

The Effect of Body Mass Index and Waist Circumference on Prostate Specific Antigen in Patients with Benign Prostatic Hyperplasia (BPH)

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Abstract

- Background** Obesity may be associated with lower prostate specific antigen(PSA) values, If true, this would result in fewer obese men having an elevated PSA, fewer biopsies performed, and fewer cancers detected , consequently cancers may be missed or not detected until at a more advanced stage.
- Objective** We examined the influences of age, body mass index (BMI) and waist circumference (WC) on PSA before and after adjusting for prostate volume. We also examined associations among age, body mass index, waist circumference and prostate volume (PV).
- Methods** We analyzed 125 Iraqi men aged 40 to 84 years old who attained the urological outpatient clinic for BPH evaluation during 2009. Current health status information including prostate related problems, medical interview, basic physical examination and anthropometric measurements including height, weight, BMI and waist circumference were taken for all patients. Blood tests including PSA concentration were performed after overnight fast. A radiologist performed transrectal prostate ultrasound. PSA measurements preceded routine digital examination and transrectal prostate ultrasound.
- Results** The median serum PSA was significantly lower among obese subjects compared to normal BMI subjects. BMI showed a statistically significant moderately strong negative linear correlation ($r = -0.5$) with serum PSA. Waist circumference showed a similar pattern with a statistically significant linear correlation with serum PSA ($r = -0.43$); the median serum PSA was significantly lower among subjects with highest waist circumference compared to subjects in the lowest quartile of waist circumference. The median PSA was significantly higher among subjects with large prostate size compared to those with lowest quartile prostate size. The anthropometric measures were tested for association with PSA density, to adjust for the effect of prostate size on serum PSA.
- Conclusion** The current data suggest that the PSA cut-points used to recommend biopsy need to be adjusted for the degree of obesity.
- Keywords** body mass index, waist circumference, prostate specific antigen.

Introduction

Many investigators evaluated the relationship between body habitus, body mass index (BMI), and obesity and lower urinary tract symptoms/benign prostate hyperplasia (LUTS/BPH). There are

plausible biologic considerations: adipose tissue is the main source of aromatization of testosterone to estrogen, and men with lower BMI have higher serum testosterone levels ⁽¹⁾. Several caveats must be mentioned: