

Case report

Minimal invasive management of generalized peritonitis as a result of spontaneous ureteral rupture

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ABSTRACT

Introduction and importance: Generalized peritonitis following proximal ureteral rupture is a very rare complication. This is about a successfully managed case without open surgical intervention.

Case presentation: A lady in her 70s presented with generalized abdominal pain, high spiking fever and low urine output for 3 days. She was haemodynamically unstable on admission and was resuscitated and managed at intensive care unit. CECT abdomen revealed partial anterior ureteral rupture with pyonephrosis. She was managed with percutaneous nephrostomy and subsequent anterograde stenting. Her recovery was uneventful and follow up imaging revealed no features of malignancy.

Clinical discussion: Generalized peritonitis due to renal pathology is very rare and it can be due to urolithiasis or neoplasm. Retroperitoneal infections may lead to irritation of peritoneum or fistulation into the peritoneum leading to generalized peritonitis. This can be managed by various surgical and non-surgical management modalities.

Conclusion: There are various pathological causes for acute abdomen. One of the rare causes is spontaneous rupture of ureter in pyonephrotic kidney which can also be managed successfully with minimal intervention.

1. Introduction

Generalized peritonitis is a common general surgical presentation in surgical casualties due to various pathological conditions which usually warrant surgical intervention [1]. This commonly includes intra abdominal pathologies and rarely involves retroperitoneal organs [2]. Peritonitis after a spontaneous rupture of a pyonephrotic kidney is an uncommon, rare presentation and only few cases have been found in the literature. This case is regarding a successfully managed similar presentation without open surgical intervention. This case was reported to comply with the SCARE criteria [3].

2. Presentation of case

A female in her 70s presented to the surgical casualty with generalized abdominal pain, high spiking fever with chills and rigors and low urine output for 3 days duration. She had a history of ureteric colic and also a diagnosed patient with diabetic mellitus on medication. She was

on long term non-steroidal anti inflammatory drugs for osteoarthritis as well. On admission she was febrile, haemodynamically unstable, reduced sensorium, abdomen was distended and tender on palpation. She was managed as septic shock and resuscitated in the intensive care unit with intravenous fluids and empirical antibiotics. Inflammatory markers and serum creatinine were high. An ultrasound scan of the abdomen showed moderate hydronephrosis and proximal hydroureter of the left kidney with mobile renal calculi ranging to a size around 1.2 cm and evidence of ascites. A non-contrast CT of Kidney, ureter and bladder elicited an uncomplicated non obstructive left renal stone and a swollen left kidney (Fig. 1).

An urgent percutaneous nephrostomy was done to decompress the obstructed pelvicalyceal system which yielded gross pus. A contrast enhanced computed tomography (CECT) of the abdomen and nephrostogram was done to delineate the cause of peritonitis and obstruction. It showed a proximal ureteral narrowing at L3 level with perforation causing urinoma leaking into the peritoneal cavity, pyonephrosis of the left kidney and free fluid in the abdomen (Fig. 2). She improved

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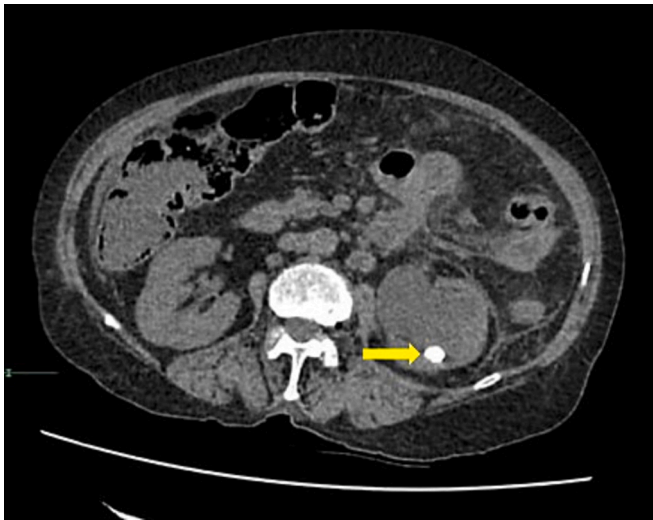


Fig. 1. NCCT showing swollen left kidney and an uncomplicated renal calculus.

clinically and biochemically. An antegrade stenting (Fig. 3) of the left ureter was performed and discharged in eight days of inward management with a plan of follow up imaging in 3 months. No features of urothelial malignancy were seen in follow up contrast urogram and urine cytology. She will be followed up with DTPA scan in another 3 months of time and follow up ultrasound scan and renal function tests every 6 months and her management will be planned accordingly. In case if she develops proximal ureteric stricture, rigid ureteroscopy and laser stricturoplasty will be performed. In case of deteriorating renal functions, subsequent management options will be decided as per multi-disciplinary team decisions.

