

## TUMOR MARKERS IN PROSTATE CANCER

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Prostate cancer is the most common malignancy in males and a leading cause of death from cancer in men. Unfortunately, there is no current strategy for preventing this cancer. Thus, the most effective way to reduce morbidity and mortality from this cancer is by early diagnosis and administration of effective treatment. Over the last several years, many investigators have indicated that screening for prostate cancer by using prostate-specific antigen (PSA) measurements in serum is an effective way to diagnose this disease at an early stage. However, this clinical application is complicated by the fact that benign prostatic disease also results in PSA elevations. This leads to many false positive results during screening and to many unnecessary biopsies in order to diagnose a cancer case. For example, an average of 5 biopsies must be performed on screened individuals before one cancer is diagnosed. The diagnostic usefulness of PSA screening has recently been refined by the introduction of measurements of the molecular forms of PSA in serum. It has been found that the percent of free PSA is decreased in serum of patients with prostate cancer, in comparison to patients with benign prostatic disease. Recently, it has been shown in prospective clinical trials that the measurement of percent free PSA reduces the number of biopsies required without compromising the sensitivity of the test for prostate cancer detection.

Another major application of PSA measurements in clinical medicine is the monitoring of prostate cancer patients after radical prostatectomy. A rising PSA in these patients indicates failure of prostatectomy. In my lecture I will present how ultrasensitive prostate-specific antigen assays can be used to optimize the monitoring of prostate cancer patients.

It has recently been shown that molecular staging of prostate cancer can be performed by reverse transcription polymerase chain reaction of mRNA extracted from whole blood. A positive reaction of RT-PCR for PSA mRNA would indicate hematogenous metastasis of the prostate cancer. I will describe in my lecture the advantages and disadvantages of this method.

A number of other prostatic markers are emerging. The prostate-specific membrane antigen can be used for molecular staging as well as for tumor radioimaging. New assays for measuring human glandular kallikrein (hK2) have recently been developed and they are now being investigated as tools for diagnosis and monitoring of prostate cancer.

In conclusion, the major prostatic marker, PSA, in combination with other emerging markers may improve the diagnostic and monitoring value of PSA alone. It is anticipated that with the introduction of these new arrays of tests, the management of the prostate cancer patient will improve. However, we are still lacking markers of aggressiveness in prostate cancer and one of our major difficulties at present is to distinguish between highly aggressive tumors which require intensive treatment from indolent, slow growing tumors which do not pose a major threat to patient survival.