

Spontaneous rupture of the renal pelvis presenting as an urinoma in locally advanced rectal cancer

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Key words: Colorectal cancer; Urinoma; Spontaneous rupture of the renal pelvis; Percutaneous nephrostomy; Pigtail catheter drainage

Core tip: A recent development of a loin swelling in a patient with a malignant pelvic tumor should alert the clinician to the possibility of a urinoma due to spontaneous rupture of the obstructed renal pelvis. Early imaging for confirmation of diagnosis and decompression of the renal pelvicalyceal system help to arrest a further downhill course of the patients.

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Abstract

A 29-year-old gentleman underwent a transverse colostomy for intestinal obstruction caused by advanced rectal carcinoma. On the 5th postoperative day, the patient developed a painful swelling on the right side of the abdomen. The contrast enhanced computed tomography of the abdomen revealed a right sided hydronephrosis, a large rent in the renal pelvis, and a large retroperitoneal fluid collection on the right side. Percutaneous nephrostomy and pigtail catheter drainage of the urinoma led to resolution of abdominal swelling. Development of a urinoma as a consequence of rectal carcinoma is highly unusual. Prompt imaging for confirmation of diagnosis, decompression of the renal pelvicalyceal system, and drainage of the urinoma limits morbidity.

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INTRODUCTION

A urinoma may be defined as a localized collection of urine within the retroperitoneum but outside the urinary system following a breach in the urothelium. Blunt abdominal trauma and iatrogenic injuries account for most urinomas. Pelvic malignancies have been less frequently implicated in the development of a urinoma. Infiltration of the lower ureter by the malignant pelvic growth causes persistent obstruction to urine flow and progressive dilatation of the upper urinary tract. The mounting pressure inside the pelvicalyceal system may lead to rupture of the renal pelvis and urinary extravasation^[1]. We, herein, report a young patient suffering from locally advanced rectal adenocarcinoma who developed a urinoma following rupture of the obstructed right renal pelvis due to malignant infiltration of the lower ureter.



Figure 1 Clinical photograph of the patient shows lump in right iliac fossa and diversion transverse colostomy.

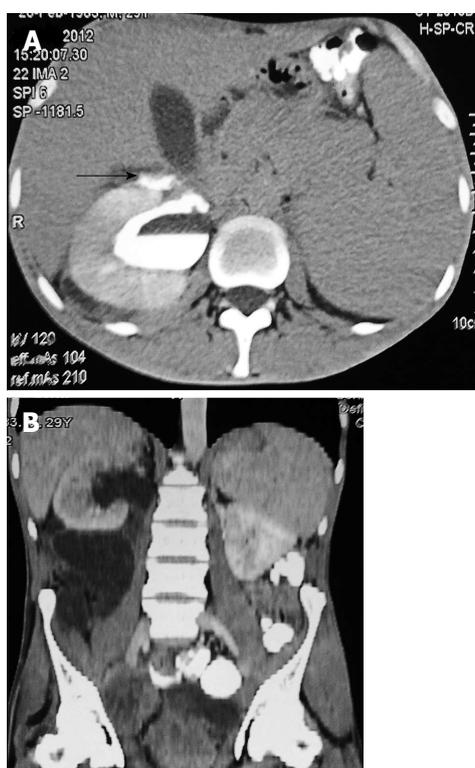


Figure 2 Computed tomography imaging. A: Axial contrast enhanced computed tomography (CT) of the abdomen shows a leak of contrast from the hydronephrotic right renal pelvis into the perinephric space (black arrow); B: CT coronal reconstruction shows a large retroperitoneal urinoma below the right kidney.

CASE REPORT

A 29-year-old gentleman presented as a surgical emergency with features of intestinal obstruction. Abdominal examination revealed distention of the abdomen, palpable bowel loops and increased bowel sounds. Digital rectal examination coupled with proctoscopy revealed an encircling ulceroproliferative growth in the distal rectum, 5 cm proximal to the anal verge. The growth was fixed to the pelvis. A plain radiograph of the abdomen revealed dilated small and large bowel loops. Transverse colostomy was performed to relieve intestinal obstruction.

Endoscopic biopsy of the rectal growth revealed adenocarcinoma. On the 5th postoperative day, the patient developed a painful swelling on the right side of the abdomen (Figure 1). He did not report any urinary and bowel symptoms. Ultrasonography of the abdomen showed a large hypoechoic collection along the right abdominal wall extending from the right kidney to the right iliac fossa. Contrast enhanced computed tomography (CECT) of the abdomen demonstrated right hydronephrosis, a large rent in the renal pelvis, perinephric stranding and a large retroperitoneal fluid collection on the right side (Figure 2). Ultrasound guided percutaneous nephrostomy and pigtail catheter drainage of the fluid collection was performed along with administration of intravenous antibiotics. Two liters of blood tinged urine was drained and the swelling subsided within the next two days. The pigtail catheter was removed after five days. The patient was advised to have definitive chemoradiation therapy for the rectal adenocarcinoma; however, he opted for alternative medicine and did not come for further treatment.

