

The Impact of Cell-free Plasma DNA on Metastatic and Nonmetastatic Prostate Cancer

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Abstract:

Background: Increased cell-free DNA (cfDNA) is observed in many diseases such as cancer, myocardial infarction, and autoimmune diseases. It has the ability to alter the receptor cell phenotype, triggering events related to malignant transformation. Our study. **Aim:** To assess the use of cell-free plasma DNA in the diagnosis of metastatic and non-metastatic prostate cancer. **Methods:** The study included 180 subjects who were classified into four groups: Group I (GI) included 50 perfect health subjects as the control group, Group II (GII) included 40 patients with prostatitis, group III (GIII) included 40 patients with benign prostatic hyperplasia (BPH) and Group IV (GIV) included 50 patients with pre-operative prostate cancer (PC). Evaluation of the plasma level of circulating cell-free DNA by real-time PCR and measurement of total PSA (tPSA) and free to total PSA percent (f/tPSA%) were carried out for all groups. **Results:** Our study revealed that the level of tPSA was significantly higher in prostate cancer patients, while levels of f/t PSA were found to be significantly lower. The level of cfDNA was significantly higher in prostate cancer patients (399.9 ± 88.6 ng/ul) when compared to that of group I (12.1 ± 1.5 ng/ul) $p < 0.01$, group II (14.7 ± 2.4 ng/ul) $p < 0.01$, and group III (26.6 ± 45.6 ng/ul) $p < 0.01$ respectively. **Conclusion:** There was a statistically significant difference in yields of cfDNA between metastatic and non-metastatic groups ($P = 0.03$) with a higher level in the metastatic group.