



Contents lists available at ScienceDirect

International Journal of Surgery Case Reports

journal homepage: www.casereports.com

Invasive urothelial carcinoma of urinary bladder presenting with annular constriction and mimicking proctitis observed by colonoscopy: A case report

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ARTICLE INFO

Article history:

Received 27 February 2021

Received in revised form 13 March 2021

Accepted 13 March 2021

Available online 16 March 2021

Keywords:

Invasive urothelial carcinoma

Colonoscopy

Proctitis

Case report

ABSTRACT

INTRODUCTION: Bladder urothelial carcinoma rarely spreads to the gastrointestinal tract, and its presentation in the rectum varies. We report a case of a patient who presented with an annular constriction of the rectum.

PRESENTATION OF CASE: A 60-year-old man was referred to our hospital with chief complaints of anal stricture and partial obstruction for about 1 month. Computed tomography and magnetic resonance imaging revealed diffuse wall thickening of the rectum, possible high cellularity in the lower portion of urinary bladder, and lesions in the visible pelvic bony structure. A colonoscopy showed a contiguous annular constriction from 5 to 15 cm above the anal verge. Carcinoembryonic antigen and carbohydrate antigen 19-9 levels were 39.75 ng/mL and 139.2 U/mL, respectively. A transurethral bladder biopsy revealed high-grade urothelial cell carcinoma, and anal biopsy showed a poorly differentiated carcinoma arranged in a small nested pattern within the subepithelial area of the anorectal tissue. A colostomy was performed, and the patient was transferred to another hospital for further treatment after series of survey with lung metastasis.

DISCUSSION: Invasive bladder cancers rarely infiltrates into the rectum and is known with the difficulty diagnosis by colonoscopy. Furthermore, the secondary rectum tumor due to bladder cancer had poor record for survival in the literature review.

CONCLUSION: This case of bladder urothelial carcinoma penetrating to the rectum was interesting because it mimicked proctitis with diffuse annular swelling observed in the colonoscopy.

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1. Introduction

Bladder urothelial carcinoma rarely spreads to the gastrointestinal tract and usually metastasizes to the lymph nodes, liver, lung,

Abbreviations: LDH, lactate dehydrogenase; AFP, alpha-fetoprotein; CA19-9, carbohydrate antigen 19-9; CT, computed tomography; MRI, magnetic resonance imaging; CK, cytokeratin.

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<https://doi.org/10.1016/j.ijscr.2021.105785>

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and bone. Moreover, it is common to note aggressive local invasion into adjacent organ. We report a case of a patient who presented with a bladder urothelial cancer that resulted in rectal infiltration and partial obstruction mimicking proctitis observed during a colonoscopy. This work has been reported in line with the SCARE criteria [1].

2. Presentation of case

A 65-year-old man was referred to our hospital because of anal stricture with partial obstruction for about 1 month without obvious abnormal findings from a colonoscopy and a biopsy. His history was remarkable for bladder urothelial carcinoma cTisNOMO,



Fig. 1. Computed tomographic image showing contiguous symmetrical rectal wall thickening.

high grade status post-transurethral resection of a bladder tumor and two-times instillation chemotherapy with intravesical 81 mg Bacillus Calmette-Guerin once a week 2 years earlier. Physical examination revealed normal vital signs, a soft, non-tender, tympanic abdomen, and no palpable abdominal mass. A digital rectal examination revealed a narrowed rectal lumen with an intact rectal mucosa without red blood on the examining finger. The laboratory exam showed the following results: C-reactive protein, 1.17 mg/dl; normal white blood cell count, 7530/ μ l; negativity for cytomegalovirus, herpes simplex virus, and treponema pallidum infection; lactate dehydrogenase (LDH), 310 U/L; alpha-fetoprotein (AFP), 3.31 ng/mL; carcinoembryonic antigen, 38.75 ng/mL; carbohydrate antigen 19-9 (CA19-9), 139.2 U/mL; and prostate specific antigen, 0.861 ng/dl. Urinalysis revealed hematuria with red blood cells >100 per high-power field. Urine cytology showed abundant atypical urothelial cells with hyperchromatism.