3. Discussion

Generalized peritonitis due to extraperitoneal organ pathology is very rare and can be due to pancreatitis and pyelonephritis. It can be due to retroperitoneal infections leading to irritation of peritoneum or fistulation of the retroperitoneal infection into the peritoneum. In patients with pyonephrosis and rupture of the kidney, the pus collection is usually limited to retroperitoneum as there is no anatomical extension with general peritoneal or pelvic cavity [2,4]. Anyhow direct extension into the peritoneal cavity from retroperitoneal infection though rare has been reported in the literature [1,2,4,5].

In most of the similar published cases, the generalized peritonitis is due to rupture of pyonephrotic kidney and fistulation into the peritoneal cavity but in this case, it is due to rupture of the proximal ureter.

The etiopathogenesis of the pyonephrosis, spontaneous rupture resulting in generalized peritonitis can be either due to urolithiasis or neoplasm. Most of the published cases are due to urolithiasis, few are secondary to neoplasm and rarely due to posterior urethral valve [4,6]. In this case, although there were evidences for urolithiasis such as history of renal colic and ultrasonic evidence of renal stones, a concrete cause of obstruction was not identified in the imaging. No features of malignancy were noted in followup imaging and urine cytology. The possible cause for partial anterior ureteral rupture would be due to severe ureteritis associated with acute pyelonephritis.

Various modes of management were used in the management of similar presentations including nephrectomy [1,4,5,7,8] and laparotomy and drainage of pus [2,6]. In most of the literature, the ruptured pyonephrotic kidney was evident only at laparotomy. In the presenting case, minimally invasive procedures such as percutaneous nephrostomy and antegrade stenting were done to relieve the obstruction and could be able to achieve normal renal functions. This is only because of the timely clinical diagnosis, presence of available imaging modalities and support of the interventional radiologists. Recently minimal invasive management options become more popular and efficacious in the management of most of the urological cases [9].

Imaging is essential in the diagnosis and management of pyonephrosis mainly ultrasonography and computed tomography. Computer tomography is very sensitive for diagnosis of pyonephrosis and its complications. It also helps in the assessment of renal function and the perirenal environment looking for perinephric abscess and peritoneal fistulation [8]. In this case, contrast enhanced computer tomography of chest abdomen and pelvis was crucial in the diagnosis of ruptured ureter and pyonephrosis. This made easy the successful management of the patient without open surgical intervention.

4. Conclusion

There are various pathological causes for a patient presenting with acute abdomen. One of the rare causes is spontaneous rupture of ureter in pyonephrotic kidney. This rare cause can be missed in the initial evaluation and might leads to misdiagnosis and mismanagement ending up in explorative/diagnostic laparotomy. This case has been managed successfully with minimal intervention due to the timely availability of good clinical expertise and imaging modalities.

