

Abstract

Up until now PSA test is used for the diagnosis of PCa, but its poor sensitivity, limited specificity and intra-observer variability necessitated the introduction of a more sensitive diagnostic method. *PCA3* gene is a non-coding RNA (ncRNA) that is highly expressed in PCa cells. The prognostic value of *PCA3* increases significantly when the *PCA3* results are combined with PCa risk factors such as age, PSA, DRE and prostate volume or PSA density (PSAD).

Vitamin D is a metabolite that acts as a hormone and can modulate the cancer development and progression. The association between circulating vitamin D levels and prostate cancer is an area of great research however there are not yet any conclusive results. Moreover, in recent years the glycoprotein fetuin-A has emerged as a novel biomarker for breast and prostate cancer since aggressive tumours synthesize fetuin-A in great amounts.

The aim of this PhD thesis is to correlate the risk of prostate cancer with circulating vitamin D concentration and fetuin-A. For this purpose, blood samples will be collected from patients diagnosed with prostate cancer that have underwent needle biopsy. The patients will be divided into groups according to the biopsy outcome and specifically: a) patients diagnosed with prostate cancer, b) patients diagnosed with low-grade prostatic intraepithelial neoplasia (LGPIN), c) patients diagnosed with high-grade prostatic intraepithelial neoplasia (HGPIN) and finally d) patients with negative biopsy (prostatitis). The patients will be followed for 3 years and measurements will be taken every six months. Total serum and free PSA concentration will be measured at the laboratory of the hospital with an automated chemiluminescent and free PSA assay. PSA velocity and doubling time will be also estimated. The *PCA3* score will be measured by real time PCR in urinary sediments and circulating vitamin D concentration and fetuin-a by means of ELISA assay. The sociodemographic characteristics and medical history of the patients will be recorded. The SPSS software package will be used for the management and statistical analysis of the data.

We hypothesize that the early detection of changes in fetuin-A and circulating vitamin D concentrations could be used as surrogate markers for screening patients in risk for prostate cancer.