

Never underestimate renal colic: a case of pelvic rupture

Tiziana Battista,¹ Domenico Cantiello,² Marta Salzillo,² Ermenegildo Pezzulo,² Diego Paternosto²

¹School of Emergency and Urgency Medicine, Second University of Naples, Naples; ²Emergency Department, S. Anna and S. Sebastiano Hospital, Caserta, Italy

Abstract

Authors describe a case of pelvic rupture as a consequence of renal colic. Pelvic rupture is an unusual condition that often is not considered in patients suffering renal colic. In this case diagnosis was not considered on ultrasonography, it was suspected when acute abdominal symptoms began and it was confirmed by computed tomography.

Introduction

Spontaneous rupture of the renal pelvis with urine extravasation into peripelvic and retroperitoneal spaces is not a common pathologic event. Symptoms may be various, going from mild diffuse pain, typical renal colic to acute abdomen, so that diagnosis is often delayed. It is due, in most cases, to a ureteral obstruction by calculus; other causes are trauma, tumors, pregnancy, diagnostic and interventional procedures.¹⁻⁴ Diagnosis, as reported in literature, is often difficult and has to be differentiated with numerous causes of abdominal pain due to involvement of perirenal abdominal structures and organs. It is usually recognized with a contrast-enhanced computed tomography (CT) showing passage of contrast medium into peripelvic, perirenal and retroperitoneal spaces.⁵ Few cases are reported in literature⁶⁻⁹ and we report our experience of spontaneous rupture of the renal pelvis in a case associated with ureteral calculus. Generally, ureteral stones are eliminated with great pain but without complications; sometimes they may be associated with complications as hydronephrosis, impaired renal function, urinary tract infections. Ulceration or clear rupture constitute unusual complications. Urine extravasation in obstructive calculus may be due to sweating fornices caused by a sudden increase of intrapelvic pressure (critical levels reported between 25 and 75 mm Hg) worsened by coughing and vomiting, or a frank rupture caused by a pelvic or ureteral lesion.

Case Report

A 61-year-old man presented in our Emergency Room (ER) complaining of diffuse abdominal pain. Two days previously he had suffered from a sudden severe typical renal colic pain with vomiting and sweating.

In his past history he had been affected by hypertension, gastroesophageal reflux disease, right renal calculi treated with a temporary stent implantation because the location of stones did not allow him to be treated with extracorporeal ultrasounds.

Renal colic, immediately recognized by the patient, was treated at home with intramuscular administration of diclofenac and subsequently, due the resumption of pain, with some intravenous infusions of spasmolytic, ketorolac, ranitidine at home. The next day, the pain disappeared and a renal echo was performed showing no pelvic dilatation nor reno-ureteral stones. However, in the evening, diffuse abdominal pain began with difficulties to get rid of faeces and gas. Moreover, poor diuresis was noted in spite of much liquid being administered. Next morning, the patient enters our ER. Physical examination reveals an alert and collaborating patient with stable vital parameters, tight but handling abdomen, also closed for faeces and gas, rectal digital exploration negative for fecal impaction; an abdominal echo is performed showing no hydronephrosis but showing a little liquid collected in his abdomen; direct abdomen Rx shows diverticulosis without air-fluid levels. Laboratory analysis shows high levels of creatinine (1.9 mg/dL), ESR, PCR, procalcitonin, fibrinogen.

Diverticula inflammation is one of the pathologic conditions that, because of its kind of symptoms, may mime renal calculi, and so our patient begins therapy with Metronidazole.¹⁰ A few minutes after therapy is given, the patient begins to suffer from shaking shivers with a sudden increase of body temperature in a few minutes (CT: 38, 8°C). Immediately a contrast-enhanced CT scan is performed showing contrast leakage in perirenal and retroperitoneal spaces because of an ulceration of the renal pelvis (Figure 1), and the presence of a radiopaque ureteral stone about 7 mm large.

