

Case Report

Primary ureteral adenocarcinoma in a patient with previous gastric adenocarcinoma: a rare nonmetastatic case

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Abstract: Upper urinary tract adenocarcinoma is a rare malignancy with a challenging diagnosis and limited treatment options. This paper presents a rare case of primary ureteral adenocarcinoma, an exceptionally uncommon malignancy typically associated with genitourinary or extra-genitourinary tumors. The 53-year-old patient, with a history of gastric adenocarcinoma and prior chemotherapy, developed left flank pain. Imaging revealed a tumor in the distal ureter, leading to a left radical nephroureterectomy. Histopathology confirmed an intestinal-type adenocarcinoma of the upper urinary tract. Unique to this case, the adenocarcinoma originated separately from the stomach. Despite planning adjuvant chemotherapy, the patient's deteriorating condition led to palliative care, and he passed away three months post-diagnosis. The paper underscores the challenges in diagnosing and treating such rare malignancies, emphasizing the need for further research to understand their etiology and optimal management.

Keywords: Ureteral adenocarcinoma, gastric adenocarcinoma, ureter, adenocarcinoma, nonmetastatic, upper urinary tract adenocarcinoma

Introduction

Primary upper urinary tract adenocarcinoma is an exceedingly rare malignancy, predominantly originating from genitourinary or extra-genitourinary sources. Upper urinary tract adenocarcinoma is infrequent among renal neoplasms, constituting less than one percent of renal malignancies [1, 2]. The most common site for this malignancy is the distal third of the upper urinary tract, often manifesting between 60 and 70 [3]. Clinical manifestations often include gross hematuria, flank pain, and urgency, although asymptomatic cases are not uncommon [2]. Etiological factors commonly associated with upper urinary tract adenocarcinoma include upper urinary calculi, infection, and chronic inflammation, leading to the proliferation of urinary epithelium and subsequent malignancy development [3, 4]. Diagnosis of this tumor is challenging preoperatively, with definitive confirmation usually achieved post-surgical intervention [5].

The standard treatment for upper urinary tract adenocarcinoma is surgery, which primarily involves radical nephroureterectomy along with excision of the bladder cuff, occasionally complemented by adjuvant chemotherapy and radiation therapy [3, 6]. However, Due to the rarity of this tumor and the limited data available regarding treatment options, the role of adjuvant chemotherapy and radiotherapy remains unclear and is subject to ongoing debate [7]. In this study, we report a rare case of upper urinary tract adenocarcinoma that underwent left radical nephroureterectomy.

Case presentation

A 53-year-old man presented to the urology clinic complaining of increasing left flank pain over the past month. He had a history of total gastrectomy due to adenocarcinoma of the stomach five years ago. Subsequently, he received 20 sessions of adjuvant chemothera-

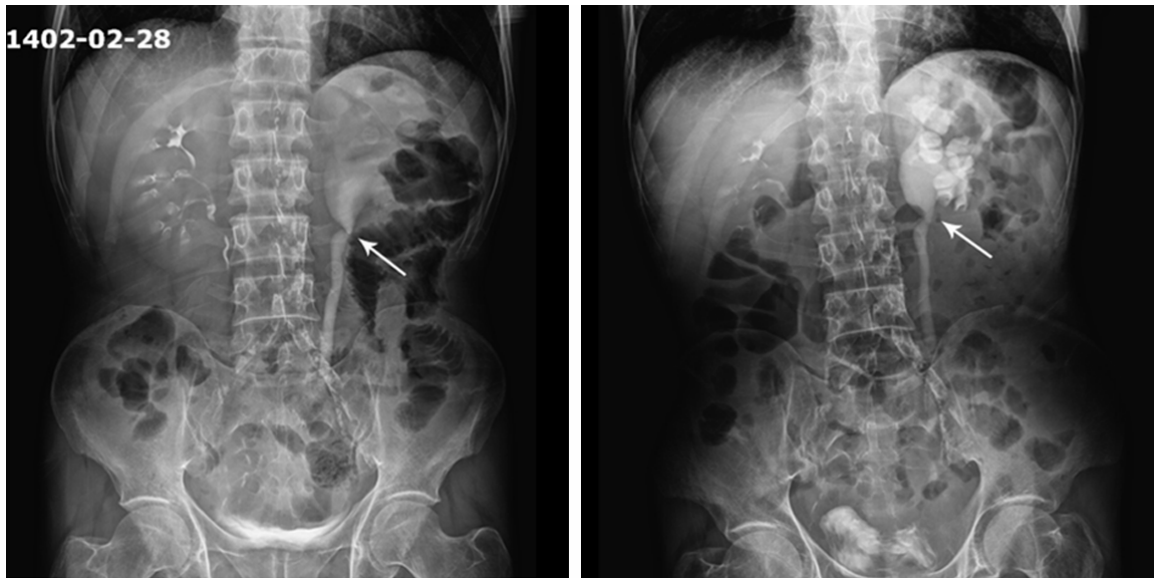


Figure 1. An intravenous urography revealing dilation of the left pelvicalyceal system secondary to stricture at the ureteropelvic junction.

py for gastric cancer. The patient's vital signs were within normal range: BP=115/75; PR=83; RR=18; T=37.5.

