Localized high-grade urothelial carcinoma of prostate: another indication for radical prostatectomy

C. Mirvald[1,2], A. Danilov[1], R. Florean[1], V.Cerempei[1], Carmen Savu[3], R. Dumitru[4], I. Sinescu[1,2], C. Surcel[1,2]

[1] Center for Uronephology and Renal Transplantation, Fundeni Clinical Institute, Bucharest, Romania.
[2] "Carol Davila" University of Medicine and Pharmacy, Bucharest, Romania.
[3] Department of Anesthesia and Intensive Care, Fundeni Clinical Institute, Bucharest, Romania
[4] Radiology and Computed Tomography Clinic, Fundeni Clinical Institute, Bucharest, Romania

ABSTRACT

Prostatic urethral carcinoma is an uncommon cancer, accounting for less than 1% of all malignancies globally and is often associated with bladder cancer. Although current guidelines recommend cystoprostatectomy for invasive PUC as main treatment option, there is no consensus regarding the usage of urethral-sparing approaches for localized disease. In this paper, we present a case of primary prostatic urethral carcinoma with concomitant high risk non muscle invasive bladder cancer treated using radical prostatectomy as part of a urethral-sparing multimodal approach.

Keywords: primary urethral carcinoma, radical prostatectomy, concomitant high risk non muscle invasive bladder cancer, chemotherapy

Alexandru Danilov
Center for Uronephology and Renal Transplantation, Fundeni Clinical Institute, Bucharest, Romania
Fundeni Street no 258, 2nd district, Bucharest, Romania
Tel : 0040725339348
e-mail: alexandru.danilov94@gmail.com

Introduction

Prostatic urethral carcinoma (PUC) is an uncommon cancer, accounting for less than 1% of all malignancies globally and is often associated with bladder cancer (1). Although diagnostic methods have diversified in recent years, most tumors are still discovered in an advanced stage and present poor prognostic (2). Although current guidelines recommend cystoprostatectomy for invasive PUC as main treatment option, there is no consensus regarding the usage of urethral-sparing approaches for localized disease(3).

In this paper, we present a case of primary prostatic urethral carcinoma with concomitant non muscle invasive high risk bladder cancer treated using radical prostatectomy as part of a urethral-sparing multimodal approach.

Case presentation

A 67 year old patient non smoker, was referred to our hospital in September 2023 for frequency, weak urinary stream and dysuria. He was admitted in another hospital 3 month prior for severe mixed low urinary tract symptoms and intermittent hematuria.

DRE examination described an enlarged prostate and a nodule in the right prostatic lobe. Laboratory results were normal with hematuria present on urine analysis and sterile urine culture. A UROCT scan was perfomed which showed an enlarged prostate and a bladder wall thickening of 7 mm on the anterolateral wall. Due to suspicious DRE findings and elevated PSA of 4.22 ng/dl, he underwent a transperineal prostate biopsy which revealed multiple ASAP lesions in the right prostatic lobe and a high-grade urothelial carcinoma possibly developed from prostatic ducts. 3 weeks after prostate biopsy the patient developed complete urinary retention with gross hematuria and clots for which he was readmitted. Uretrocistoscopic evaluation revealed a 2/2 cm urethral tumor on the right prostatic lobe and an ½ cm bladder tumor on the anterolateral wall which were resected. Pathological results of the resected specimens described a pT2G3 prostatic stroma invasive urothelial carcinoma from the TURP fragments and a high grade pT1 urothelial carcinoma in the bladder. Abdomino-pelvic MRI performed 1 month after endoscopic resection revealed a PIRADS 2 lesion in the transitional zone and a mid-prostatic urethral lesion, with no bladder tumor and no enlarged pelvic nodes (Figure 1).

