Case Report

# Metastasis from Gastric Carcinoma Causing Ureteral Obstruction

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*Received: 10 Feb 2017* *Initial Review: 20 Feb 2017* *Accepted: 28 Feb 2017* *Published Online: 04 Apr 2017*

## ABSTRACT

Gastric carcinoma rarely metastasizes to the lower urinary tract. Adenocarcinomas are commonly found in the stomach, however this histologic entity is rarely seen in the bladder and often difficult to distinguish primary from secondary with only histopathologic changes. We report a 61 year old man with a history of total gastrectomy for gastric adenocarcinoma presenting six months later with metastasis to the lower urinary tract. He presented with nonspecific symptoms and laboratory investigations showed progressive elevation of serum creatinine level. Despite implantation of double J stents, renal function did not improve. Computed tomography revealed enlarged mesenteric lymph node, bilateral hydronephrosis and hydroureter likely due to bladder wall thickening at the vesicoureteric junction. Retrograde pyelogram and biopsies taken from the bladder revealed secondary bladder adenocarcinoma. In summary, metastatic carcinoma of the lower urinary tract should be considered in patients with history of gastric adenocarcinoma whose presentation is consistent with ureteral obstruction.

**Keywords:** Metastasis; Neoplasm; Obstruction; Stomach neoplasm; Ureteral; Urinary bladder cancer.

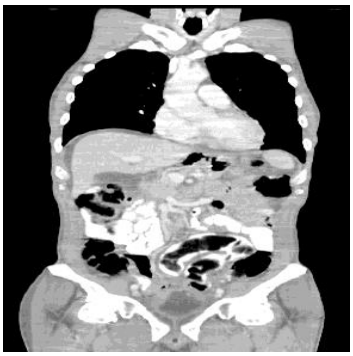
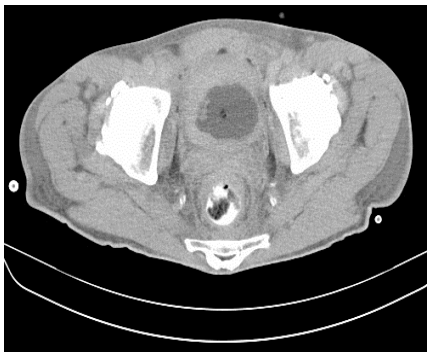
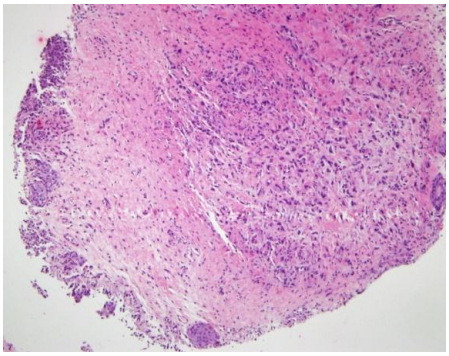
Primary bladder cancer (BC) is a common urological malignancy. Histologically, 95% of cases are transitional cell carcinoma while secondary BC is responsible for less than 2% of all BC. Adenocarcinoma of the bladder accounts for only 1% and most cases are seen as a result of metastatic involvement. Metastatic adenocarcinoma has an aggressive clinical course and the prognosis is always poor. It is not possible to obtain cure with surgery, however chemotherapy and radiotherapy may be administered for palliative purposes [1].

Therefore, when bladder adenocarcinoma is encountered, primary cause should be distinguished from secondary BC because their treatment and prognosis differs. We report a case presenting with nonspecific symptoms and found to have bladder metastasis secondary to gastric adenocarcinoma.