Subsequently, computed tomography (CT) (Fig. 1) and magnetic resonance imaging (MRI) (Fig. 2) revealed diffuse rectal wall thickening, diffuse lower urinary bladder wall thickening with possible high cellularity, and at least three lesions in the visible pelvic bony structure with the largest one (about 1.7 cm) in the left ischium bone. Subsequently, repeated colonoscopy was arranged

after bowel preparation and showed contiguous annular constriction from 5 to 15 cm above the anal verge (Fig. 3). A biopsy revealed an inflamed colonic mucosa with a few abnormal small glands within the submucosa.

After discussion with the patient, we agreed to perform a colostomy for nutrition establishment, cystoscopy, and anal biopsy. The cystoscopy showed a diffuse wide-base bladder tumor over the bladder neck and left lateral wall. The tumor cells stained strongly positive for CK7 and were focally positive for CK20, positive for GATA-3, diffusely positive for CD138, and negative for CDX-2. Therefore, primary adenocarcinoma of the colon was less likely and tumor growth of urothelial origin was suspected (Fig. 4). An anal biopsy showed poorly differentiated carcinoma arranged in a small nested pattern within the subepithelial area of the anorectal tissue (Fig. 5) and further positive immunohistochemistry staining for GATA-3 was reported. From the pathology above, the mass caused annular constriction was consistent with direct invasion from the previous urinary bladder cancer. Unfortunately, the patient was diagnosed with lung and bone metastasis after transferring to another hospital for further evaluation and chemotherapy for invasive urothelial carcinoma cT4N1M1, high grade, plasmacytoid variant because of personal reasons after a T-loop colostomy.

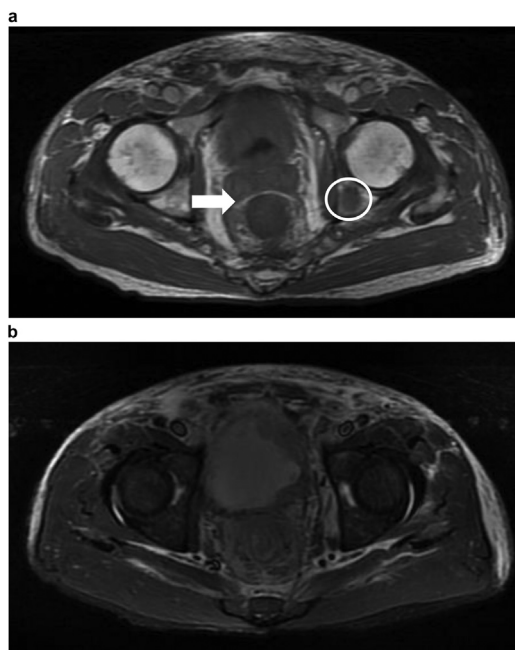


Fig. 2. Magnetic resonance image showing (a) intact Denonvilliers' fascia (arrow) and bone metastasis (circle) and (b) irregular thickening of the bladder wall.

As far as we are concerned, we could only track his out-patient department follow-up record about five months later.

3. Discussion

Invasive bladder cancers frequently show lymphatic or hematogenous metastasis. Aggressive local invasion into adjacent structures is also commonly observed. However, the occurrence of

rectal annular constriction due to infiltration by bladder cancer is relatively rare. Previously, it was believed that the rectal mucosa could remain intact because it was thought that metastatic spread would not penetrate the muscular layers of the bowel [2]. However, Aneese et al. [3] reported a case of bladder urothelial carcinoma extension, via the prostate, into the rectum that formed a multinodular, oval, ulcerated, friable mass. All of the previous reports have revealed the vagaries of the presentation of invasive bladder (prostate) cancer in the rectum and the difficult diagnosis by colonoscopy.