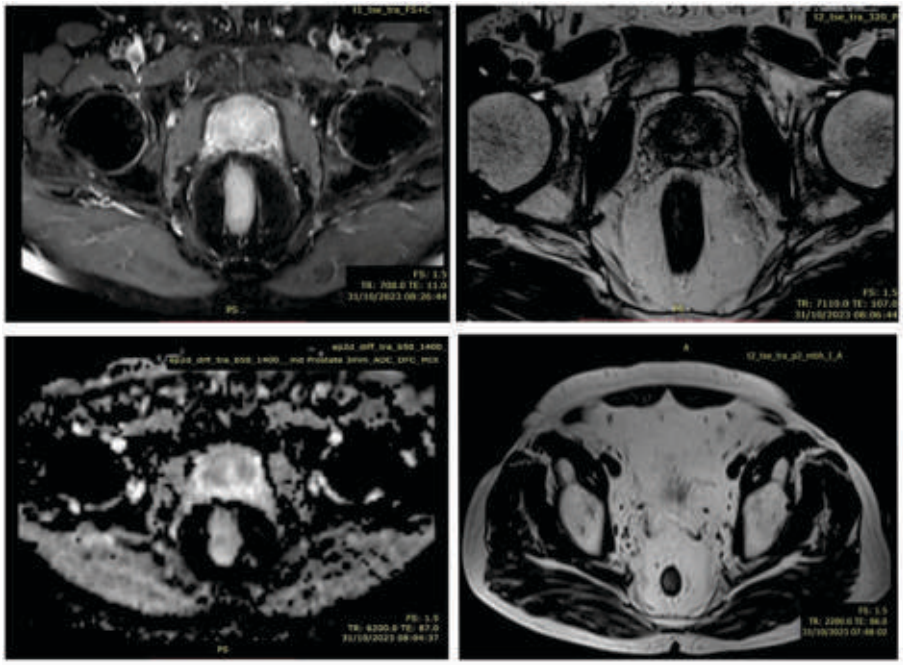


Figure 1. Multiparametric pelvic MRI describing a isointense T1 with a short T2 signal lesion in the center of prostate suggestive for prostatic urethral carcinoma

At admittance in our department, laboratory results were normal, except presence of microhematuria on urine analysis and a PSA of 3.38 ng/mL. We performed a cystoscopic reevaluation under spinal anesthesia that revealed an incompletely healed area on the right anterolateral prostatic lobe and a scar on the anterolateral bladder wall (Figure 2). A reTURBT was perfomed from the resection area along with prostatic urethra biopsy and random bladder biopsies form all quadrants. Pathological results described a high grade urothelial carcinoma with prostatic stromal invasion and no residual tumor in the bladder.

