

RETROPERITONEAL ABSCESS DUE TO A LUMBAR URINOMA EFFUSED INTO THE THIGH

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Abstract

We are presenting the case of a retroperitoneal urinoma, secondary to a spontaneous pelviureteral junction rupture that effused to the thigh. A 45-year-old female patient known with lithiasis history admitted emergently in our clinic for right lumbar pain, right thigh pain and edema, fever and chills. Ultrasound examination and contrast CT revealed right side grade II hydronephrosis, fluid accumulation in the perirenal fat surrounding the kidney and descending downwards to the pelvis and upper thigh. At retrograde pyelography a right pelviureteral rupture could be observed. We preferred a minimal invasive approach and placed a right retroperitoneal drainage tube and a double-J stent, combined with broad spectrum antibiotics. After few days the patient complained for right thigh pain and movement impairment. She was immediately operated openly for right thigh abscess. Three days postoperative the general status of the patient improved and blood analyses normalized. Lumbar urinoma is a rarely encountered complication of urinary tract obstruction that can spread along the psoas muscle into the thigh. Minimal invasive treatment is recommended as first approach for urinary tract ruptures. In medical literature there are few cases of retroperitoneal abscesses effused into the thigh most of them with gastrointestinal origin.

Keywords: urinoma, abscess, retroperitoneum, thigh, minimal invasive

Introduction

Urinoma represents a collection of urine effused into the retroperitoneal space, secondary to a disruption of the urinary tract. Usually the disruption occurs at the fornix or ureteropelvic junction site, but sometimes other urinary tract organs may be involved: kidney, ureter or bladder [1]. The most encountered pathologic mechanism is an external trauma that occurs on a

distended urinary tract. Sometimes when the urinary tract was distended for a long period of time due to an obstructive pathology, the internal structure of the renal pelvic wall becomes weaker and a spontaneous disruption may easily occur [2,3].

We are presenting the case of a young patient with a right retroperitoneal urinoma, secondary to a spontaneous fornix rupture that effused to the lower third of the thigh.

Case presentation

A 45-year-old female patient known with history of right kidney lithiasis came in emergency room accusing right lumbar pain appeared for more than 10 days, right thigh pain and edema, fever and chills. Clinical examination revealed edema and tenderness in the right flank, accompanied by pain that was increasing during palpation. The right thigh presented edema and was painful to palpation from the inguinal ligament to its distal part. Blood analyses revealed: hemoglobin – 6.6 g/dl; white cell count – 18.6/μl; platelets count – 680.000/μl; K⁺ - 3,1 mmol/L; procalcitonin – 3 ng/ml; creatinine and blood urea nitrogen were in normal range.

Ultrasound examination revealed right liquid fusion in the perirenal fat that descended towards the pelvis. The right kidney had grade II hydronephrosis, but the ureter was not dilated and there were no stones or other obstructive causes. The patient was admitted to our clinic for further investigations.

Contrast CT examination revealed a large amount of fluid accumulated on the anterior aspect of the right psoas muscle which begun from the muscle origin (T12, L1 vertebrae level), descended inferiorly and infiltrated the spaces between quadriceps and adductor muscles. A fluid accumulation with multiple septa could be observed on the anterior aspect of the kidney and also in Morrison recess.

The collection passed the right posterior side of the kidney and continued on the anterior aspect of iliopsoas muscle alongside its femoral insertion, in contact with the femoral artery and vein.

The right kidney had slightly dilated pelvis (grade II) presenting normal secretory phase but absent excretory phase at 15 minutes. The right ureter presented a wide thickening and contraction of the pelvic ureter on a distance of 1.5 mm above the ureterovesical junction. The left kidney appeared normal on CT scan.

In the same day we decided to indwell a 10 Ch drainage tube under ultrasound guidance through which we evacuated almost 500 ml of puss which was sent to bacteriology exam. We performed a retrograde pyelography that

revealed us a contrast effusion from the renal fornix into the perirenal fat and then into the rest of retroperitoneum. A double-J stent was indwelled into the right kidney and also a Foley catheter was placed in the bladder. The patient received large spectrum antibiotic treatment with third generation cephalosporin (ceftriaxone) and Metronidazole until the result of the antibiogram was ready. We have also administered 2 erythrocyte mass transfusions in order to correct the anemic syndrome.



