Editorial

Does obesity impact bladder cancer prognosis?—a long-lasting debate

Fabrizio Dal Moro[1,2], **Michele Colicchia**[1]

[1]Department of Surgery, Oncology and Gastroenterology-Urology, University of Padova, Padova, Italy; [2]Urology, University Hospital 'Santa Maria della Misericordia', Udine, Italy

Correspondence to: Fabrizio Dal Moro, MD, FEBU. Associate Professor, Urology, University Hospital 'Santa Maria della Misericordia', Via Pozzuolo, 330, 33100 Udine, Italy. Email: fabrizio.dalmoro@uniud.it.

Provenance: This is an Invited Editorial commissioned by Section Editor Xiao Li (Department of Urology, Jiangsu Cancer Hospital & Jiangsu Institute of Cancer Research & Nanjing Medical University Affiliated Cancer Hospital, Nanjing, China).

Comment on: Ferro M, Vartolomei MD, Russo GI, *et al.* An increased body mass index is associated with a worse prognosis in patients administered BCG immunotherapy for T1 bladder cancer. World J Urol 2018. [Epub ahead of print].

Submitted Oct 06, 2018. Accepted for publication Oct 12, 2018.
doi: 10.21037/tau.2018.10.11
View this article at: http://dx.doi.org/10.21037/tau.2018.10.11

Obesity is a pandemic: worldwide, it is estimated more than 1.9 billion adults were overweight and, of these, over 650 million were obese in 2016.

As obesity is a risk factor for cancers and is modifiable, Ferro *et al.* retrospectively investigated the impact of body mass index (BMI) on prognosis in a cohort of BCG-treated patients for T1 bladder cancer. They found that being overweight and obesity were significantly associated with an increased risk of recurrence and progression, but neither was a predictive factor of survival outcomes (1).

First, the authors must be commended for their efforts of collecting a large multi-institutional cohort with a long follow-up, where thirteen academic institutions were involved worldwide to perform this retrospective cohort study. The present results are consistent with previous literature (2,3), and imply the need to adopt a prudent approach for T1G3 NMIBC, and generally for bladder cancer, in overweight and obese patients.

For BMI ≥25 kg/m^2, a weight loss program should be considered, at the very least for the well-known benefit on general health, even the impact on cancer-specific outcomes is unknown.

As reported in the baseline characteristics of the study cohort, smoking is more common among overweight and obese patients, hence, it might be a potential confounder that should be addressed in further investigations.

Several biological explanations (e.g., insulin resistance, IGF-1, inflammatory cytokines—leptin, IL-6 and TNF-α) were offered by the investigators to explain their findings. However, we suggest that other factors may explain the observed results, including a more challenging procedure due to obesity and a higher intraabdominal pressure.

A common obstacle of the literature addressing the impact of obesity is the widely diffused use of BMI in the definition of this medical condition. BMI calculation cannot distinguish between fat and muscle and it is inaccurate in determining whether a patient is truly obese or not, but, regardless it is widely accepted. Additionally, a threshold of BMI ≥30 has been shown to have poor sensitivity for obesity in elderly populations, with over 25% of patients with BMI under 30 qualifying as obese based on body fat (4).

Conversely, sarcopenia—i.e., the severe wasting of skeletal muscle, representing the burden of comorbidity and overall frailty—might be an interesting factor, and has been already associated with worse cancer specific- and overall survival in a cohort of patients treated with radical cystectomy for bladder cancer (5).

Moreover, considering any bladder cancer suitable for surgical approach, the detrimental effect of obesity on oncological outcomes has been extensively explored in the last decade (3).

Importantly, the author's findings may be also considered hypothesis-generating because they suggest to take in account other metabolic disorders, like metabolic syndrome and its components, in this setting.

Metabolic syndrome has been already associated with

a higher incidence and/or poor oncological outcomes for several, not only genitourinary, cancers (6,7). In particular, obesity was not the only metabolic syndrome component associated with adverse outcomes; other components, like hypertension, diabetes mellitus or dyslipidemia, have also been associated with worse oncological outcomes. In a single-center study on 343 high-risk bladder cancer patients undergoing BCG, we demonstrated that hypertension alone revealed the increased risk of bladder cancer recurrence after BCG treatment (8).

A small single-center retrospective cohort study of 90 patients treated with TURBT and adjuvant BCG therapy for high-grade non-muscle-invasive bladder cancer, reported a reduced disease-free survival in patients affected by metabolic syndrome compared to patients without metabolic syndrome (9). Specifically, in multivariable analysis, BMI ≥30 kg/m^2 was a significant predictor of recurrence or progression.

Altogether this report enlightens a relevant and controversial topic in the context of obesity and bladder cancer. In conclusion, future investigations should specifically focus on: (I) a prospective evaluation of obesity on bladder cancer; (II) the effect of bodyweight loss as treatment approach to reduce the risk of recurrence and progression for non-muscle invasive bladder cancer; and (III) the investigation of more reliable metabolic prognosticator of disease outcomes. Anyhow, it is universally accepted that "prevention is better than cure".

Acknowledgements

None.

Footnote

Conflicts of Interest: The authors have no conflicts of interest to declare.

Cite this article as: Dal Moro F, Colicchia M. Does obesity impact bladder cancer prognosis?—a long-lasting debate. Transl Androl Urol 2018;7(Suppl 6):S710-S711. doi: 10.21037/tau.2018.10.11

References

1. Ferro M, Vartolomei MD, Russo GI, et al. An increased body mass index is associated with a worse prognosis in patients administered BCG immunotherapy for T1 bladder cancer. World J Urol 2018. [Epub ahead of print].
2. Kluth LA, Xylinas E, Crivelli JJ, et al. Obesity is associated with worse outcomes in patients with T1 high grade urothelial carcinoma of the bladder. J Urol 2013;190:480-6.
3. Lin Y, Wang Y, Wu Q, et al. Association between obesity and bladder cancer recurrence: A meta-analysis. Clin Chim Acta 2018;480:41-6.
4. Romero-Corral A, Somers VK, Sierra-Johnson J, et al. Accuracy of body mass index in diagnosing obesity in the adult general population. Int J Obes (Lond) 2008;32:959-66.
5. Toussi A, Stewart-Merrill SB, Boorjian SA, et al. Standardizing the Definition of Biochemical Recurrence after Radical Prostatectomy-What Prostate Specific Antigen Cut Point Best Predicts a Durable Increase and Subsequent Systemic Progression? J Urol 2016;195:1754-9.
6. Colicchia M, Morlacco A, Rangel LJ, et al. Role of Metabolic Syndrome on Perioperative and Oncological Outcomes at Radical Prostatectomy in a Low-risk Prostate Cancer Cohort Potentially Eligible for Active Surveillance. Eur Urol Focus 2018. [Epub ahead of print].
7. Bulut S, Aktas BK, Erkmen AE, et al. Metabolic syndrome prevalence in renal cell cancer patients. Asian Pac J Cancer Prev 2014;15:7925-8.
8. Dal Moro F, Bovo A, Crestani A, et al. Effect of hypertension on outcomes of high-risk patients after BCG-treated bladder cancer: a single-institution long follow-up cohort study. Medicine (Baltimore) 2015;94:e589.
9. Lenis AT, Asanad K, Blaibel M, et al. Association between Metabolic Syndrome and Recurrence of Nonmuscle Invasive Bladder Cancer following bacillus Calmette-Guérin Treatment. Urol Pract 2018;5:132-8.

