The Role of PCA 3 as a Prognostic Factor in Patients with Castration-resistant Prostate Cancer (CRPC) Treated with Docetaxel.


Abstract

To investigate potential fluctuations in prostate cancer antigen 3 (PCA 3) scores in castration-resistant prostate cancer (CRPC) patients treated with docetaxel and investigate the assay as a potential prognostic factor.

PATIENTS AND METHODS: This was a prospective observational cohort study. Inclusion criteria included patients on hormonal treatment who were recently diagnosed with CRPC. Exclusion criteria included patients previously having radical treatment (surgery or radiotherapy) and patients who have completed the first cycle of chemotherapy. All urine samples were collected and analyzed using the Progensa® assay. Samples were collected before starting chemotherapy and at 12 months. A prospective database was created including routine blood tests, prostate staging and prostate-specific antigen (PSA) levels throughout the study period. The effects of chemotherapy were also recorded.

RESULTS: Between January 2010 and February 2013, 12 patients were included in the study out of an initial cohort of 23 patients with CRPC. Mean follow-up was 14.8 months. Mean age at CRPC diagnosis was 73.8 years (±3.6 SD). Mean Gleason score was 8, with PSA 84.23 ng/ml (±158 SD). Mean duration of androgen deprivation treatment (ADT) was 45.16 months (±34.9 SD). Mean time to castrate-resistant state was 46.58 months (±35.3 SD). All twelve (n=12, 100%) patients had non-assessable PCA 3 scores at baseline and at 12 months follow-up. As a direct consequence, statistical analysis was not performed as the anticipated change in PCA 3 scores was not identified and correlation between measurable differences was not possible. All patients tolerated chemotherapy and completed the scheduled cycles with no serious adverse effects.

CONCLUSION: To our knowledge, this is the first prospective study to demonstrate lack of expression of PCA3 in CRPC, with the result apparently not influenced by chemotherapy. There appears to be a strong association between hormonal treatment and lack of PCA 3 expression. It is still unknown whether disease progression per se affects PCA 3 scores. The gradual reduction and eventual complete non-expression of PCA 3 with ongoing treatment and disease progression provide an insight towards molecular pathways that may be connected to castration-resistant state.

Keywords: Castration-resistant prostate cancer (CRPC); PCA 3; androgen deprivation treatment (ADT); docetaxel; prognostic factor

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