Because of sudden evolution of symptoms, immediately a double J ureteral stent is delivered and antibiotic therapy with piperacillin and tazobactam i.v. is prescribed: so there is a prompt resolution of symptoms. Also, laboratory exams, after peaking on the second day, quickly normalize. After a week on antibiotic infusional therapy, a CT-scan is performed to verify a good stent position (Figure 2) no trace of the stone is noted and the patient is discharged and advised to continue oral antibiotic therapy with ciprofloxacin for seven days. After

Correspondence: Tiziana Battista, School of Emergency and Urgency Medicine, Second University of Naples, via Montelungo 21, 81100 Caserta, Italy.
Tel: +39.320.6188356.
E-mail: tizyb85@gmail.com

Key words: Pelvic rupture; Renal colic; Ultrasounds; Computed tomography.

Conflict of interest: the authors declare no potential conflict of interest.

Received for publication: 27 February 2016.

Revision received: 30 April 2016.

Accepted for publication: 6 May 2016.

This work is licensed under a Creative Commons Attribution 4.0 License (by-nc 4.0).

©Copyright T. Battista et al., 2016
Licensee PAGEPress, Italy
Emergency Care Journal 2016; 12:5854
doi:10.4081/ecj.2016.5854

two months, the stent is successfully removed without any complications.

Discussion

Spontaneous rupture of renal pelvis is an unusual event that is difficult to recognize because of its painful abdominal symptoms and the possibility of further complications due to peritoneal involvement and the development of a septic state. Its recognition is diagnostically challenging (taking into account that in literature a delayed diagnosis is reported in over 50% of cases¹¹) and may be life-saving.

Clinical presentation may be aspecific, often indistinguishable from a simple renal colic and the prognosis depends on underlying disease, degree of renal damage, location of rupture and infection occurrence.¹²

An accurate medical history is mandatory as well as a careful clinical examination. We want to stress the importance of the differential diagnosis in an emergency setting, because it is fundamental to treat patients with this condition as soon as possible.

In some cases symptoms mimic pain related to other abdominal pathogenesis, such as pyelonephritis, appendicitis, duodenal ulcer, biliary colic and cholecystitis.

Rupture of renal pelvis very often occurs in the setting of trauma, cancer, invasive or diagnostic procedures (the risk of extravasation during i.v. pyelogram is about 3% without any obstruction, while the risk increases from 5 to 33% when an obstruction is present) and also

may be due to benign extrinsic compression of the ureter by a gravid uterus (it is rarely seen and is a significant complication in pregnancy).¹³ In absence of such conditions, spontaneous rupture at any level of urinary collecting system is generally due to an obstruction of urinary tract by calculus,¹² with sudden increase of intraluminal pressure and this can cause rupture of its thin wall.

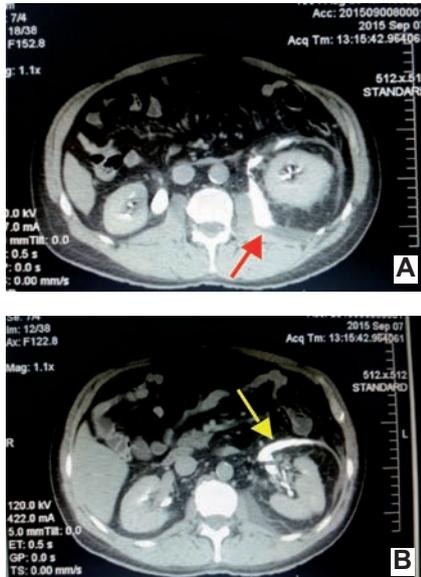


Figure 1. A contrast-enhanced computed tomography scan showing contrast leakage in perirenal and retroperitoneal spaces because of an ulceration of renal pelvis (arrows).



Figure 2. Computed tomography scan showing a good stent position, after which the patient can be discharged and advised to continue oral antibiotic therapy.

