

negatively associated with obesity (measured by BMI or WC), positively associated with PV and weakly associated with age.

Our study demonstrated that although obese men generally have higher PV than non obese men, they have a lower PSA, but the reason for that is not well known. Previous investigators have suggested that the inverse link between obesity and PSA levels is explained either by endocrine disturbances associated with abdominal obesity, Obesity leads to greater aromatization of testosterone and may associated with lower PSA production⁽¹⁷⁻¹⁹⁾.

The volume dilution theory appears to more closely predict the inverse association between prostate-specific antigen (PSA) levels and obesity than the hormone disturbance theory. A more recent suggestion is that lower PSA are largely due to haemodilution by a large plasma volume in obese men⁽²⁰⁻²³⁾.

These data demonstrate that PSA concentrations in prostate-cancer-free men inversely correlate with BMI, due to a rise in plasma volume with increasing BMI. Studies confirmed that Higher BMI correlated with higher plasma volumes. Partially adjusted mean PSA levels, on the other hand, decreased with increasing BMI. This relationship between BMI and PSA did not exist when investigators controlled for plasma volume. These data demonstrate that PSA concentrations in prostate-cancer-free men inversely correlate with BMI, due to a rise in plasma volume with increasing BMI⁽²⁰⁻²³⁾.

In one theory, fat mass, but not lean mass and abdominal fat will be inversely associated with PSA levels, while both lean and fat mass, independent of body fat distribution, will be inversely associated with PSA levels in the second theory⁽¹⁷⁻¹⁹⁾.

In men undergoing radical prostatectomy, higher BMI was associated with higher plasma volume; haemodilution may therefore be responsible for the lower serum PSA concentrations among obese men with prostate cancer⁽²⁴⁻²⁶⁾.

To investigate further, Be-Long Cho, from Seoul National University Hospital, and colleagues studied 3593 Korean men aged 30-79 years who received regular check-ups at a health examination center and for whom prostate volume data were available; Obesity had a negative association with prostate specific antigen regardless of prostate volume, and a positive association with prostate volume. Age was not associated with prostate specific antigen after prostate volume adjustment. Obese men, especially those with a small prostate volume, may have lower baseline prostate specific antigen and, thus, be at higher risk for having prostate cancer undetected in a prostate specific antigen screening test⁽¹²⁾.

The current data suggest that the PSA cut-points used to recommend biopsy need to be adjusted for the degree of obesity^(10,12,27). Further studies to correlate these results in relation to different races, geographic distribution, and specific age group relation may be needed.

References

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