Although the mechanism of urological tumor-related annular rectal stricture remains unclear, several studies have been reported. Langenstroer et al. [4] reported a case involving a similar clinical presentation that was noted about three years after the operation of cystoprostatectomy; they suggested that this presentation may have been caused by surgical deposition of cancer cells. Stillwell et al. [5] presented two cases of annular constrictions of the rectum and hypothesized that a locally aggressive bladder cancer may spread through the Denonvilliers' fascia causing the problem. Kobayashil et al. [6] hypothesized that this kind of cancer cells may easily progress along the lateral pedicles to the posterior part of rectal wall and even break through the rectal wall afterward. Their hypothesis was based on the many CT results of their three cases that showed enlarge lateral pedicles with relative intact of their fat layer. From the studies mentioned above, it is currently hypothesized that the routes of invasive bladder (prostate) tumor to the rectum are (1) previous iatrogenic exposure-caused deposition; (2) direct invasion, breaking through the bladder wall via Denonvilliers' fascia to the rectum; and (3) metastasis via the lateral pedicles of the bladder to the posterior rectal wall followed by wall infiltration.

In our case, we concluded that a secondary rectum tumor due to bladder cancer could be mimicking proctitis with continuous annular constriction caused by swelling and an intact mucosa. We had performed a tumor marker survey and a laboratory evaluation of possible infections. Details of the colonoscopy were recorded,

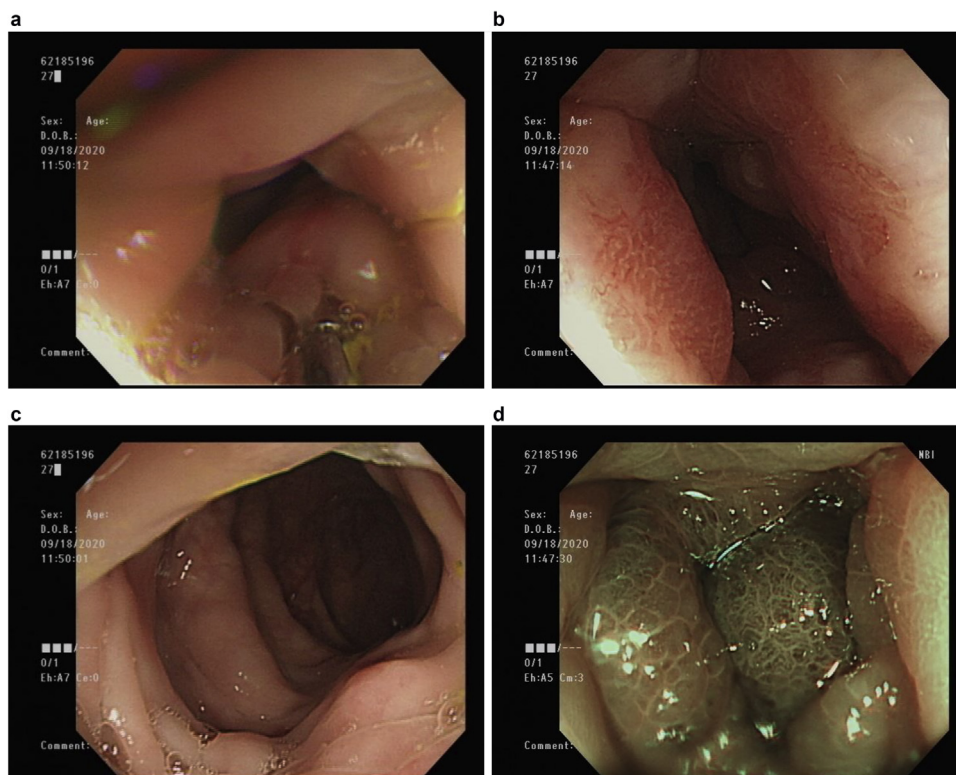


Fig. 3. Colonoscopy. (a) 5 cm from the anal verge, (b) 10 cm from the anal verge, (c) 15 cm from the anal verge, (d) narrow-band image at 5 cm from the anal verge.

