA levels between 4 and 10 ng/ml. When the lower limit of PSA was decreased to 2.5 ng/ml the area under the curve for PSA decreased to 0.50. These results suggest that this test has great potential. However, it will be important for these studies to be carried out in larger groups of patients before one can conclude that in the long run it will be better than PSA.

Patrick C. Walsh, M.D.

Frequent Overexpression of ETS-Related Gene-1 (ERG1) in Prostate Cancer Transcriptome

G. Petrovics, A. Liu, S. Shaheduzzaman, B. Furasato, C. Sun, Y. Chen, M. Nau, L. Ravindranath, Y. Chen, A. Dobi, V. Srikantan, I. A. Sesterhenn, D. G. McLeod, M. Vahey, J. W. Moul and S. Srivastava, *Center for Prostate Disease Research, Department of Surgery and US Military Cancer Institute, Uniformed Services University and Laboratory of Functional Genomics, Walter Reed Army Institute of Research, Rockville, and Cancer Genetics Branch, National Human Genome Research Institute, NIH, Bethesda, Maryland, and Department of Genitourinary Pathology, Armed Forces Institute of Pathology and Urology Service, Walter Reed Army Medical Center, Washington, D. C.*

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Transcription factors encoded by the ETS family of genes are central in integrating signals that regulate cell growth and differentiation, stress responses, and tumorigenesis. This study, analysing laser microdissected paired benign and malignant prostate epithelial cells from prostate cancer (CaP) patients (n = 114; 228 specimen) by GeneChip and quantitative real-time RT-PCR, identifies ETS-related gene (ERG), a member

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