Adenocarcinoma of the bladder: a case report

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Background: Adenocarcinoma of the urinary bladder is a rare malignancy accounting for 0.5–2.0% of all bladder cancers and has a poor prognosis. The main treatment is radical cystectomy. However, there is no case report of adenocarcinoma of the urinary bladder treated by robot-assisted radical cystectomy.

Case Description: A 43-year-old man was diagnosed with bladder tumor that was incidentally detected during ultrasonography. Cystoscopy revealed a follicular tumor in the trigon of the urinary bladder. The patient underwent transurethral resection and pathological examination revealed adenocarcinoma, not otherwise specified, associated with intestinal metaplasia and cystitis glandularis of the urinary bladder. Most parts of the specimen exhibited intestinal metaplasia and cystitis glandularis. Adenocarcinoma with a non-specific glandular growth was found in some part of the specimen and the Ki-67 positivity rate was higher in these regions than in the other regions. Computed tomography, gastroscopy and colonoscopy revealed no other tumors. The patient underwent robot-assisted radical cystectomy with a total intracorporeal urinary diversion (ileal neobladder). Pathological examination revealed no residual tumor (pT0).

Conclusions: Here, we report a rare case of adenocarcinoma of the urinary bladder associated with intestinal metaplasia and cystitis glandularis of the urinary bladder treated by robot-assisted radical cystectomy. The patient was free from recurrence 1 year after the surgery.

Keywords: Adenocarcinoma; case report; Ki-67 antigen; immunohistochemical staining; robot-assisted radical cystectomy

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Introduction

Background

Adenocarcinoma of the urinary bladder is a rare malignant disease that accounts for 0.5–2.0% of all cases of bladder cancer (1). Possible risk factors for bladder adenocarcinoma include schistosomiasis, chronic inflammation, urinary obstruction, cystocele, and endometriosis (2). Adenocarcinoma of the bladder largely arises from the trigon or the posterior wall of the bladder. The tumor may appear as a papillary, sessile, or ulcerous lesion. Notably, the prognosis of bladder adenocarcinoma is poor, with reported overall 2-, 5-, and 10-year survival rates of 54.8%, 36.1%, and 25.4%, respectively (3).

Various benign glandular lesions, including cystitis glandularis, should be considered in the differential

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diagnosis of bladder adenocarcinoma (4-7). Cystitis glandularis, a relatively rare condition of proliferative cystitis, is generally classified into two categories: (I) usual/typical and (II) intestinal (also known as intestinal metaplasia) (6). The presence of extracellular mucin secreted by goblet cells confirms the differential diagnosis of endocervicosis, primary adenocarcinoma, or urachal adenocarcinoma (5).

Rationale and knowledge gap

The prognosis of bladder adenocarcinoma is poor, with reported overall 2-, 5-, and 10-year survival rates of 54.8%, 36.1%, and 25.4%, respectively (3). Optimal treatment for bladder adenocarcinoma remains to be established.

Objective

We report a case of adenocarcinoma, not otherwise specified (NOS), associated with intestinal metaplasia and cystitis glandularis of the urinary bladder treated by robot-assisted radical cystectomy (RARC). This case is presented in accordance with the CARE reporting checklist (available at https://asj.amegroups.com/article/view/10.21037/asj-23-3/rc).

Case presentation

A 43-year-old man was referred to the urology department of another hospital with a bladder tumor that was incidentally detected during ultrasonography. Cystoscopy revealed a follicular tumor in the trigon of the urinary bladder, but the orifices were not detectable (*Figure 1A*). The patient underwent a transurethral resection of the bladder tumor. Pathological examination revealed adenocarcinoma, NOS, associated with intestinal metaplasia and cystitis glandularis.

Most parts of the specimen exhibited intestinal metaplasia and cystitis glandularis. Microscopically, a large and clear nucleus was observed in some of the tumor cells containing the gland ducts. The Ki-67 positivity rate was higher in these regions than in the other regions, and breakdown of the gland ducts and mucus leakage into the proper mucus membrane suggested tumor invasion into the proper mucus membrane (pT1) (*Figure 1B-1E*). No muscular invasion or vascular infiltration was observed. Immunohistochemical (IHC) staining showed cytokeratin (CK) 7(–), CK20(+), Caudal type homeobox 2 (CDX-2) (+), and no nuclear localization of β-catenin (*Figure 2A-2D*). The specimen was negative for prostate-specific antigen (*Figure 2E*). P53 testing showed a wild pattern (*Figure 2F*). The final pathological diagnosis was adenocarcinoma NOS associated with intestinal metaplasia and cystitis glandularis. No evidence of urothelial carcinoma was observed in any specimen.