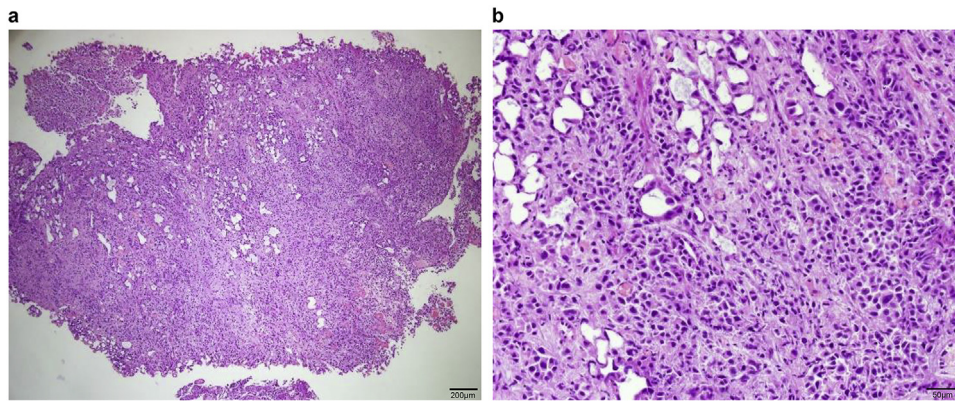


Fig. 4. Immunohistochemistry of bladder tumor cells (a) strongly positive for CK7, (b) focally positive for CK20, (c) positive for GATA-3, (d) diffusely positive for CD138, and (e) negative for CDX-2; scale bar represents 100 μM.

