Body Weight Status as Predicted by Body Mass Index and Dual-Energy X-Ray Absorpitometry Scanning Predicts Pre-Treatment Risk of PSA Failure in Men with Clinically Localized Prostate Cancer

Introduction and Objectives: Obesity/(excessive adiposity) in men with clinically organ-confined prostate cancer is of growing concern because it is associated with increased risk of cancer recurrence after definitive therapy based on post-treatment prognostic parameters. The objective of this study was to evaluate whether body weight status is associated with pre-treatment predictors of cancer recurrence in patients being treated with radical prostatectomy.
Materials and Methods: We performed a cross-sectional study of body weight status and pre-treatment risk of PSA failure in 119 men awaiting radical prostatectomy for clinically localized prostate cancer. Body weight status was assessed using the body mass index (BMI) and dual-energy x-ray absorpitometry (DXA) scanning, D'Amico risk scores, which are based on clinical tumor stage, biopsy Gleason sum, and pre-treatment PSA were used to rank each patient's 5-year risk of PSA failure as low, intermediate, or high. Ordinal logistical regression was used to analyze the association between BMI quartile and D'Amico risk scores after accounting for age, race, total grams of body fat, and study site.
Results: The risk of PSA failure increased with increasing quartile of BMI. Relative to the lowest BMI quartile, the cumulative odds of an intermediate or higher D'Amico risk score vs. a low risk score ("cumulative odds ratio") for patients in the second BMI quartile (mean BMI=27.8 kg/m) was 351 (95% CI=1.07 to 11.5, p=.038). For patients in the third quartile (mean BMI=32.0 kg/m) and fourth quartile (mean BMI=37.0 kg/m), the cumulative OR was 6.52 (95% CI=1.72 to 24.6, p=.0057) and 7.74 (95% CI=1.18 to 50.9, p=.033), respectively (OR trend=1.98, 95% CI=1.09 to 3.59, p=.0254).
Conclusions: Pre-treatment body weight status predicts risk of PSA failure in men with clinically localized prostate cancer. This finding provides further support for a mechanistic link between body weight status (which reflects energy balance) and prostate cancer prognosis. The results also highlight the potential for using body weight status and other lifestyle-related factors pertinent to prostate cancer to identify men who are at high risk for unfavorable treatment outcomes.