The patient underwent repeated transurethral resection of the bladder tumor, and no residual tumor was found. However, the trigon of the urinary bladder was still inflamed. Computed tomography revealed severe bilateral hydronephrosis, but no other tumors were detected (*Figure 3*). Gastroscopy and colonoscopy revealed no other tumors. The urine cytology was negative for malignancy throughout the treatment period.

Although the histological examination of the second transurethral resection was negative for cancer, because of the severe hydronephrosis and the tumor's possible aggressive behavior, the patient underwent RARC with total intracorporeal urinary diversion (ileal neobladder). Pathological examination revealed no residual tumor (pT0). The patient had the periodic cystoscopy, urine cytology, and computed tomography and was free from recurrence 1 year after the surgery.

All procedures performed in this study were in accordance with the ethical standards of the institutional and/or national research committee(s) and with the Helsinki Declaration (as revised in 2013). Written informed consent was obtained from the patient for publication of this case report and accompanying images. A copy of the written

Highlight box

Key findings

- We report a rare case of adenocarcinoma of the urinary bladder associated with intestinal metaplasia and cystitis glandularis of the urinary bladder treated by robot-assisted radical cystectomy. The patient was free from recurrence 1 year after the surgery.

What is known and what is new?

- Adenocarcinoma of the urinary bladder is rare and has a poor prognosis. The main treatment option is radical cystectomy.
- We present the first case report of adenocarcinoma of the urinary bladder treated by robot-assisted radical cystectomy.

What is the implication, and what should change now?

- The patient diagnosed with adenocarcinoma of the urinary bladder underwent robot-assisted radical cystectomy and was free from recurrence 1 year after the surgery. Accumulation of similar case reports would improve the treatment of patients with bladder adenocarcinoma.

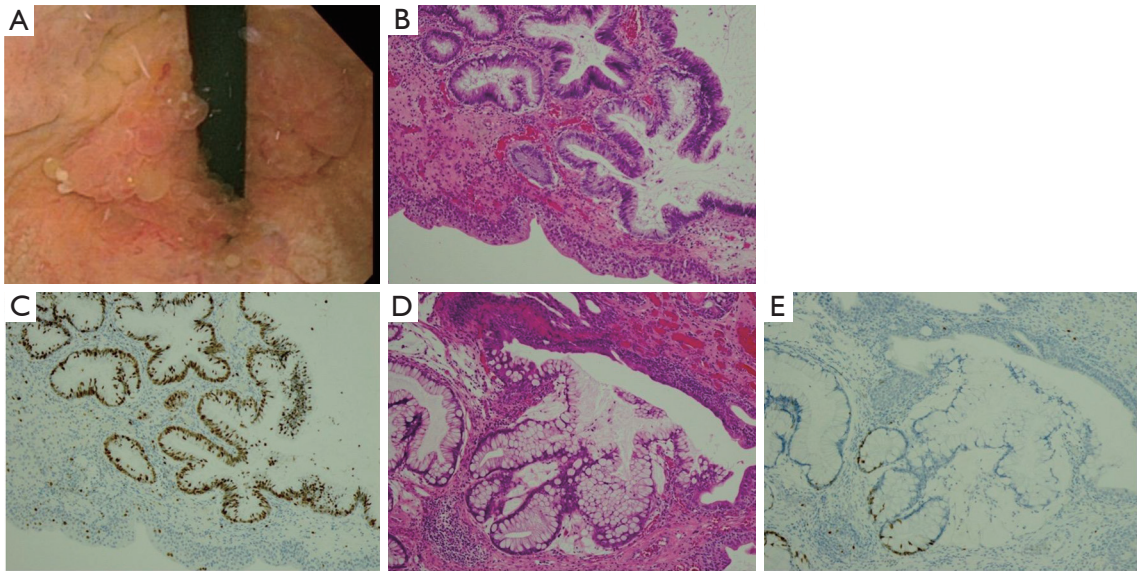

Figure 1 Cystoscopy and pathological images of the adenocarcinoma lesion. (A) Photos from preoperative cystoscopy. (B) Histology of adenocarcinoma of the urinary bladder (hematoxylin and eosin, ×10). (C) Positive staining for Ki-67 (×10). (D) Histology of intestinal metaplasia and cystitis glandularis of the urinary bladder (hematoxylin and eosin, ×10). (E) Negative staining for Ki-67 (×10).