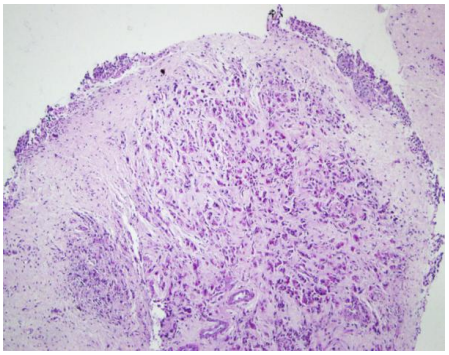
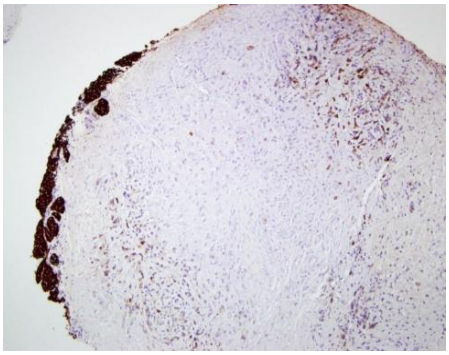
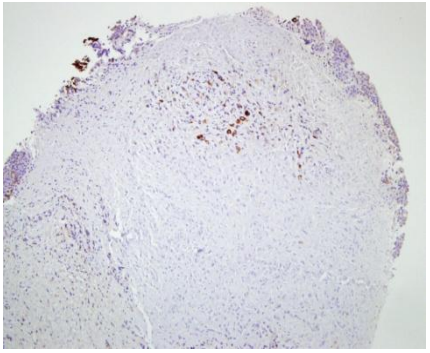
## CASE REPORT

A 61-year-old man, with a history of total gastrectomy and adjuvant chemotherapy 6 months prior for a gastric adenocarcinoma (T4aN3bM0); presented to us with abdominal discomfort and early satiety of 2 weeks duration. There were neither urinary symptoms nor significant weight loss. He denied smoking and alcohol consumption. Clinical examination was unremarkable at that time.

The initial blood results were within normal limits apart from deranged renal function (urea 18.6mmol/L and creatinine 899µmol/L). Abdominal ultrasound showed mild bilateral hydronephrosis with presence of free fluid in the abdominal cavity. Despite adequate hydration, the renal function progressively worsened and required hemodialysis.

**Figures: Fig 1 A & B - CT scan demonstrate urinary bladder thickening at both vesicoureteric junction (thicker on the right), Fig 2 - Microscopic appearance of poorly differentiated cells on hematoxylin and eosin stain**

**Figures: Fig 3 - Large cells with nuclear pleomorphism, inconspicuous nucleoli and presence of cytoplasmic mucin (PAS positive, Diastase resistant), Fig 4 - Atypical cells stained positive to CK 7, Fig 5 - Atypical cells stained positive to CK20.**

Computed tomography (CT) of the abdomen showed urinary bladder thickening at both vesicoureteric junction (VUJ) causing bilateral hydroureteronephrosis **(Fig 1 A & B).** Bilateral nephrostomy tube was inserted and the renal function improved. Retrograde pyelogram (RPG) demonstrated bilateral distal ureteric strictures up to mid-ureter with moderate hydroureteronephrosis proximally. There was also a thickened and irregular area seen at the right ureteric orifice extending to the lateral bladder wall. These suspicious lesions were biopsied and double J stents were inserted bilaterally. He was discharged home well a month later.

Histopathologic examination of the material collected from the bladder lesion demonstrated poorly differentiated adenocarcinoma **(Fig 2),** similar to the primary gastric carcinoma of the patient. There were typical cells infiltration within the stroma with nuclear pleomorphism, inconspicuous nucleoli and presence of cytoplasmic mucin (PAS positive, diastase resistant) **(Fig 3).** The covering urothelium forms Brunn's nest in areas and the epithelial cells display small round nuclei with ample amount of eosinophiliccytoplasm. Imunohistochemical analysis showed atypical cells immunoreactivity to CK7 and CK20 **(Fig 4 & 5)**.

The microsection of the stomach showed an extensive infiltrating poorly differentiated adenocarcinoma with full thickness wall invasion and infiltration into the surrounding fibroadipose tissue including serosal margin. There is perineural invasion observed as well. Both proximal and distal margins are clear of tumor. A total of 23 out of 25 paragastric lymph nodes with lymphovascular permeation by the tumor were seen.

Unfortunately, he presented again 2 weeks after discharge with abdominal distension, progressive weight loss, poor oral intake and a painless lesion in the umbilicus. On examination, he was emaciated and there was an umbilical lesion measuring 2x2cm. It was painless, hard and not adherent to the underlying structure, likely to represent Sister Mary Joseph's nodules.

During oesophagogastroduodenoscopy, the scope could only advance up to 50cm from the incisor. Repeated CT scan showed stricture at the oesophago-jejunal anastomotic site with proximal oesophageal dilatation and worsening ascites in the abdominal cavity. The clinical condition of the patient indicated that the disease has progressed rapidly over a short period of time. He is now under palliative care.

