### Case Report

# Unusual Bladder Metastasis from a Primary Gastric Carcinoma: Two Case Reports and Review of Literature

### Mohamed Ali Nouioui,<sup>1</sup> Ahmed Saadi,<sup>1</sup> Marouene Chakroun,<sup>1</sup> Amine Oueslati,<sup>1</sup> Meriem Ksentini,<sup>2</sup> Abderrazak Bouzouita,<sup>1</sup> Amine Derouiche,<sup>1</sup> Mohamed Riadh Ben Slama,<sup>1</sup> Soumaya Rammeh,<sup>2</sup> Haroun Ayed,<sup>1</sup> and Mohamed Chebil<sup>1</sup>

<sup>1</sup>Department of Urology, Charles Nicolle Hospital of Tunis, University of Tunis El Manar, Tunisia <sup>2</sup>Department of Pathology, Charles Nicolle Hospital of Tunis, University of Tunis El Manar, Tunisia

Correspondence should be addressed to Mohamed Ali Nouioui; mednouiouimed@gmail.com

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Primary bladder cancer is a frequent malignancy in the urology field, whereas secondary bladder neoplasms from a distant organ are extremely rare. This paper aims to report two rare cases of a secondary tumor of the urinary bladder from a primary gastric tumor and to perform a literature review of similar reported cases in order to better characterize its clinicopathological features and diagnosis in effort to shed light on this rare condition. The final diagnosis of secondary adenocarcinoma was made histologically after transurethral biopsy or resection of the bladder lesion. In one case, the bladder metastasis was a synchronous metastasis, and in the second case, it occurred under chemotherapy five months after initial diagnosis with gastric adenocarcinoma. Secondary adenocarcinoma of the bladder is extremely rare but should be considered when evaluating a bladder lesion in a patient treated for gastric cancer or presenting with gastric symptoms.

#### 1. Introduction

Primary bladder cancer is a frequent malignancy in the urological field whereas secondary bladder tumor from distant primary foci is considered an extremely rare condition accounting for 2% from total vesical tumors [1].

Histologically, 54% of those secondary neoplasms of the bladder are adenocarcinomas of which 4.3% are originated from a primary gastric adenocarcinoma [2].

Here, we present two cases of metastatic bladder tumor from a primary gastric adenocarcinoma and a literature review of similar case reports.

#### 2. Case Presentation

2.1. *Case 1.* A 72-year-old male patient with a history of smoking and no occupational exposure to urothelial carcinogens, was recently diagnosed with a poorly differentiating signet ring cell (SRC) carcinoma of the stomach based on a

histological examination of endoscopic biopsy material taken from a suspicious infiltrating gastric mass.

Other than main gastric complaints, he complained of lower urinary tract storage symptoms such as frequency, nocturia, and urgency, but no haematuria was reported.

A CT scan of the abdomen and the pelvis was performed showing the malignant tumoral mass in the pylorus with peritoneal involvement and ascites associated to a diffuse thickening of the bladder wall with bilateral hydronephrosis (Figure 1).

Physical pelvic examination was normal.

Cystoscopy was performed, revealing an extensive bullous oedema of the bladder mucosa with a grape-like aspect with involvement of both the ureteric orifices initially not visualized, obscured by the lesion (Figure 2).

Transurethral biopsy of the lesion was conducted with liberation of the ureteric orifices.

Histopathological evaluation of the bladder biopsy revealed multiple signet ring cells in the lamina propria with



FIGURE 1: (a) CT scan showing diffuse irregular thickening of the bladder wall. (b) CT scan showing a neoplastic gastric mass.



FIGURE 2: Macroscopic aspect of a bullous lesion of the bladder with a grape-like aspect.

overlying transitional cell epithelium with no sign of urothelial carcinoma (Figure 3).

Based on histological findings and previous diagnosis of poorly differentiated gastric carcinoma, a diagnosis of synchronous bladder metastasis from primary gastric SRC carcinoma was made.

2.2. Case 2. A nonsmoker 36-year-old male with no occupational exposure to urothelial carcinogens, initially diagnosed five months ago with gastric signet ring cell adenocarcinoma metastatic to the bone with peritoneal involvement, initially treated with palliative chemotherapy, was referred to our urology department after he developed gross intermittent haematuria.

A CT scan of the abdomen and the pelvis detected two suspicious masses in the bladder wall, respectively, measuring 6 and 8 mm associated with homolateral hydronephrosis.

Because of our patient's history of primary gastric carcinoma, a secondary location of the bladder was suggested.

A cystoscopy showed two solid protuberant nodular lesions one in the trigone and the other in the right lateral bladder wall completely resected.



FIGURE 3: Infiltration of the subepithelium of the bladder with a small aggregates of neoplastic cells (H&E,  $\times 200$ ).



