Title: Increasing adiposity in bladder cancer survivors: does diet matter?

Introduction and Objective
Increasing adiposity has been shown to adversely affect bladder cancer (BC) outcomes, but why adiposity changes in some BC survivors but not others is currently unknown. We study the role of dietary factors affecting adiposity in BC survivors.

Methods
A cross-sectional study of 285 BC survivors was assessed by the Diet History Questionnaire II (DHQ2), a comprehensive food frequency questionnaire, and results converted into Healthy Eating Index 2010 (HEI2010) scores and component macronutrients. Slice-O-Matic software was used to measure subcutaneous adipose tissue (SAT) and visceral adipose tissue (VAT) surface area at L3 by 2 independent readers and converted to adipose indices (divided by height (m²)). To measure inter-rater reliability, 30 cases were read by each reader and a third expert radiologist. Agreement was measured by the intraclass correlation coefficient (ICC) and Bland-Altman plots. Demographic covariates (age, gender, race, income), clinical characteristics (AJCC stage, procedures, Elixhauser comorbidity index), and dietary components were assessed in regression models for their impact on adiposity.

Results
Inter-rater agreement for SAT and VAT was excellent with ICC of 0.94 and 0.96, respectively, further supported by pair-wise Bland-Altman plots. Predictors of increasing SAT included younger age (p=0.01), white race (p<0.01), female gender (p<0.01), and Elixhauser index (p<0.01). Predictors of increasing VAT included white race (p=0.03), male gender (p<0.01), and Elixhauser index(p<0.01). Individually, the daily intake of fat, protein, carbohydrate, and total calories had no effect on body adiposity. However, the composite HEI2010 diet quality score, a composite measure of diet quality, was associated with lower VAT (p<0.001) and SAT (p=0.025).

Conclusions
Adiposity predicts poor outcomes and its measurement is highly reliable. The most important predictors of adiposity were non-modifiable: age, gender, race, and comorbidity. Overall diet quality also played a role, though less important, and is modifiable. Nutritional interventions in BC survivors could play a role in improving outcomes.
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