On physical examination, the patient appeared cachectic and had tenderness in the left flank. He did not report any history of gross hematuria or lower urinary tract symptoms. Routine hematological investigations revealed the following results: WBC=8.6; RBC=4.4; Hb=13.2; HCT=39.3; Plt=241; ESR=25.

A spiral computed tomography (CT) scan of the abdominopelvic regions with contrast revealed soft tissue density in the distal left renal pelvis, measuring 12×8 mm, at the level of the pelvic inlet. An intravenous urography showed dilation of the left pelvicalyceal system (hydronephrosis grade II) without evidence of renal stones secondary to stricture at the ureteropelvic junction (**Figure 1**). A ureteroscopy was done, and the tumor was observed in the distal part of the ureter. A multi-detector computed tomography (MDCT) scan with contrast was performed to rule out metastasis in other regions, including the abdomen and chest, which did not reveal any distant metastasis. The patient underwent a left radical nephroureterectomy along with bladder cuff removal. Microscopic histopathological examination of the surgical specimen confirmed a 1 cm intestinal-type primary ade-

nocarcinoma of the upper urinary tract (**Figure 2**), staged as T3N1M0. The patient had negative close radial margins. A macroscopic histopathological examination revealed that the kidney measured 10×6×3 cm, as the attached ureter measured 18 cm in length and 1 cm in diameter. Multiple cut sections of the kidney revealed dilation of the pelvis and calyces. Cut sections of the ureter revealed a firm tumoral lesion with luminal narrowing measured 1 cm.

Immunohistochemistry showed positive staining for CK7 (**Figure 3**), favoring primary upper urinary tract adenocarcinoma, while CK20 (**Figure 4**), CDX2 (**Figure 5**), and beta-catenin (**Figure 6**) were negative. This distinction is noteworthy as the origin of upper urinary tract adenocarcinoma differed from gastric adenocarcinoma.

After the surgery, the patient was scheduled for adjuvant chemotherapy. Unfortunately, owing to the patient's poor prognosis and cachexia from the outset, as well as delayed presentation for treatment and late diagnosis of the tumor, the disease had progressed significantly. Despite surgical intervention, the patient's condition deteriorated, rendering further treatment impractical. Due to the worsening general condition of the patient, only palliative care was performed to improve his quality of life.

Primary ureteral adenocarcinoma in gastric cancer survivor

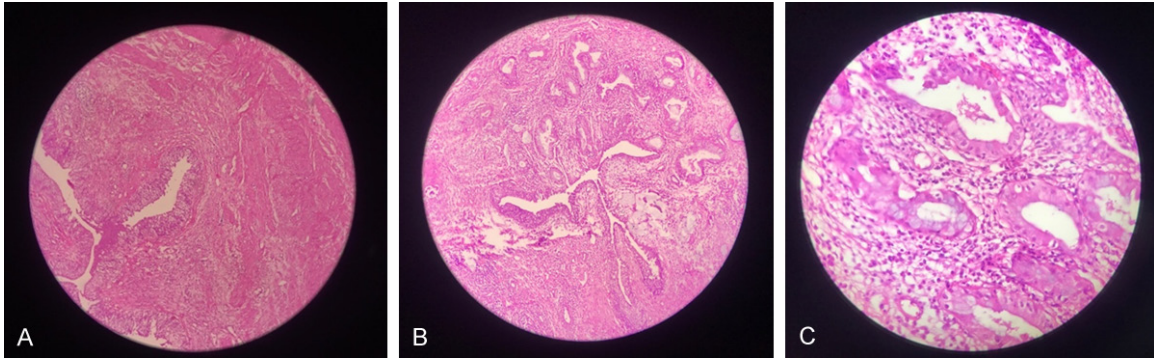


Figure 2. Histopathological examination of the surgical specimen with hematoxylin and eosin staining showing microscopic features of ureteral adenocarcinoma. A. $\times 10$ magnification. B. $\times 40$ magnification. C. $\times 100$ magnification.

