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Clinical Pearl

Prostate Cancer Screening and Treatment Recommendations for Obese Men

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Introduction

The relationship between obesity and prostate cancer has sparked a flurry of investigation among clinicians and prostate cancer researchers alike over the past several years. Reasons for this increased interest include the rapidly growing prevalence of both obesity and prostate cancer and the need to understand the association between the 2. While some older studies suggest that obesity is positively associated with the risk of being diagnosed with prostate cancer [1-2] more recent investigations indicate that obese men may actually have a lower likelihood of being diagnosed with prostate cancer [3]. Obesity appears to be linked with more aggressive disease (eg, greater risk of progression after radical prostatectomy) and increased risk of prostate cancer death [4-5]. Related factors that have been shown to play a role in the development of prostate cancer include diet, caloric intake, and insulin resistance [6-8]. Prostate cancer incidence has been found to be much lower in countries where people eat a predominantly low-fat, plant-based diet [9]. Some suggest that dietary supplements such as selenium, vitamin E, lycopene, omega-3 fatty acids, and soy decrease cancer risk, but whether lifestyle changes after diagnosis either slow or reverse prostate cancer remains unknown [6].

Screening and Diagnosis

Current guidelines recommend that men begin to undergo yearly screening for prostate cancer at age 50. For African Americans and those with family histories of prostate cancer, screening should begin at age 45 and consist of yearly digital rectal examinations (DRE) and prostate specific antigen (PSA) tests. While these recommendations are no different for obese men, some data suggest that prostate cancer is more difficult to detect in this population.

For instance, although obese men have been shown to have larger prostates, they have also been shown to have lower overall PSAs [10-11]. Because of this, obese men may have PSA values that are elevated compared to their normal value but not yet in the statistical abnormal range for all men. Thus they are less likely to be referred for a prostate biopsy. Fewer biopsies results in fewer cancers detected. Obese men also have larger prostates at the time of biopsy than non-obese men have at the same stage. Given that performing a biopsy to find cancer in the prostate is like looking for a needle in a haystack, a larger haystack (ie, prostate) makes it more difficult to find the needle (ie,

cancer). Ultimately, the combination of lower PSA values and larger prostate size may cause a delay in diagnosis that results in more advanced disease at the time of diagnosis for obese men.

Although there are no specific screening recommendations for obese men as a population, they may warrant a greater degree of suspicion by the screening physician. As mentioned, a PSA level that would be considered normal in a man of average weight might be abnormal for an obese man and justify further investigation and biopsy. It is also more difficult to perform a thorough DRE in an obese man, which means that physicians need to be aggressive in doing so. The difficulty in performing a DRE forces many clinicians to rely more heavily on the PSA, but, as mentioned above, this only compounds the difficulty of diagnosis. In sum, urologists may need to increase the number of biopsy cores taken to compensate for these 2 inconclusive procedures.

Treatment

There are multiple treatment options available to men diagnosed with prostate cancer, including radical prostatectomy, cryosurgery, external beam radiation, brachytherapy, androgen deprivation therapy (ADT), chemotherapy, and watchful waiting. Furthermore, emerging technologies such as high-intensity focused ultrasound (HIFU) are being studied. When counseling patients who are newly diagnosed with prostate cancer about treatment options, it is often helpful to stratify them according to risk groups based on PSA, biopsy Gleason score, and clinical stage. For instance, low risk patients (PSA <10 and biopsy Gleason score ≤6) and intermediate risk (PSA 10-20, biopsy Gleason = 7, or both) are amenable to virtually all of the above therapies. However, patients with high-risk disease (PSA >20, biopsy Gleason ≥8, or both) might be advised to undergo some form of combination therapy, such as ADT and radiation or surgery followed by radiation.

Other factors such as age, race, and family history should be included in the discussion. For example, an individual with low-risk or intermediate-risk disease who is African American or has a strong family history of prostate cancer might warrant more aggressive intervention. An elderly individual diagnosed with prostate cancer is much more likely to be offered watchful waiting than a younger man with the same clinical features.

As with screening for prostate cancer, there are no treatment recommendations specific to obese men, but there are several important treatment decision considerations. Radical prostatectomy (complete surgical removal of the prostate) is technically more challenging in obese men, resulting in a higher rate of inadvertent incision into the prostate and a higher rate of positive surgical margins, that is, presence of malignant cells in tissue surrounding the surgery site [12, 4]. Technical issues combined with overall more aggressive disease result in poorer cancer-free survival, something obese men should be aware of [4]. However, even after adjusting for surgical technique issues, obese men seem to have an increased risk of progression, strongly suggesting that they have more aggressive disease [4]. This more aggressive disease should in theory result in worse outcomes after any form of prostate cancer therapy, though to date this has been most closely studied after surgery.

Obesity can also present a technical challenge for radiation. Classically, radiation fields were designed based upon a single computed tomography scan done prior the start of the 4-8 week radiation course. But the day-to-day movement of the prostate is greater in obese men, and this variation in location can result in a lower delivered radiation dose, a condition referred to as "set-up" error [13].

ADT works by lowering serum testosterone levels. Obese men naturally have lower testosterone levels. Therefore, it is possible that obese men may be undergoing a natural chronic form of weak hormonal therapy. Thus it is plausible that lowering serum testosterone levels may not work as well on obese men, although this speculation has not yet been studied.

Conclusion

To date no specific screening or treatment recommendations exist for obese men. However, several obesity-related factors can make prostate cancer screening and treatment challenging. It is hoped that through a better understanding of these factors, we can improve outcomes among this group of men who are at increased risk for death from prostate cancer.

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