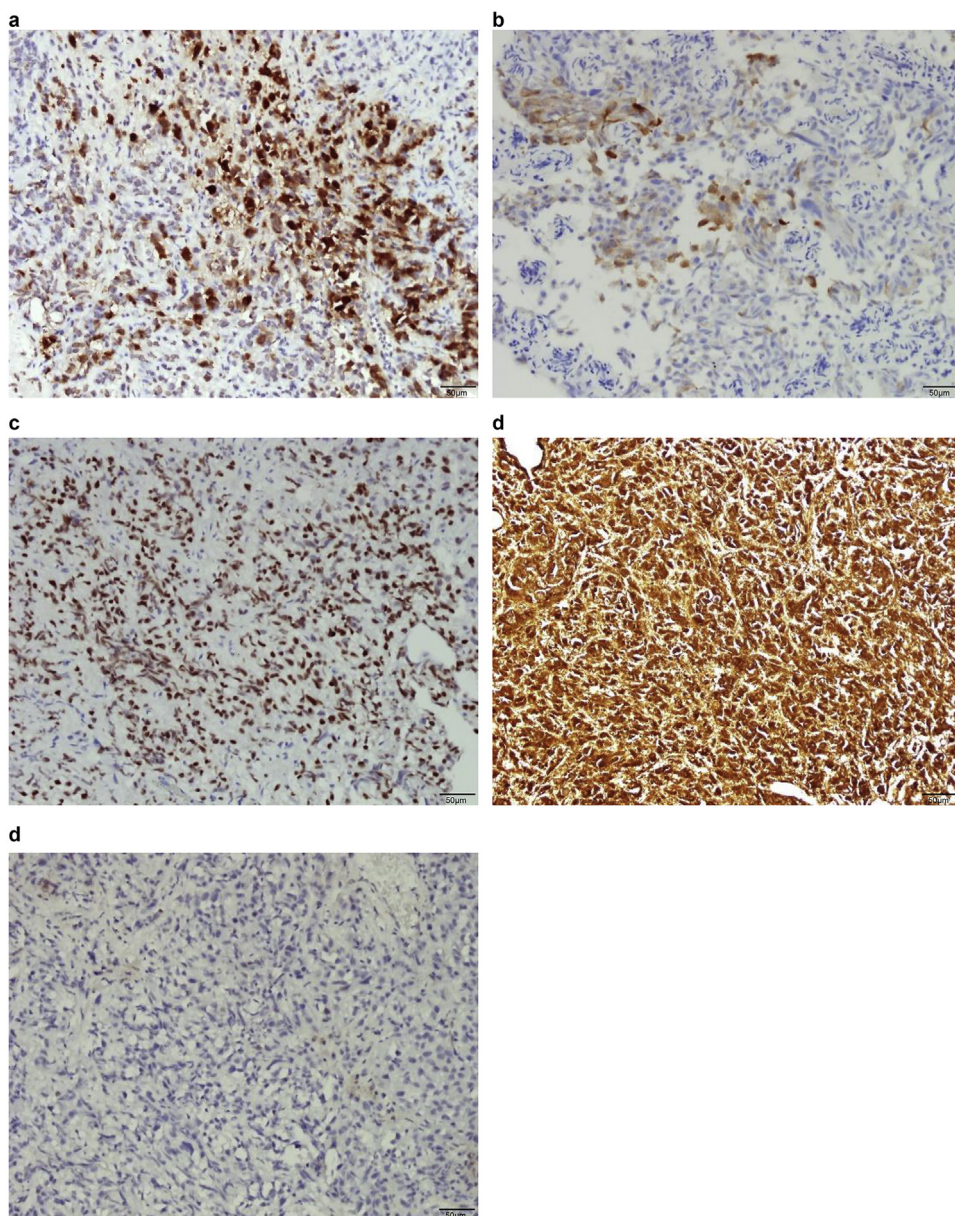


Fig. 5. Histopathological examination revealed inflamed colonic mucosa with a few abnormal small glands within the submucosa with crushed artefacts suspicious of adenocarcinoma. (a) 40×, scale bar represents 200 μM; (b) 200×, scale bar represents 50 μM.

and CT and MRI were also performed. However, we did not know the etiology of the severe swelling of the rectal mucosa until we obtained the pathology report results.

Bladder urothelial carcinoma rarely extends or metastasizes to the gastrointestinal tract, and few cases with rectum involvement have been reported [7]. Three main characteristics of secondary rectal tumors originating from the bladder or prostate were noted. First, all of the cases, including ours, involved men. A possible explanation of a sex difference is that there is a reproductive organ that acts as a barrier between urologic organs and the rectum in women. Second, high grades of the original cancers were noted, which may be related to the third feature: poor outcome. There is no record for survival >2 years after diagnosis of a rectal lesion.

4. Conclusion

In summary, we presented a case of a bladder urothelial carcinoma that had penetrated to the rectum and mimicked proctitis with diffuse annular swelling observed by colonoscopy, which may lead to a poor outcome.

Declaration of Competing Interest

The authors report no declarations of interest.

Funding

This study has not received funding from any person or institution.

Ethical approval

Our protocol adhered to the tenets of the Declaration of Helsinki and received approval from the TSGH Institutional Review Board.

Consent

Informed written consent was obtained from the patient's legally authorized representatives for publication of this case.

Author contribution

Yu-Hong Liu contributed to the design of the study, was responsible for the management and retrieval of data, contributed to initial data analysis and interpretation, and drafted the initial manuscript.

Yu-Hong Liu and Ta-Wei Pu decided upon the data collection methods and were also responsible for the data analysis decisions. Ta-Wei Pu conceptualized and designed the study, supervised all aspects of the study, critically reviewed and revised the manuscript, and approved the final manuscript for submission.

Registration of research studies

Not applicable.

Guarantor

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Provenance and peer review

Not commissioned, externally peer-reviewed.

Acknowledgment

The authors are grateful to Enago for technical editing, language editing, and proofreading.

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