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Bringing Biomarkers to Clinical Fruition: Prostate Cancer Biomarkers

Hundreds of papers are published each year on biomarkers for early detection; many of them are rejected because they do not meet the criteria described in the guidelines. Most of them are flawed by the use of insufficient data, originating from the use of convenience samples and poor study designs. For example, EDRN investigators identified about 108 biomarkers that could be potentially tested to serve as an adjunct to PSA. And out of 108 they found about 58 of them which use reproducible tests which have reproducible data and so on. After critical reviews of these 58 biomarkers by a panel of EDRN and other experts, only five were selected for further validation. The five out of more than one thousand markers represent a very dismal success rate. Taking these promising biomarkers further, the group at University of Michigan in collaboration with other EDRN investigators is developing a panel of biomarkers that could cut down on the need for biopsies. A panel of four candidate biomarkers showed sensitivity of 65.9% and specificity of 76% in identifying men with prostate cancer, (Feb. 1 issue of Cancer Research). The four markers were transcripts for the GOLPH2, SPINK1, and PCA3 genes, and a gene-fusion product known as TMPRSS2:ERG. They were assayed by quantitative polymerase chain reaction methods. All genes were first tested by univariate analysis, with GOLPH2 ($P = 0.0002$), SPINK1 ($P = 0.0002$), PCA3 ($P = 0.001$), and TMPRSS2:ERG fusion ($P = 0.034$) showing significant association for discriminating patients with prostate cancer from patients with negative needle biopsies. The fifth biomarker is proPSA that has recently been approved by the FDA. The speaker will address the progress made in the validation of these biomarkers and their availability for clinical use in the near future.

Biography

Srivastava is chief of the Cancer Biomarkers Research Group in the Division of Cancer Prevention, National Cancer Institute. Dr. Srivastava has received several honors and awards and is a member of a number of scientific committees. In 1995 he was elected to the American Joint Committee on Cancer AJCC which is responsible for developing staging criteria for cancers for worldwide use and currently serves on the AJCC Executive Committee. Dr. Srivastava has played a pivotal role in the development of the ABethesda Guidelines for diagnosing hereditary nonpolyposis colorectal cancer and in the development of International Criteria for screening microsatellite instability in cancer patients. He has played a key role in conceptualizing and implementing informatics infrastructure for the National Cancer Institute Early Detection Research Network and the Alliance of Glycobiologists for the Detection and Early Cancer and Cancer Risk. He has successfully chaired workshop conferences, working groups and other NIH wide committees and published more than 170 research papers, review articles and commentaries in peer reviewed journals. He has edited several monographs and book chapters; Recently he has edited two books: A Early Detection of Cancer: Molecular Markers which has published by the Futura Publishing Company. He is also Editor-in Chief of the journal Disease Markers and Cancer Biomarkers published by the IOS Press Recently he edited a book on Informatics in Proteomics published in June 2005 by Francis and Taylor, New York.

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