FIGURE 4: Signet-ring cells in the poorly differentiated adenocarcinoma (H&E, ×400).

After pathological examination of the surgical specimen, the diagnosis of metastatic poorly differentiated adenocarcinoma of the bladder from a gastric primary cancer was reached (Figure 4).

Both patients were then referred to oncology for a second-line chemotherapy.

	dn-w	ed days ter nosis	K	R	R	ıble tion 8 ıs after nosis	eased nonths ter nosis	R
om a primary gastric tumor reported in English language literature.	Follo	Deceas af diag	Z	Z	Z	Sta condi month diag	Deco three r af diag	Z
	Management of bladder metastasis	Nil	TUR	TUR	Total cystectomy	TUR	NIL	TUR
	Endoscopic findings	Large broad- based lesion at the posterior wall, with mucinous strands	NR	Bullous oedema of the bladder mucosa	Oedematous mucosa of the bladder with a small ulcer	Extensive vegetative lesion in the bladder	Lesion in the bladder diverticulum	NR
	Other metastasis	Retroperitoneal adenopathy	Nil	Nil	Nil	Ascites	Nil	Nil
	Presence of hydronephrosis	Ŷ	ŶZ	°N N	Ŷ	Bilateral	No	No
	Imaging findings	Polypoid lesion in the bladder posterior wall	Focal thickening of the bladder anterior wall	Diffuse bladder wall thickening	Diffuse thickening of the bladder wall	Thickened wall of the bladder	Thickening of the bladder wall with diverticulum enhance effect	2 cm mass involving the trigone and the left lateral
ler metastasis fr	Interval between primary tumor and metastasis	7 years HC	One year HC	Fifteen months HC	Two years HC	One year and nine months	Synchronous metastasis	Fifteen months HC
urinary bladd	Haematuria	Yes	Microscopic	Microscopic	Microscopic	Nil	Ye	Yes
LE 1: Review o	Clinical presentation	Nil	Sense of residual urine dysuria, non- tender supra-pubic mass	Frequency, dysuria	Dysuria	Left lumbar pain, dysuria low abdominal pain	Nausea, dysphagia	Nil
TAB	Primary gastric tumor stage	SRC AC	AC	SRC AC	SRC AC	AC	Tubular AC	AC
	Gender	M	W	ц	М	ц	ц	M
	Age	58	60	57	42	63	90	58
	Author and year	Saba et al. 1997 [7]	Kim et al. 2000 [4]	Kim et al. 2000 [4]	Kim et al. 2000 [4]	Antunes et al. 2004 [8]	Matsuhashi et al. 2005 [9]	Farhat et al. 2007 [10]

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Follow-up	Alive five months after chemo	Colic recurrence one year after chemo		Alive 5 months after chemotherapy	Stable three month later	Deceased nine months after diagnosis	Alive four months since diagnosis	NR
Management of bladder metastasis	TUR adjuvant chemotherapy	TUR adjuvant chemotherapy	TUR nephrostomy diversion Palliative chemotherapy	Transurethral biopsy Palliative chemotherapy	TUR adjuvant chemotherapy	NIL	Chemotherapy	NR
Endoscopic findings	Multiple grape-like lesions on the dome and left bladder	Mucosal hyperaemia lesion close to the ureteric orifice	Smooth wall diffusely erythematous small capacity bladder	Diffuse papillary nodular lesion	Protuberant mass	NR	Mucosal tumor growth	Extensive vegetative lesion
Other metastasis	Nil	Nil	Nil	Peritoneum	Nil	Ascites	Lymphadenopathy rectum	NIL
Presence of hydronephrosis	No	oN	Bilateral	Bilateral	No	Unilateral	Bilateral	Bilateral
Imaging findings	Localized thickening of the bladder wall	2 × 4 cm tumor-like mass on the left posterior bladder wall	Diffusely thickened bladder wall with small capacity bladder	Diffuse thickening of the bladder wall	Right posterior lateral urinary bladder broad base mass	NR	Bladder wall thickening	Diffuse thickening of bladder wall
Interval between primary tumor and metastasis	Two years HC	Ten years HC	Synchronous metastasis	Synchronous metastasis	Synchronous metastasis	Seven months HC	Twenty years HC	Two years
Haematuria	Yes	Nil	Microscopic	Yes	Yes	Yes	Nil	Nil
Clinical presentation	Weight loss	Low abdominal pain	Low urinary tract storage symptoms	Abdominal pain, weight loss tenderness of hypogastric region	Abdominal fullness weight loss	Abdominal pain	Frequency	Appetite loss, lumbar pain
Primary gastric tumor stage	SRC AC	Tubular AC	SRC AC	SRC AC	Tubular AC	SRC AC	SRC AC	SRC AC
Gender	Μ	Μ	М	Μ	M	Μ	Μ	M
Age	30	59	60	48	53	38	75	75
Author and year	Sharma et al. 2011 [6]	Andras et al. 2013 [11]	Kalra et al. 2015 [12]	Okutur et al. 2015 [13]	Lodh et al. 2016 [14]	Vigliar et al. 2013 [15]	Seow-En et al. 2015 [16]	Khoury et al. 2019 [17]

TABLE 1: Continued.

