Ureteritis cystica mimicking upper tract urothelial cancer in a patient with bladder cancer

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ABSTRACT

Ureteritis cystica is a rare condition of the upper urinary tract characterized by the presence of numerous small cystic lesions. Associated urinary tract malignancy is exceedingly rare, and ureteritis cystica is not thought to have malignant potential.

We present the case of a 62-year-old male who was found to have both urothelial carcinoma of the bladder and numerous filling defects of the bilateral upper urinary tracts which were subsequently diagnosed as ureteritis cystica.

To our knowledge this is the only published case of ureteritis cystica associated with bladder cancer and the clinical challenges it poses.

1. Introduction

Ureteritis cystica is a rare benign condition of the upper urinary tract characterized by the presence of numerous small cystic lesions occupying the pyelocaliceal system and ureters. It is commonly identified incidentally and presents radiographically as numerous filling defects with a scalloped appearance. Macroscopically, these lesions appear as multiple gray or pale yellow, hemispheric lesions less than 5mm in diameter. The lesions contain a sterile, white or yellow, viscous fluid. Microscopically, the lesions appear as small epithelial-lined cysts representing cystic degeneration of the epithelium. There are often no associated clinical symptoms. Diagnosis may be made radiographically or endoscopically, and biopsy is generally not necessary. The etiology has not been fully elucidated but is postulated to be secondary to inflammatory changes resulting from infection, urolithiasis, or obstruction. Prognosis is considered favorable as upper urinary tract obstruction is exceedingly rare, and there have been no reported fatalities. No specific treatments are known although treatment of concomitant pathologies thought to be causative can result in resolution.

Herein, we report the first case of urothelial cell carcinoma of the bladder associated with ureteritis cystica and discuss the associated challenges of clinical management.

2. Case presentation

A 62-year old Caucasian male with coronary artery disease and a 45 pack-year smoking history presented to urology clinic with a history of several episodes of painless gross hematuria. He denied other associated urologic symptoms, including dysuria, flank pain, or change in baseline voiding patterns, and he expressed no notable change in overall health. He had no history of kidney stones. He worked as an aircraft mechanic. His physical exam was unremarkable.

A CT Urogram demonstrated a small left lateral wall filling defect in the bladder, as well as numerous bilateral upper urinary tract filling defects which, in the setting of a filling defect in the bladder, were concerning for upper tract urothelial carcinoma (Fig. 1A).

2.1. His voided urine cytology returned as atypical

The patient was taken to the OR for cystoscopy, TURBT with instillation of gemcitabine, and bilateral ureteroscopy. His cystoscopy was notable for two small bladder tumors located on the left lateral wall and within a left hutch diverticulum, which were resected uneventfully.

Bilateral retrograde pyelograms confirmed multiple bilateral upper tract filling defects which, in the setting of a filling defect in the bladder, were concerning for upper tract urothelial carcinoma (Fig. 1B). Left sided ureteroscopy was performed demonstrating innumerable small, pale yellow to tan, cystic lesions

Abbreviations: AUA, American Urological Association; UCB, urothelial carcinoma of the bladder; UTUC, upper tract urothelial carcinoma.

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A holmium laser was used to puncture one of the lesions, producing an efflux of cloudy tan-colored fluid (Fig. 2B and supplemental video). Cytology procured from this area was negative, as were bacterial and fungal cultures. Several of the cysts were biopsied using a ureteroscopic biopsy forceps, however pathologic results were non-diagnostic given its scant and amorphous nature. The right upper urinary tract was investigated similarly, and further cysts were noted, albeit with fewer on this side.

2.2. No tumors suggestive of UTUC were noted in either upper tract

The bladder tumor pathology was diagnostic of low grade pTa urothelial carcinoma of the bladder (UCB) with no evidence of lamina propria invasion.

Under American Urological Association (AUA) Guidelines for non-muscle-invasive bladder cancer, this patient would be categorized as intermediate risk (LG Ta – multifocal). Further intravesical therapy was discussed with the patient but he declined owing to a burdensome work schedule. The patient has been followed for 6 months with no recurrence of bladder cancer or associated symptoms including hematuria. Repeat CT urogram at 6 months demonstrated a slight interval improvement of upper tract cystic involvement. He has since discontinued smoking entirely.

3. Discussion

Ureteritis cystica is a rare benign entity which, to date, has never been described in association with UCB. The patient presented had significant tobacco smoke exposure raising the clinical suspicion that the upper tract filling defects noted during his workup could represent UTUC. Fortunately, careful endoscopic evaluation did not reveal evidence of UTUC. Upon review of the literature, we found only a single case of urinary tract malignancy associated with ureteritis cystica reported in 1967 which was a ureteral adenocarcinoma.1 Menéndez et al. performed the largest review of ureteritis cystica patients to date and found there to be a strong association with infection, urolithiasis, and hematuria although it is not certain if any of these entities are causative.2

AUA Guidelines for intermediate risk non-muscle-invasive bladder cancer recommend surveillance of the upper urinary tract every 1–2 years to rule out the development of UTUC. This surveillance is typically performed using cross-sectional urographic phase imaging such as CT urogram or MR urogram. These studies are unable to distinguish between cysts and UTUC in the patient described, representing a unique clinical challenge. The invasive nature of ureteroscopy poses a significant treatment burden for the patient. Other non-invasive methods of surveillance need to be considered including urine-based biomarkers (cytology, FISH, NMP22, immunocyte, BTA-TRAK, etc). Alone the sensitivity of urine cytology for all UTUC is inadequate (<50%), although it has high specificity (>90%). The combination of cytology and FISH is promising in this scenario as it offers a sensitivity of 85.9% while maintaining a specificity of 97.8%.4 Fortunately, the estimated lifetime risk of developing metachronous UTUC in a patient with UCB is low, around 2.6%.5 In this patient, we have opted to survey his upper tract using voided urine cytology, FISH, and periodic urographic phase imaging.

4. Conclusion

Ureteritis cystica is a rare benign condition which can mimic UTUC, particularly in patients with UCB. Herein, we report the first case of ureteritis cystica associated with UCB. Upon close consideration of case details and relevant literature we do not suspect there to be a causal relationship between these pathologies, but rather an unlikely concurrence which deserves reporting. Surveillance of the upper tracts for UTUC using cross-sectional imaging in this patient is not feasible given the presence of the cysts, raising an uncommon clinical challenge to which urinary biomarkers represent a promising potential solution.

Consent

Written consent was obtained from the patient to retrospectively report the outcome of the case.

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Appendix A. Supplementary data

Supplementary data to this article can be found online at https://doi.org/10.1016/j.eucr.2021.101822.

Fig. 1. Maximum intensity projection from CT urogram demonstrating multiple filling defects in proximal left ureter (A). Retrograde pyelogram during ureteroscopy demonstrating multiple filling defects in proximal left ureter (B).

Fig. 2. Ureteroscopic view of cysts in proximal left ureter (A), Ureteroscopic image of cloudy efflux following laser puncture of cyst (B).
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