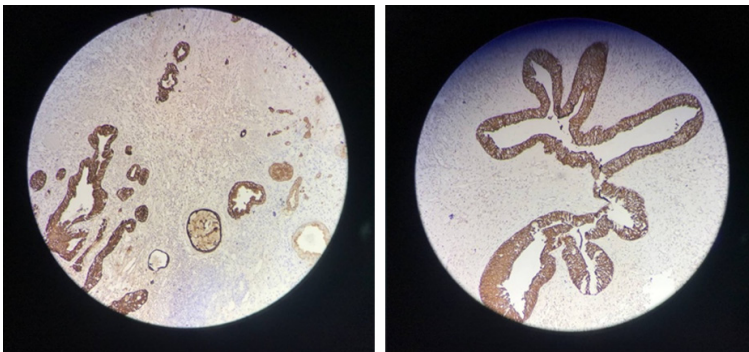


Figure 3. Immunohistochemistry showed positive staining for CK7 ($\times 40$ magnification).

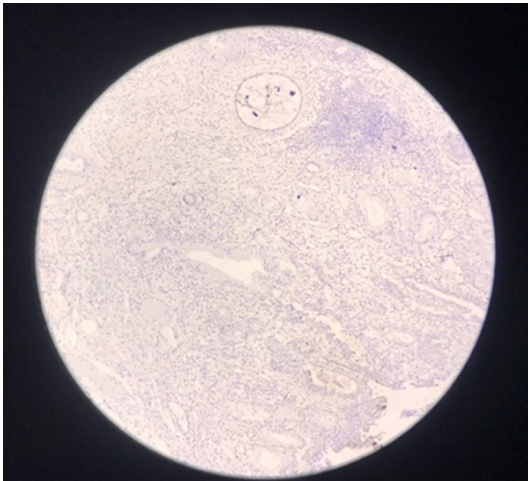


Figure 4. Immunohistochemistry showed negative staining for CK20 ($\times 40$ magnification).

Unfortunately, the patient's overall condition did not improve, and he died three months after the diagnosis was established.

Discussion

Adenocarcinoma of the ureter is a rare malignancy, with primary cases being exceptionally uncommon and often associated with metastasis from other primary sites such as the breast or stomach [1, 2, 8]. Metastasis of gastric adenocarcinoma to the ureter is an infrequent occurrence, but many reports have been registered in this regard. The first study was conducted by Schlangintweit in 1991. After that, numerous cases have been reported in this regard. Among them, the study by Vesna Bisof and colleagues, in which ureteral metastasis appeared as the sole manifestation of gastric cancer, is noteworthy [9]. In another study conducted by Meriem Ait Alla and colleagues, a metastatic carcinoma of the ureter was reported, which was derived from a previous adenocarcinoma of the stomach. They also comprehensively reviewed prior ureteral metastases in this study [10]. In our case study, the patient was initially diagnosed with gastric adenocarcinoma, and a few years later, adenocarcinoma of the ureter was observed, which was reported to have originated from the primary carcinoma of the ureter based on immunohistochemical findings. So far, we have not found any cases of primary adenocarcinoma of both the stomach and ureter with different origins, making this case unique. Additionally, a high percentage of adenocarcinomas of the ureter is associated with stones,

Primary ureteral adenocarcinoma in gastric cancer survivor

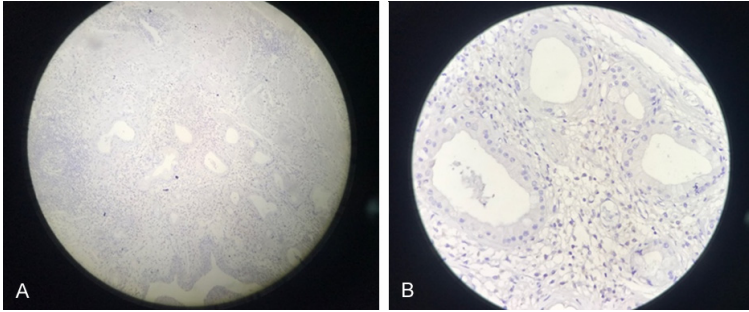


Figure 5. Immunohistochemistry showed negative staining for CDX2. A. $\times 40$ magnification. B. $\times 100$ magnification.

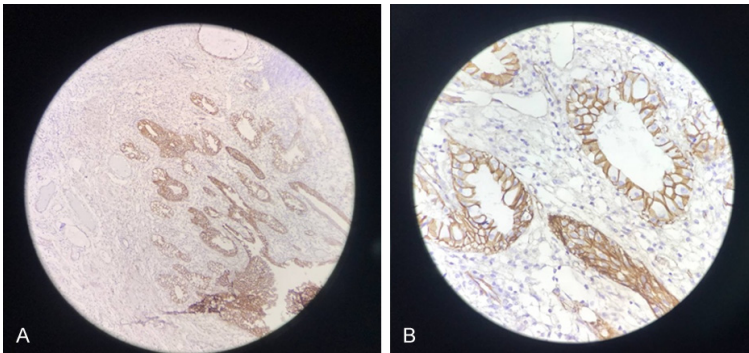


Figure 6. Immunohistochemistry showed negative staining for beta-catenin. A. $\times 40$ magnification. B. $\times 100$ magnification.

but our patient did not have a history of urinary tract stones, which is also noteworthy.