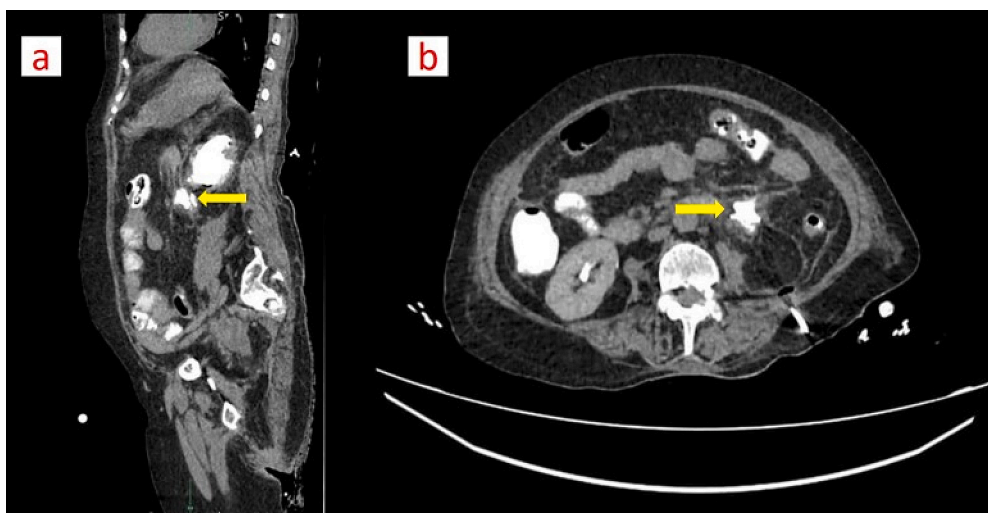


Fig. 2. a) Sagittal section b) transverse section of CECT abdomen and nephrostogram showing urinoma and contrast leak into peritoneal cavity.

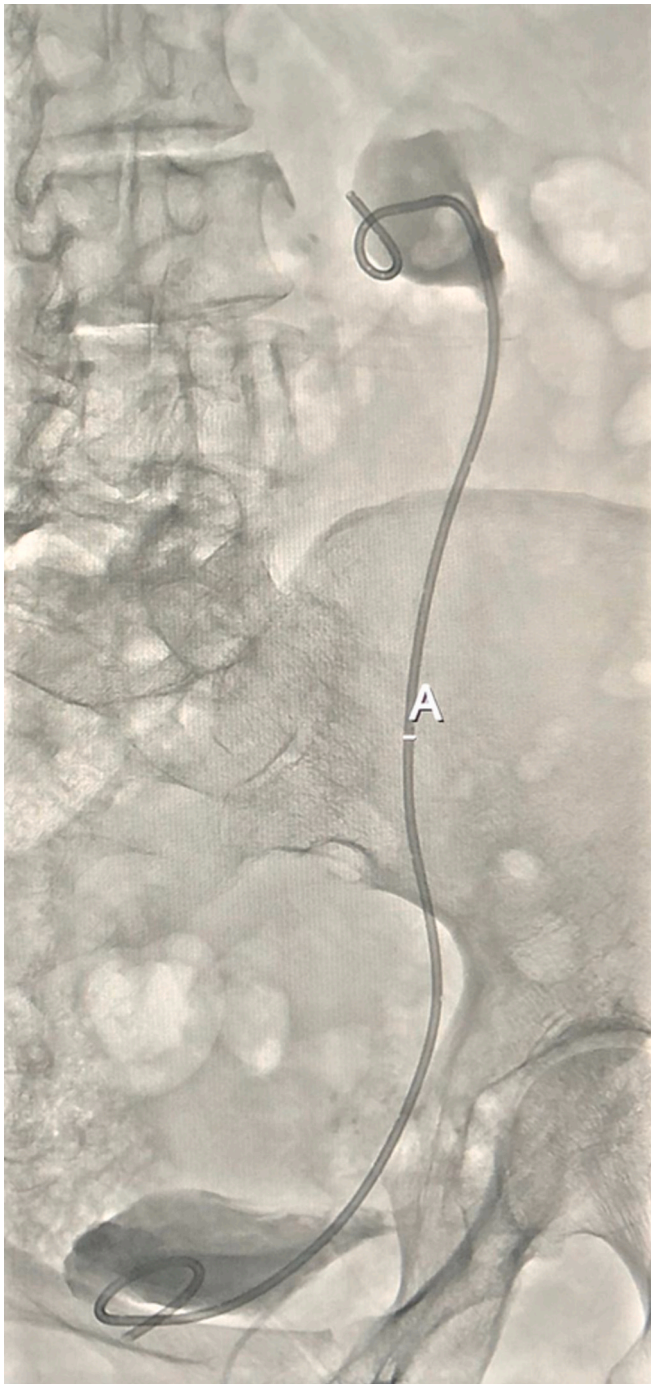


Fig. 3. Nephrostogram after anterograde stenting.

Consent

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 Editor-in-Chief of this journal on request.

Ethical approval

Ethical committee approval was not required given the article type

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CRediT authorship contribution statement

Study concept – SG, SR, BB, AJ

Data collection – SV, SG

Data analysis or interpretation – SR, BB, SGS

Manuscript preparation - SG.

Conflict of interest

The authors declare that the study was conducted without any commercial or financial relationships that could be construed as a potential conflict of interest.

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