## DISCUSSION

The incidence of secondary BC is comparable to the non-transitional cell primary carcinoma [2]. They may spread by direct extension from surrounding organs (colon, rectum, prostate and cervix) or distant metastasis by lymphatic, hematogenous or peritoneal dissemination and metastasis arising from stomach was reported approximately 4% [3].

Secondary BC rarely give rise to urinary symptoms before the primary site is detected. They have reported many cases were found incidentally at autopsy [4]. 85% of patients remained asymptomatic, however the most frequent presentation include flank pain (15-50%) and hematuria (16%) [4]. It is extremely rare to find obstructive uropathy as the first sign of gastric metastasis; may be due to bladder tumor involving the VUJ or microinvolvement of the ureter by metastasiswhich both are seen in our patient. It has been reported there are 3 different types of ureteral involvement-periureteral adventitial layer infiltrated by tumor cells, transmural or submucosal involvements [4].

Base on the RPG findings of this patient, the tumor were seen at the VUJ extending up to mid-ureter. We were unable to confirm if there is transmuralinvolvement based on the RPG findings and biopsy of the mucosa of the bladder wall unless resection is performed. According to the HPE reports of our patient, there is lymphatic and venous invasion into the paragastric lymph nodes suggesting that the metastasis occurred via lymphatic and hematogenous route.

The presentation of umbilical nodules in a patient with known malignancy should be evaluated as cutaneous metastasis. It was reported as rare presentation and represent only 10% of all secondary tumors which have spread to the skin [5]. This usually indicates advanced neoplastic disease with poor prognosis and generally inoperable.

Primary adenocarcinoma of the bladder is relatively rare and this commonly causes dilemma to differentiate them from secondary process. Mastofi have reported [6] the histological characteristics that may suggest primary origin, that include the presence of polypoid formation, Brunn's nests or glandular or mucous metaplasia within the adjacent mucosa and foci of other epithelial tumor cells such as squamous or transitional cells. However in the presence of gastrointestinal adenocarcinoma, the author has been reluctant to classify the bladder tumor as primary disease [6].

On the other hand, Bates states [2] that if tumor was seen to be infiltrated from adjacent organs (direct spread), histological appearance of the bladder tumor was comparable to the primary tumor of other site or tumor appeared histologically incompatible with origin from the bladder are accepted as secondary malignancy. In addition, secondary tumor deposits were almost always solitary (96.7%), and 54% were located in the bladder neck or trigone [2].

Early diagnosis of secondary bladder carcinoma often posed a challenge to physicians as they may remained undetected until it become extensive as to prevent complete removal and due to its rare entity. It has been demonstrated that urine sample for cytology is sufficient to diagnose secondary bladder cancer [7]. Therefore, urine sample should be collected and to be evaluated for cytology in patients with subtle changes in urinary symptoms or in laboratory values for early detection. Specimen obtained directly from the suspicious site should be done for diagnostic purposes.

All umbilical nodules should be biopsied to determine the pathological nature of the lesions. It was stated that 75% these cutaneous lesions correspond to a "Sister Joseph's nodule [8].Metastatic bladder from gastric adenocarcinoma with the presence of Sister Mary nodules has a very unfavorable prognosis. 75% of the patients die within 6 months after onset of symptoms of ureteral obstruction [9]. It is difficult to alter the course of the disease even with aggressive adjuvant therapy or surgical intervention in such rapidly progressed disease. Therefore, in view of the course of the disease observed in our

patient, there were no biopsies taken from the umbilical lesion.

## CONCLUSION

Lower urinary tract metastases are extremely infrequent in the natural history of this disease. There must be high index of suspicion when a patient who has malignant disease has evidence of ureteral obstruction on laboratory or radiographic studies. The presence of lower urinary tract metastases in addition to Sister Mary Joseph nodules indicates advanced disease. The prognosis is usually poor even with aggressive neo-adjuvant therapy and surgery.

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**How to cite this article:** Yee LF, Inn FX, Tan GH, Goh EH, Singam P. Metastasis from Gastric Carcinoma Causing Ureteral Obstruction. Indian J Case Reports. 2017; 3(2): 50-53.

*Conflict of interest: None stated, Funding: Nil*