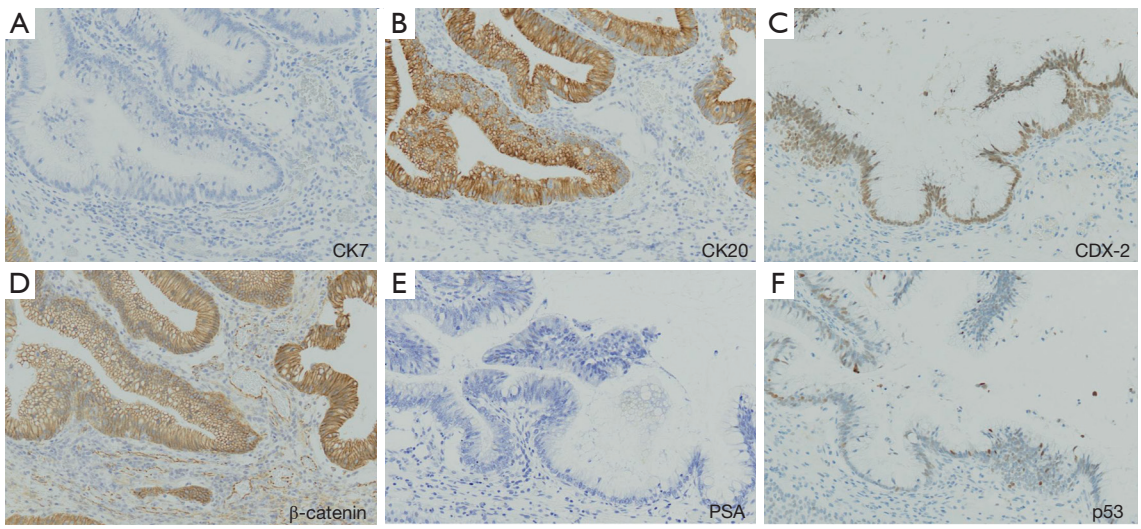

Figure 2 Immunohistochemical images of the adenocarcinoma lesion. (A) Image of immunohistochemical staining for CK7 (×20). (B) Image of immunohistochemical staining for CK20 (×20). (C) Image of immunohistochemical staining for CDX-2 (×20). (D) Image of immunohistochemical staining for β-catenin (×20). (E) Image of immunohistochemical staining for prostate specific antigen (PSA) (×20). (F) Image of immunohistochemical staining for p53 (×20). CK, cytokeratin; CDX-2, caudal type homeobox 2.

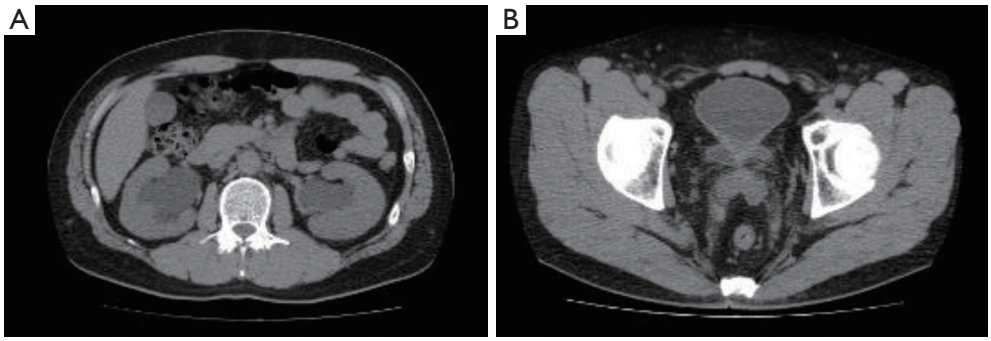

Figure 3 CT images of the patient. (A) CT showing residual bilateral hydronephrosis after repeated transurethral resection of the bladder tumor. (B) Residual inflammation at the trigon of the urinary bladder. CT, computed tomography.

consent is available for review by the editorial office of this journal.