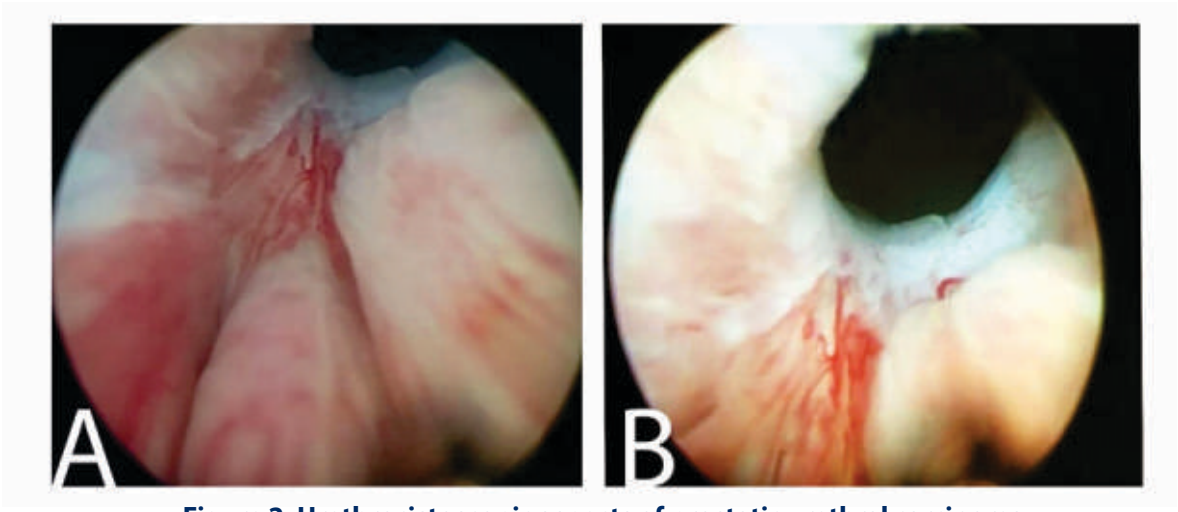


Figure 2. Urethrocistoscopic aspects of prostatic urethral carcinoma

Considering the presence of a solitary non muscle invasive bladder tumor with no nodal spread on imaging in a patient with symptomatic LUTS, the multidisciplinary team recommended radical prostatectomy as first step and adjuvant chemotherapy depending on the final pathological examination and cystoscopic surveillance of the bladder lesion.

In November 2023 an open left side nerve sparing radical prostatectomy with extended pelvic lymph node dissection was performed, which was uneventful and the patient was discharged in day 7 postoperative. Final pathology results described an invasive urethral urothelial carcinoma pT2 high grade with extensive pagetoid patterns in prostatic ducts and acini, carcinoma in situ lesions (endoluminal) and associated HG-PIN prostatic lesions. Surgical margins were negative and vas deferens and seminal vesicles did not show any tumor infiltrates (RO). 23 nodes were removed with no signs of metastasis (pN0). The patient underwent 3 cycles of adjuvant gemcitabine and cisplatin, with good tolerance. At 3 months after surgery, the patient was continent with no urethral or bladder recurrence at urethrocistoscopic evaluation. However, at 9 months the patients developed a 1.2 cm Ta high grade recurrence on the posterior bladder wall which was resected and it's currently undergoing a 6 cycle induction BCG as adjuvant treatment.

Discussions

Prostatic urethral carcinomas are rare without a history of or concomitant bladder cancer. This type of cancer can be frequently understaged and usually requires an extensive TURP to evaluate the presence of stromal or ductal invasion. Due the rarity of this disease, current literature is limited to small case series and case presentation. Previous studies have shown that radical cystoprostatectomy should be considered as first-line therapeutic choice for individuals with ductal involvement(4). Urethral sparing strategies (such as prostatectomy, partial urethrectomy, etc) and multimodal approaches have been suggested in order to decrease the morbidity of cystectomy, but the oncological safety of these management options is still controversial(5, 6).

Around 2-5% of people with superficial bladder cancer and 40-60% with muscle-invasive bladder cancer develop urethral cancer during follow-up and are considered micrometastasis from the primary tumor(7). Resectoscope loop biopsy represents the method of choice in order to detect PUD and the biopsies should include the area around verumontanum in order to maximize detection (8, 9). In addition, an aggressive TURP may even curative in some cases, even with stromal involvement(8, 10).

The pattern of prostatic involvement should also be taken into account, not only the histological degree of differentiation. Stromal involvement may have both a bladder and intraurethral origin and the type of involvement may impact subsequent treatment decision. However, there are no prospective studies to elucidate the relevance of various prostate invasion degrees in terms of prognosis and treatment strategies, as well as the impact on survival of distinct prostate invasion pathways.

Cisplatinum based chemotherapy in patients with urethral urothelial tumor may improve survival in addition to surgical treatment or radiotherapy(3). Unfortunately, the studies that have followed the oncological results of multimodal treatment are heterogeneous, with a small number of patients, and the sequencing of treatments in order to improve survival is unknown(5).

The usage of urethral sparing techniques in the management of stromal invasive PUC is controversial. The risks of urethral or local recurrence must be balanced against the morbidity of radical cystectomy and incontinent urinary diversion. To this day, there is no prospective trial to evaluate the oncological safety of any urethral sparing techniques in comparison to cystoprostatectomy for localized or locally advanced PUC.

