For patients facing a diagnosis of a locally advanced bladder malignancy, radical cystectomy (RC) with urinary diversion, preceded by neoadjuvant platinum-based chemotherapy (NC), is considered the gold standard treatment [1,2]. Following RC, continence (e.g. neobladder) or incontinence (e.g. ileal conduit) diversion has been completed. Previous research has shown that both diversion methods can result in acute and chronic metabolic abnormalities including bone density, electrolyte imbalance, impaired drug metabolism, abnormal acid-base balance, and malabsorption.[3,4] While the acute and chronic metabolic changes of urinary diversion have been explored, the current study seeks to improve the understanding of urinary diversion on lean mass and adipose burden over time. Previous research examining body composition across a range of cancer types has shown correlations among lean and fat mass loss and resulting patient related survival outcomes, performance status, and pharmacological toxicities.[5,6]

**Specific Aim 1:** Quantify and compare changes in lean muscle mass among patients who received continent and incontinent diversions following RC to patients treated with bladder sparing protocols (BSP) retaining their native bladder over a period of 1 year. 

**Specific Aim 2:** Quantify and compare changes in adipose tissue (including subcutaneous and visceral fat) among patients who received continent and incontinent diversions following RC to patients treated with BSP retaining their native bladder over a period of 1 year.

**Methods**

Clinicopathologic and radiographic data was retrospectively collected for all consecutive patients undergoing treatment for locally advanced bladder cancer between 2000 and 2018 (N=654). The clinical cohort for this study included patients undergoing radical cystectomy and either continence (N=105) or continent diversion (N=35) and patients undergoing BSP (N=5) who functioned as controls as they retained their native bladder. Patients were excluded under the following criteria: unavailable imaging within 30-60 days of initiation of chemotherapy and unavailable follow-up imaging (1-year up) RC. After exclusion, 145 patients were included in the current analysis.

Axial CT images at the level of third lumbar (L3) were collected at baseline and 1 year post intervention. Analysis of imaging was conducted by a team of radiologists at Massachusetts General Hospital in which axial images were segmented by tissue density into lean muscle, subcutaneous and visceral adipose tissue using artificial intelligence-based algorithms.

**Results**

Prevalence of overweight and obesity was assessed at baseline and 1 year post intervention. The prevalence of overweight and obesity was assessed at baseline and 1 year post intervention. The prevalence of overweight and obesity was assessed at baseline and 1 year post intervention. The prevalence of overweight and obesity was assessed at baseline and 1 year post intervention. The prevalence of overweight and obesity was assessed at baseline and 1 year post intervention.

**Conclusions**

Preliminary comparison demonstrated patients who underwent continent diversion had a greater BMI at baseline than those patients who underwent incontinence diversion or BSP. Both continent and incontinence intervention experienced a decline in BMI over a 1-year period following RC. Patients who underwent BSP saw an increase in BMI during the same 1-year post intervention period. Clinico pathological data showed many similarities among interventions groups except for median age which varied significantly among the three interventions. Because only the clinicopathological data and BMI can be compared at this time many limitations exist as work on this project continues imaging analysis will allow for a comprehensive comparison among interventions and a foundational understanding of the implications that different methods of urinary diversion have on lean muscularity and adipose tissue. Finally, the goal of this project is to provide physicians with a resource that can aid in improving clinical outcomes, as well as educating patients on an array of treatment options.

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