Discussion

Key findings

Here, we report a case of bladder adenocarcinoma associated with intestinal metaplasia and cystitis glandularis treated with robot-assisted radical cystectomy.

Strengths and limitations

This is the first case of bladder adenocarcinoma treated by RARC. The patient is free from recurrence 1 year after surgery. The limitation is that this is a single case report.

Comparison with similar researches

The differential diagnosis of adenocarcinoma from intestinal metaplasia and cystitis glandularis is difficult but clinically important. Intestinal metaplasia may demonstrate mucus extravasation, which can be mistaken for invasive adenocarcinomas. Another possible finding that could mistakenly suggest adenocarcinoma is the presence of benign intestinal metaplasia glands in the muscularis propria or thick muscle bundles (8). In our case, extensive mucus extravasation was found in much of the specimen.

Whether intestinal metaplasia and cystitis glandularis are precancerous remains controversial (9-11). While one retrospective study found no evidence of mucinous metaplasia increasing the future risk of malignancy, others reported the transition from mucinous metaplasia to adenocarcinoma (11).

Explanations of findings

A thorough microscopic examination revealed a 3-mm region that was ultimately diagnosed as adenocarcinoma. IHC examination confirmed the diagnosis of adenocarcinoma. Adenocarcinoma of the bladder reportedly expresses Caudal type homeobox 2 (CDX-2), Carcinoembryonic antigen (CEA), Mucin (MUC)-1, MUC-2, and MUC-3, similar to colonic adenocarcinoma (12). In contrast, bladder adenocarcinoma is positive for CK7 (33.3%) and CK20 (100%), whereas colonic adenocarcinoma is positive for CK20 (100%) but not CK7 (8.3%) (13). Strong nuclear and cytoplasmic-membranous staining of β-catenin was observed in 75% of the metastatic colonic adenocarcinoma cases versus only 16.7% of the primary bladder adenocarcinoma cases (13). Ki-67 is a nuclear protein associated with cellular proliferation and correlated with the clinical course of several cancer types, including bladder cancer (14). A recent systematic review and meta-analysis reported significant correlations between high Ki-67 expression and survival outcomes in European-American but not Asian patients (14).

Considering the severe hydronephrosis and poor prognosis of bladder adenocarcinoma, our patient selected to undergo radical cystectomy.

Implications and actions needed

Although robot-assisted radical cystectomy has been replacing open or laparoscopic radical cystectomy, there are some reports on atypical recurrence of bladder cancer after

RARC (15). Surgical indication should be limited to tumors at early stages.

As this is a single case report, accumulation of similar case reports would improve the treatment of patients with bladder adenocarcinoma.

Conclusions

Herein, we report a rare case of bladder adenocarcinoma associated with intestinal metaplasia and cystitis glandularis. The patient underwent Robot-assisted radical cystectomy because of the severe hydronephrosis and poor prognosis of bladder adenocarcinoma and had a favorable outcome.

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Footnote

Reporting Checklist: The authors have completed the CARE reporting checklist. Available at https://asj.amegroups.com/article/view/10.21037/asj-23-3/rc

Peer Review File: Available at https://asj.amegroups.com/article/view/10.21037/asj-23-3/prf

Conflicts of Interest: All authors have completed the ICMJE uniform disclosure form (available at https://asj.amegroups.com/article/view/10.21037/asj-23-3/coif). MN serves as an unpaid editorial board member of *AME Surgical Journal* from January 2023 to December 2024. The other authors have no conflicts of interest to declare.

Ethical Statement: The authors are accountable for all aspects of the work in ensuring that questions related to the accuracy or integrity of any part of the work are appropriately investigated and resolved. All procedures performed in this study were in accordance with the ethical standards of the institutional and/or national research committee(s) and with the Helsinki Declaration (as revised in 2013). Written informed consent was obtained from the patient for publication of this case report and accompanying images. A copy of the written consent is available for review by the editorial office of this journal.

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