Figure 1 – Right hydronephrosis due to retroperitoneal abscess

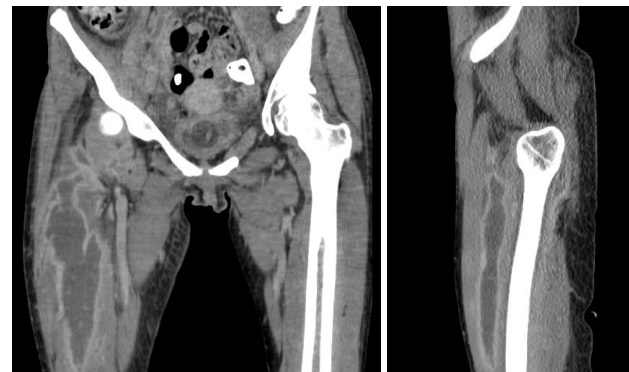


Figure 2 – Thigh abscess fused from the retroperitoneum

In the next two days we have noticed an improvement in the patient's evolution: the lumbar pain reduced significantly, the fever and chills disappeared, the lumbar drainage reduced to almost 50 ml/day, but the lower limb pain and edema were slightly reduced. Also the blood analyses improved but were still unbalanced. The lumbar puss culture revealed *Streptococcus viridans* infection sensitive to ceftriaxone, gentamicin and metronidazole. We decided to continue the initial antibiotic treatment.

Two days later the patient's general status deteriorated, this time the main complaints were vivid right thigh pain, edema, and significant movement impairment. A superficial ultrasound of the thigh revealed that the collection increased its volume and spread toward the distal part of the thigh, close to the knee joint.

We've decided then to transfer the patient to orthopedics clinic where she was immediately operated: the thigh abscess was drained through an incision and two drain tubes were inserted between the muscle spaces. Three days postoperative they performed a new CT scan were the retroperitoneal and thigh collections were significantly reduced. Also the general status of the patient improved and blood analyses normalized. Then we have decided to remove the drainages and at 14 days postoperative the patient was discharged.

At this moment on a routine follow-up the patient has no hydronephrosis, the kidney function on scintigraphy is normal and also the right thigh healed per primam and regained its normal mobility. The blood analyses in this moment are normal

Discussions

The lumbar urinoma is considered a rare condition that results from the disruption of the urinary tract with extravasation of urine in the retroperitoneal space [2,4]. The most common site of urinary tract rupture is the fornix, followed by the pelvis, ureteropelvic junction and ureter [5]. The most frequent aetiology of urinary tract rupture is the obstruction caused by ureteral calculi (in ~ 75% of cases), followed by extrinsic or intrinsic ureteral compression (malignant or benign), pelviureteral junction obstruction, vesico-ureteric junction obstruction, congenital anomalies, iatrogenic causes [1,6] and other less common causes like pregnancy [7].

Until now there is no unanimously accepted mechanism of urinary tract rupture, although there are some physiopathological explanations that could explain this condition. The main aspect of urinary tract rupture is the acute onset of hydronephrosis that exceeds critical pressures (35 cmH₂O or 75 mmHg) [1,5]

which according to Laplace's law produces a tensile stress on the wall of the collecting system [6]. Chronic hydronephrosis could be another mechanism by altering the intrinsic structure of the urinary tract wall, thus being easy susceptible to rupture [2].

There is much debate about the spontaneous character of the collecting system rupture. It is considered that a rupture can be spontaneous if it's not triggered by an external trauma, iatrogenic manipulation, previously surgical procedure on the collecting system or degenerative kidney diseases [5, 8]. In our patient's case the rupture mechanism has not been objectivated due to the fact that she came in a late stage of evolution. According to the fact that she had right kidney lithiasis history we could speculate that the obstruction occurred on an impacted ureteral stone that was eventually eliminated, thus explaining the thickening of the lower right pelvic ureter.

The symptoms of retroperitoneal urinoma are grossly similar to renal colic: lumbar pain, nausea, vomiting, [2, 8, 9] In some cases it can simulate an acute abdomen or can be associated with fever or hematuria [4, 5, 10]. Due to the insidious onset and its long evolution, in our patient's case the urinoma descended along the psoas muscle and spread on the right thigh. Normally urine is a sterile liquid but when an obstruction occur the risk of infection is high. Being trapped for a long period of time in an enclosed anaerobic medium our patient developed a retroperitoneal abscess that spread to the thigh causing pain and edema. When the abscess spread to the blood stream the patient developed septic signs.

The imagistic investigations were crucial for the rapid diagnosis of the urinoma. The Ultrasound showed us the extravasation of liquid that surrounded the kidney and spread in the lumbar space. Also the right hydronephrosis was an important sign that made us believe that the liquid from the lumbar space could be the result of a urinary tract laceration. The CT investigation revealed us the most important aspects about the urinoma: the spread within the lumbar space, the pathway of effusion towards the pelvis and then into the thigh along psoas muscle insertion site. Also the excretory phase showed us that the right

kidney function was severely altered, showing grade II hydronephrosis but no contrast at the late examination. The retrograde ureteropyelography elucidated the diagnosis of pelvic rupture showing us the site of urine effusion from the urinary tract. All 3 investigations are essential for the diagnosis of urinoma due to urinary tract rupture.