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Follow-up	Alive twelve months after chemotherapy		
Management of bladder metastasis	Chemotherapy		
Endoscopic findings	NR		
Other metastasis	Nil		
Presence of hydronephrosis	Bilateral	q.	
Imaging findings	Diffuse thickening of bladder wall		
Interval between primary tumor and metastasis	Interval between primary tumor and metastasis HC		
Haematuria	Nil	al resection; HC	
Clinical presentation	Sense of residual urine, incontinence	TUR: transureth	
Primary gastric tumor stage	AC	carcinoma;	
Gender	W	AC: adenoc	
Age	43	ng cell; /	
Author and year	Ota et al. 1999 [18]	SRC: signet rin	

Continued.	
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TABLE	

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#### 3. Discussion

Bladder cancer (BC) is ranked the second most common genitourinary malignancy with an estimated 81000 new cases in the USA alone per year.

However, secondary neoplasms of the urinary bladder are rarely encountered in urology, accounting for only 2% of total vesical tumors according to the 2016 WHO classification [1].

Adenocarcinomas are the most frequent histological subtypes of such metastatic tumors [2].

Metastatic spread generally occurs by haematogenous or lymphogenous paths from distant primary foci.

Even intraperitoneal dissemination should be considered.

Bates et al. found that the most common sites of origin of cancer metastatic to the urinary bladder were the stomach yielding a figure of 4.3% of all secondary bladder neoplasms in a series of 282 cases [2].

After analysing 1000 consecutive postmortem cases of epithelial malignancies, Abrams' study yielded the same finding that gastric adenocarcinomas metastasize to the bladder more often than any other epithelial neoplasms [3].

We performed a review of PubMed for full-text peerreviewed similar case reports published in English language since 1997.

We should point out that the majority of case reports occurred in Japan due to the high incidence of gastric adenocarcinoma there but were not included in this review due to the non-availability in English language.

15 case reports including our case report, involving 18 patients with secondary bladder tumor from primary gastric neoplasm, were included and analysed.

The features of these cases were summarised in Table 1.

The age range was 30-90, median of 60 years old.

Metastasis to the urinary bladder can be synchronous or can occur after the primary gastric tumor with an average of six years in our review.

Clinical urologic manifestations were absent in the majority of patients in whom bladder involvement was discovered postmortem [4]. However, in case one, our patient presented with lower urinary tract storage symptoms, and in case two, macroscopic haematuria was the chief complaint.

In our review, haematuria was the only consistent urinary symptom occurring in twelve of the total 18 patients.

Radiographic appearance of secondary bladder tumors may consist of focal or diffuse thickening of the bladder wall associated or not with hydronephrosis [5].

Distinction between metastatic bladder lesion and primary tumor may be hard from an imaging viewpoint which makes cystoscopy and histological examination the gold standard in making the diagnosis.

The metastatic bladder tumor can be described macroscopically as diffuse or protuberant similar to typical transitional cell carcinoma [6].

Most of the cases are protuberant in our review.

The main subsites of the secondary tumors were summarized in Table 2.

Of the 12 cases for which histology subtype was available, three were tubular type adenocarcinoma, and nine were sig-

TABLE 2: Anatomical localization of secondary tumor deposits within the urinary bladder of the reviewed cases.

Neck	Trigone	Anterior/lateral/posterior	Fundus	Diffuse
0	3	7	0	4

net ring cell type, whereas in Bates et al. series, out of the 10 cases, only three were signet ring cell [2].

Without clinical history of primary malignancy elsewhere, it is often challenging to distinguish between metastatic adenocarcinoma from primary adenocarcinoma, since primary bladder adenocarcinomas have a better prognosis following cystectomy [2], making immunohistochemistry necessary in that case.

Like other metastatic tumors, secondary bladder neoplasms have a variable chemosensitivity and radiosensitivity that correlates with the primary tumor [2].

Curative intention is not possible due to the metastatic characteristic of the disease and adjuvant chemotherapy is indicated, though with unsatisfactory results [4].

#### 4. Conclusion

Despite being a rare disease, secondary bladder neoplasm should be considered when assessing a bladder lesion whether it occurs simultaneously or years after initial diagnosis of primary cancer.

Knowledge of its clinical and radiological characteristics is important for clinicians for correct diagnosis and proper therapeutic conduct.

#### **Data Availability**

Data availability is accessible on demand.

#### **Conflicts of Interest**

Authors declare that they have no conflict of interest.

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