In our patient, absence of hydronephrosis on the ultrasound scan due to extravasation of urine in the perirenal space, observation of diverticula, peritoneal involvement and fever, at first confused the diagnosis, addressing it towards diverticulitis or other causes of acute abdomen or fever. In fact, clinical presentation in ER really was difficult to recognize because the renal symptoms were less intense while symptoms related to peritoneal involvement and incipient sepsis developed.

But, keeping in mind the most important initial clinical sign, that is typical renal colic pain complained of by patient at home and oliguria, the investigation continued with a contrast-enhanced CT making diagnosis clear. Subsequently, timely antibiotic and percutaneous interventional therapies have permitted pelvis detension and sepsis treatment.

In case of small ruptures a double J stent implantation or percutaneous nephrostomy is suitable; in the case of large ruptures a surgical intervention is mandatory.¹⁴ Dimensions of kidney calculus are important for their evolution: in fact small urinary stones (<4 mm) are ejected in 30-40 days; stones > 5mm need an intervention (lithotripsy, ureteroscopy for ureterolithotomy) in over 50 % of cases¹⁵ in a second step.

Conclusions

In conclusion, in a patient showing symptoms of renal colic with peritonitis syndrome and/or overlapping fever, one must keep in mind the possibility of a urinary tract rupture because a delayed diagnosis may be life-threatening for the patient.

References

1. Paajanen H, Kettunen J, Tainio H, et al. Spontaneous peripelvic extravasation of urine as a cause of acute abdomen. *Scand J Urol Nephrol* 1993;27:333-6.
2. Koga S, Arakaki Y, Matsuoka M, et al. Spontaneous peripelvic extravasation of urine. *Int Urol Nephrol* 1992;24:465-9.
3. Spurlock JW, Burke TW, Dunn NP, et al. Calyceal rupture with perirenal urinoma in a patient with cervical carcinoma. *Obstet Gynecol* 1987;70:511-3.
4. Buckley N, Smith JM. Renal extravasation of urine due to bladder outflow obstruction. *J Urol* 1984;132:1161-2.
5. Silverman SG, Leyendecker JR, Amis ES. What is the current role of CT urography and MR urography in the evaluation of the urinary tract? *Radiology* 2009;250:309-23.
6. Bonk JP, Basch RI, Cheris DN. Spontaneous rupture of the renal pelvis. *Am J Roentgenol* 1966;98:54-62.
7. Kpctener A, Unal D, Dilmen G, et al. Spontaneous rupture of renal pelvis caused by calculus: a case report. *J Emerg Med* 2007;33:127-9.
8. Ashebu SD, Elshebiny YH, Dahniya MH. Spontaneous rupture of renal pelvis. *Australas Radiol* 2000;44:125-7.
9. Diaz ES, Buenrostro FG. Renal pelvis spontaneous rupture secondary to ureteral lithiasis: case report and bibliographic review. *Arch Esp Urol* 2011;64:640-2.
10. Ruchen CM, Menias CO, Bhalia S. Mimics of renal colic: alternative diagnoses at unenhanced helical CT. *Radiographics* 2004;24:511-28, 528-33.
11. Sierra Diaz E, Garcia Buenrostro F. Renal pelvis spontaneous rupture secondary to ureteral lithiasis. Case report and bibliographic review. *Arch Esp Urol* 2011;64:640-2.
12. Ferri E, Casoni GL, Morabito G, et al. Rupture of the renal pelvis complicating a renal colic: report of a case. *Am J Emerg Med* 2006;24:383-5.
13. Huang E, Sayegh R, Craig S, Chelmos D. Rupture of the renal pelvis associated with intravenous fluid bolus. *J Matern-Fetal Neonatal Med* 2002;11:345-6.
14. Bogdanovic J, Djovic J, Idjusi S, et al. Successful surgical reconstruction of ruptured renal pelvis following blunt abdominal trauma. *Urol Int* 2002;68:302-4.
15. Miller OF, Kane CJ. Time to stone passage for observed ureteral calculi: a guide for patient education. *J Urology* 1999;162:688-91.