Due to the fact that the patient came at the emergency room with septic complications we preferred a minimal invasive endoscopic approach combined with broad spectrum antibiotics in order to drain the infected urine and reduce the septic complications. The indwelling of a double-J stent has been successfully used as first approach in urinary tract rupture [1–5, 9, 11] and is recommended in combination with antibiotic treatment in order to minimize the infectious complications [10]. However each case should be treated according to its severity [12]. The drainage tube placed percutaneous made a proper drainage of the lumbar space, but because the urinoma spread to the upper thigh the infected urine from this site was trapped in an enclosed space. The immediate open surgical approach was preferred to drain the thigh abscess.

Particular to our case was the atypical spread of the urinoma to the thigh and the elusive cause of the rupture. In medical literature there are few cases of retroperitoneal abscesses effused into the thigh most of them with gastrointestinal origin [13–14].

Conclusions

Retroperitoneal urinoma is a rarely encountered complication of urinary tract obstruction that can cause severe systemic infections. Thigh abscess can complicate even further a retroperitoneal effusion that spreads along the psoas muscle. Imaging investigations especially ultrasound and uroCT are indispensable for the diagnosis sometimes completed by retrograde pyelography. Minimal invasive treatment is recommended as first approach for urinary tract ruptures combined with broad spectrum antibiotics.

References

- [1] R. Gautam et al., "Urinoma: a rare complication of ureteral calculi," *Int J Res Med Sci*, vol. 33, no. 99, pp. 2440–2442, 2015.
- [2] T.-L. Chen, Y.-J. Su, L.-M. Tang, W.-H. Chang, and C.-C. Chen, "SPONTANEOUS RUPTURE OF RENAL PELVIS," *Int. J. Gerontol.*, vol. 1, no. 3, pp. 131–133, 2007.
- [3] C. S. Gökçaya, M. M. Baykam, S. Yahşi, S. Bulut, B. K. Aktaş, and A. Memiş, "Spontaneous fornix rupture due to obstructive ureteral stone," *Erciyes Tip Derg.*, vol. 36, no. 2, pp. 91–93, 2014.
- [4] A. Koktener, D. Unal, G. Dilmen, and A. Koc, "Spontaneous Rupture of the Renal Pelvis Caused by Calculus: A Case Report," *J. Emerg. Med.*, vol. 33, no. 2, pp. 127–129, 2007.
- [5] E. Pampana, S. Altobelli, M. Morini, A. Ricci, S. D. Onofrio, and G. Simonetti, "Spontaneous ureteral rupture diagnosis and treatment," *Case Rep. Radiol.*, vol. 2013, no. Figure 1, pp. 1–4, 2013.
- [6] B. Gershman, N. Kulkarni, D. V. Sahani, and B. H. Eisner, "Causes of renal fornical rupture," *BJU Int.*, vol. 108, no. 11, pp. 1909–1912, 2011.
- [7] M. Bin Tang, K. S. Shen, C. W. Lee, J. Y. Chen, C. H. Yeh, and C. H. Chu, "Rupture of the Renal Pelvis Following Hydronephrosis and Hydroureter After a Cesarean Section," *Taiwan. J. Obstet. Gynecol.*, vol. 48, no. 2, pp. 190–192, 2009.
- [8] H. N. Elukoti, E. Indumathi, I. Kanabur, and P. Medicine, "RARE CASE OF SPONTANEOUS RUPTURE OF RENAL PELVIS SECONDARY TO URETEROLITHIASIS," *Int. J. Curr. Res.*, vol. 7, no. 10, pp. 21850–21853, 2015.
- [9] T. Tas, B. C. J, and S. H. Aksoy, "Spontaneous Renal Pelvis Rupture: Unexpected Complication of Urolithiasis Expected to Passage with Observation Therapy," *Case Rep. Urol.*, vol. 2013, pp. 2–4, 2013.
- [10] A. Chaabouni, M. Y. Binous, W. Zakhama, H. Chrayti, M. Sfaxi, and M. Fodha, "Spontaneous calyceal rupture caused by a ureteral calculus," *African J. Urol.*, vol. 19, no. 4, pp. 191–193, 2013.
- [11] L. A. Batista Peres, J. R. Leonel Ferreira, and T. F. T. de Oliveira, "Spontaneous Renal Pelvis Rupture Caused by Ureteral Lithiasis," *J Clin Nephrol Res*, vol. 2, no. 2, pp. 1–2, 2015.
- [12] S. H. Huang et al., "Retroperitoneal abscess: 7-year experience of 29 cases in a tertiary care center in Taiwan," *Urol. Sci.*, vol. 26, no. 3, pp. 218–221, 2015.
- [13] C. Hsieh et al., "Extensive retroperitoneal and right thigh abscess in a patient with ruptured retrocecal appendicitis: An extremely fulminant form of a common disease," *World J Gastroenterol*, vol. 12, no. 3, pp. 496–499, 2006.
- [14] Z. Zhou, Y. Song, Q. Cai, and J. Zeng, "Primary psoas abscess extending to thigh adductors: case report," *BMC Musculoskelet. Disord.*, vol. 11, p. 176, 2010.