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# Circulating Inflammatory Cytokine Expression in Men With Prostate Cancer Undergoing Androgen Deprivation Therapy

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Prostate cancer (PCa) is one of the most common cancers in men. Androgen deprivation therapy (ADT) is employed in the treatment of patients with metastatic or recurrent PCa, resulting in castrate levels of testosterone. Recent studies have shown that male hypogonadism is associated with increased levels of proinflammatory and diminished concentrations of anti-inflammatory cytokines, which normalize upon testosterone treatment. Furthermore, an inflammatory state is associated with osteoporosis, sarcopenia and metabolic abnormalities. We examined 3 groups of men: 1) 20 men with PCa undergoing ADT for at least 12 months prior to the onset of the study (ADT group); 2) 18 age-matched men with non-metastatic PCa who had undergone local surgery and/or radiotherapy and had not yet received ADT and were eugonadal (non-ADT group); and 3) 20 age-matched healthy eugonadal men (control group). None of the subjects were suffering from any acute or chronic inflammatory conditions. Mean age was similar in the 3 groups ($P$ = .41). Men in the ADT and non-ADT groups had higher BMI compared to the control group ($P$ = .0005 and $P$ = .01, respectively). Men in the ADT group had significantly lower mean serum total ($P$ < .0001) and free ($P$ < .0001) testosterone and estradiol ($P$ < .0001) levels compared to the other 2 groups. No significant differences in serum levels of pro-inflammatory or anti-inflammatory cytokines were observed between the 3 groups. These data suggest that men with PCa undergoing long-term ADT do not have elevated levels of pro-inflammatory cytokines compared to age and disease matched controls. Prospective studies are needed to evaluate for any acute changes in these inflammatory markers that might

occur after the initiation of ADT.

Key words: Hypogonadism, inflammation

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