Histologically, adenocarcinomas of the renal pelvis and ureter can be classified into three subgroups, including tubulovillous, mucinous, and papillary non-intestinal types [5, 11]. Survival rates in adenocarcinomas of the ureter differ based on these subgroups. Tubulovillous adenocarcinomas are more invasive and have lower 5-year survival rates than other types. Papillary adenocarcinomas have the highest 5-year survival rate at around 100% [3].

Radiological assessments play crucial roles, such as contrast-enhanced CT scans, intravenous pyelography (IVP), ultrasound, and retrograde urethrography. IVP with retrograde urethrography shows the overall renal function, location of the defect, and, if present, hydronephrosis caused by obstruction. CT scans can also be used to investigate tumor spread [3, 12, 13]. In our case study, we found evidence of a tumor using IVP and retrograde urethrography and ruled out metastasis from adenocarci-

noma of the ureter using CT scans.

The early diagnosis of this condition is notably challenging. Given the absence of specific clinical symptoms or laboratory tests for the identification of this malignancy, in most cases, the diagnosis of adenocarcinoma occurs post-surgery through pathological examination. In instances of strong clinical suspicion, the recommended treatment is radical nephroureterectomy, accompanied by bladder cuff removal. This approach is advocated as studies indicate that approximately half of tumor recurrences occur locally at the remaining ureteral edge. Despite advancements in treatment modalities, the prognosis for adenocarcinoma of the ureter remains guarded due to its aggressive nature and low survival rates. In some cases of adenocarcinoma of the ureter, it is recom-

mended to prevent recurrence with radiation therapy or chemotherapy. However, the definitive role of adjuvant chemotherapy or radiotherapy still needs to be determined [3, 7, 14].

In our case study, which had a high clinical suspicion of ureteral adenocarcinoma; the standard treatment involved radical nephroureterectomy with bladder cuff removal (**Figure 7**). Adjuvant chemotherapy was proposed post-surgery. However, due to the patient's poor general condition, we could not pursue these treatments and only provided supportive care.

Unfortunately, given the type of adenocarcinoma and its low survival rate, the patient passed away.

Conclusion

In conclusion, we presented a rare case of upper urinary tract adenocarcinoma that was believed to have originated from the ureter and not as a metastasis from the previous gastric adenocarcinoma. This case highlights the

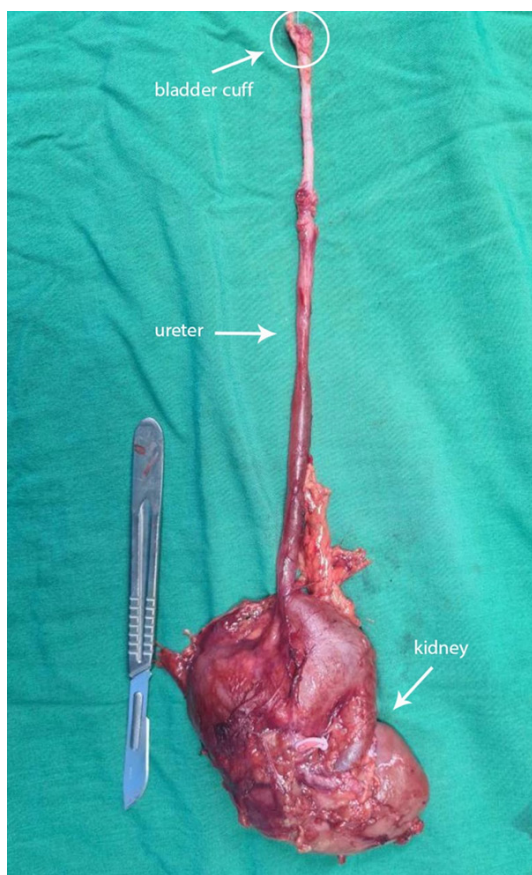


Figure 7. Specimen of left radical ureteronephrectomy including left kidney, ureter, and bladder cuff.

importance of considering the possibility of primary upper urinary tract adenocarcinoma in patients with other malignancies. It also emphasizes the challenges in diagnosing and treating such rare malignancies. Further research and case studies are needed to understand better the etiology, diagnosis, and treatment of primary upper urinary tract adenocarcinoma.

Disclosure of conflict of interest

None.

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Primary ureteral adenocarcinoma in gastric cancer survivor

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