DISCUSSION

Ureters can be easily obstructed by pelvic malignancies by virtue of their thin wall and narrow caliber lumen. Unrelieved progressive urinary obstruction in the presence of a functional kidney can disrupt the pelvicalyceal system, leading to formation of a urinoma^[2]. The renal pelvis, least supported by the parenchymal mass of kidney, is vulnerable for rupture in such scenarios. Carcinoma of the rectum, cervix, ovary, urinary bladder, and metastatic pelvic lymphadenopathy have been implicated in causation of spontaneous urinary rupture and urinoma formation^[3-5]. Carcinoma of the rectum in particular has an unrelenting course in young individuals, characterized by advanced stage and higher-grade tumors at diagnosis^[6]. The incidence of extra-intestinal complications is also more frequent in these patients. Apart from malignancies, mechanical obstruction secondary to congenital anomalies, calculus, prostatomegaly and pregnancy can also lead to disruption of the pelvicalyceal integrity and formation of a urinoma.

Urinomas exhibit gradual enlargement in size until the whole retroperitoneum is filled with the cystic mass. Since the contained urine is sterile, pain is not an early and prominent symptom. The patients usually present with an asymptomatic loin lump that requires imaging to confirm the diagnosis. Development of pain suggests infection of the extravasated urine or compression on the adjacent structures by the expanding urinoma. Pain may also be related to the primary disease. Ipsilateral loin pain, ileus and low grade pyrexia constitute the characteristic manifestations of a symptomatic urinoma^[7]. If treatment is delayed, blood urea nitrogen and serum creatinine may rise due to re-absorption of urine from the urinoma. The level of creatinine in the urinoma fluid is 10 times higher than the creatinine level in the patient's serum^[8]. Ultrasonography, intravenous urogram and CECT have been used for confirmation of the diagnosis. CECT can

identify the underlying cause, the location of the breach in the urothelial lining, the dimension of the collection and its relationship with the adjacent structures.

Asymptomatic, small and non expanding urinomas can be managed with close observation. Active management of urinomas includes decompression of the kidneys by means of a double J ureteral stent or percutaneous nephrostomy tube and prophylactic broad spectrum antibiotics^[9]. Endoscopic placement of a ureteral stent is difficult in patients with obstruction of the lower ureter due to malignant infiltration. Percutaneous drainage of the urinoma should be considered if it persists despite satisfactory diversion of urine flow or if the extravasated urine becomes infected. Percutaneous drainage of the urinoma alone is unhelpful as the urinoma rapidly refills unless the primary pathology is tackled expeditiously. Delay in the management predisposes to the development of complications like perinephric abscess, peritonitis, sepsis, urinary stricture and, rarely, obstructive nephropathy and secondary hypertension due to compression on the upper urinary tract^[10]. Correction of the underlying pathology is of paramount importance for the improved survival of patients. Nephrostomy/a ureteric stent should be retained until the ureteric obstruction is relieved.

A recent development of a loin swelling in a patient with a malignant pelvic growth should alert the clinician regarding the possibility of spontaneous rupture of the renal pelvis. Early confirmation of diagnosis by imaging and decompression of the renal pelvicalyceal system helps to arrest a further downhill course of patients.

COMMENTS

Case characteristics

A 29-year-old gentleman underwent a transverse colostomy for intestinal obstruction caused by advanced rectal carcinoma. On the 5th postoperative day, the patient developed a painful swelling on the right side of the abdomen.

Clinical diagnosis

Tender swelling in the right iliac fossa.

Differential diagnosis

Clinical examination and imaging methods can help to arrive at the diagnosis.

Imaging diagnosis

The contrast enhanced computed tomography of the abdomen revealed a right

sided hydronephrosis, a large rent in the renal pelvis, and a large retroperitoneal fluid collection on the right side.

Treatment

Ultrasound guided percutaneous nephrostomy and pigtail catheter drainage of the fluid collection was performed along with administration of intravenous antibiotics.

Experiences and lessons

A recent development of a loin swelling in a patient with a malignant pelvic growth should alert the clinician regarding the possibility of spontaneous rupture of the renal pelvis.

Peer review

This is a concise and clearly written case report which helps understanding of an unusual complication of malignant pelvic growth.

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