In patients with limited stromal involvement, radical prostatectomy may be considered as a treatment option in well selected cases with close monitoring. Although the literature regarding this topic is scarce, several papers have reported excellent outcomes using radical prostatectomy as monotherapy or in combination with platinum based chemotherapy (11-14). In our case, no urethral recurrence was discovered during cystoscopic follow-up, however a 1.2 cm Ta high grade recurrence was resected at 9 months after radical prostatectomy for PUD which is a common finding during surveillance in patients with high risk non muscle invasive bladder cancer.

Conclusions

Radical prostatectomy may be considered as a treatment option for localized prostatic urethral carcinoma in well selected cases. The risks of urethral or local recurrence must be carefully analyzed individually against the morbidity of radical cystoprostatectomy and incontinent urinary diversion.

Ethical approval and consent to participate
The patient's informed written consent was obtained for the publication of this manuscript and for usage of medical images.

Disclosure statement
No potential conflict of interest was reported by the authors.

Data availability statement
All data generated or analyzed during this study are included in this published article.

References

1. Visser O, Adolfsson J, Rossi S, Verne J, Gatta G, Maffezzini M, et al. Incidence and survival of rare urogenital cancers in Europe. Eur J Cancer. 2012;48(4):456-64.
2. Matzkin H, Soloway MS, Hardeman S. Transitional cell carcinoma of the prostate. J Urol. 1991;146(5):1207-12.
3. Gakis G, Bruins HM, Cathomas R, Comperat EM, Cowan NC, van der Heijden AG, et al. European Association of Urology Guidelines on Primary Urethral Carcinoma-2020 Update. Eur Urol Oncol. 2020;3(4):424-32.
4. Cahn DB, Handorf E, Ristau BT, Geynisman DM, Simhan J, Kutikov A, et al. Contemporary practice patterns and survival outcomes for locally advanced urethral malignancies: A National Cancer Database Analysis. Urol Oncol. 2017;35(12):670 e15-e21.
5. Janisch F, Abufaraj M, Fajkovic H, Kimura S, Iwata T, Nyirady P, et al. Current Disease Management of Primary Urethral Carcinoma. Eur Urol Focus. 2019;5(5):722-34.
6. Sinescu I, Glück G. Tratat de urologie: Editura Medicală; 2008.
7. Kakizoe T, Tobisu K. Transitional cell carcinoma of the urethra in men and women associated with bladder cancer. Jpn J Clin Oncol. 1998;28(6):357-9.
8. Donat SM, Wei DC, McGuire MS, Herr HW. The efficacy of transurethral biopsy for predicting the long-term clinical impact of prostatic invasive bladder cancer. J Urol. 2001;165(5):1580-4.
9. Wood DP, Jr., Montie JE, Pontes JE, Levin HS. Identification of transitional cell carcinoma of the prostate in bladder cancer patients: a prospective study. J Urol. 1989;142(1):83-5.
10. Orihuela E, Herr HW, Whitmore WF, Jr. Conservative treatment of superficial transitional cell carcinoma of prostatic urethra with intravesical BCG. Urology. 1989;34(5):231-7.
11. Mallen Mateo E, Gil Martinez P, Sancho Serrano C, Garcia de Jalon Martinez A, Pascual Regueiro D, Gil Sanz MJ, et al. [Pure primary prostate transitional cell carcinoma. A review of our series]. Actas Urol Esp. 2004;28(5):377-80.
12. Huguet J. [Prostatic involvement by urothelial carcinoma in patients with bladder cancer and their implications in the clinical practice]. Actas Urol Esp. 2012;36(9):545-53.
13. Sawczuk I, Tannenbaum M, Olsson CA, deVere White R. Primary transitional cell carcinoma of prostatic periurethral ducts. Urology. 1985;25(4):339-43.
14. Liu L, Sun FZ, Zhang PY, Xiao Y, Yue X, Wang DM, et al. Primary high-grade urothelial carcinoma of prostate with prostatic hyperplasia: a rare case report and review of the literature. Aging Male. 2023;26(1):2252102.