CASE REPORT

BILATERAL PSOAS ABSCESS AFTER EXTRACORPOREAL SHOCK WAVE LITHOTRIPSY: REMINDER OF A RARE COMPLICATION

Sidra Zafar, Syed Usman Bin Mahmood*, Arsal Tharwani, Noreen Nasir
Aga Khan University-Pakistan, *Yale University School of Medicine, New Haven-United States

Extracorporeal shock wave lithotripsy (ESWL) is among the most widely used modalities for treatment of urolithiasis since its introduction in the 1980s. The non-invasive technique reduces the risk of post-procedure complications and produces excellent stone free rates. However, complications may still follow and albeit rare, there are reports in literature of abscess formation post ESWL. Herein, we report the case of a young, immunocompetent gentleman who developed bilateral psoas abscess after undergoing this procedure. He was successfully managed at our institute with intravenous antibiotics, percutaneous abscess drainage and was discharged on day 5 post-intervention in a stable condition. There have been two similar cases reported in literature.
Keywords: Extracorporeal shock wave lithotripsy, ESWL; Psoas abscess; Abscess, Complication

Citation: Zafar S, Mahmood SU, Tharwani A, Nasir N. Bilateral psoas abscess after extracorporeal shock wave lithotripsy: Reminder of a rare complication. J Ayub Med Coll Abbottabad 2018;30(3):470–2.

INTRODUCTION

Since its introduction in the 1980s, extracorporeal shock wave lithotripsy (ESWL) has rapidly become the most widely used treatment for management of kidney and ureteric stones. The benign, non-invasive nature of this procedure along with excellent stone-free rates has contributed to its widespread acceptance.[1,2] The procedure itself is remarkably safe although localized iatrogenic injury and compromise of the blood urine barrier, may lead to complications.[2] Predisposing conditions identified such as urinary obstruction, multiple or infected calculi, staghorn calculi and pre-existing UTI increase the risk of patients having post-intervention complications.[2,3] Herein, we present a case of a 36-year-old immunocompetent patient who developed bilateral psoas abscess one-month post ESWL.

CASE REPORT

A 36-year old gentleman presented to the emergency department with a one-week history of fever, dyspnoea and abdominal distension. Past medical history revealed double J (DJ) stent placement in both kidneys and ESWL sessions for recurrent nephrolithiasis, the most recent one performed a month back. On examination, his vitals were deranged with a temperature of 38.4 ºC, heart rate 132 beats/minute, blood pressure 132/84 mm Hg and respiratory rate of 20/minute.

Laboratory investigations demonstrated a haemoglobin of 6.9 mg/dL, serum creatinine of 8.8, BUN=122 and leukocytes 16x10^9/L with 91% neutrophilic dominance. Electrolytes were found to be deranged with calcium of 8.4 mg/dL, K of 6.4 mg/dl and Mg 1.5 mg/dl. Additionally, arterial blood gas analysis revealed the presence of respiratory acidosis and metabolic alkalosis. This clinical condition led to a provisional diagnosis of pyelonephritis resulting in uro-sepsis and the patient was admitted under the care of urology. Management was initiated with antibiotics, soda mint, calcium acetate and oxygen. Two units of packed red cells were also transfused to correct his anaemia.

A CT scan was performed to further assess the patient's clinical status. Imaging revealed significant perinephric stranding and large hypo-attenuating areas within the psoas muscle bilaterally that were highly suggestive of psoas abscess. Left sided hydronephrosis was also noted secondary to an obstructing calculus measuring 10x7 mm in the proximal ureter (Figure-1).

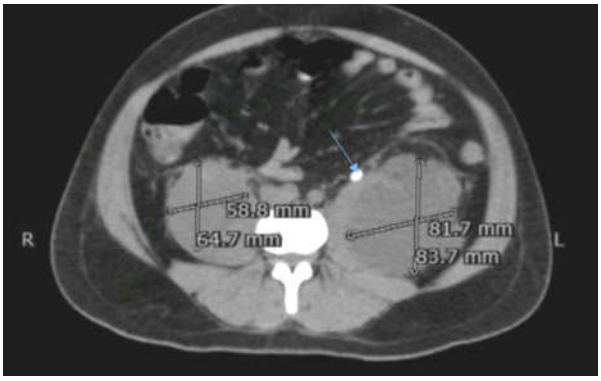

Figure-1: Non-contrast CT scan demonstrating abscess measuring 65×59 mm in the right psoas and a second abscess measuring 82×84 mm in the left psoas. A large obstructing calculus measuring 10×7 mm is seen in the left ureter as highlighted by the arrow (blue) resulting in proximal hydroureter and hydronephrosis.

In the light of these findings, emergent left sided percutaneous nephrostomy (PCN) was performed for

the removal of calculus and drainage of localized purulent accumulation. This was followed by ultrasound guided percutaneous drainage of the right and left sided psoas abscess. A sample of the purulent aspirate was sent for pan-culture and sensitivity tests.

Culture results identified growth of Enterococcus and Carbapenem resistant *E. coli*. Colistin was added to the empirical treatment regimen that already included vancomycin and imipenem. The patient's condition improved considerably following these interventions. A follow up ultrasound revealed residual collection in the right psoas muscle which was subsequently drained. Intra-venous antibiotics were continued and the patient was discharged after 5 days of hospitalization. The patient tolerated the procedure well and was symptom free at the 3-month follow-up.

DISCUSSION

Introduction of ESWL in the early 1980s revolutionized treatment of patients with nephrolithiasis. It employs high energy acoustic pulses, which effectively pulverize renal calculi.[4] Occasionally however minute residual fragments remain serving as a nidus for bacterial proliferation. Risk factors for incomplete fragmentation include composition of the stone, its size, site and the number.[2] In addition to breakage of stones, the force generated during therapy may cause mechanical trauma to blood vessels severing the blood urine barrier and giving rise to ensuing remote infection. Morphologic abnormalities such as corticomedullary differentiation loss, parenchymal swelling, and perirenal fluid accumulation may also be detected.[5,6] The resulting vascular haemorrhagic lesions allow passage of bacteria, present in the urinary system or the stone itself, into systemic circulation. Bacteraemia is reported to occur in a range of approximately 4–14% of patients undergoing ESWL. Even though the conversion rate to sepsis in patients without any predisposing condition (obstruction, UTI) is low (approx. 1%),[2,7] reports of serious complications such as perinephric abscess, pancreatitis and splenic rupture with abscess formation are found in literature.[8–10] Patients with positive urine culture, those with staghorn stones and a stent in place are at increased risk of developing infective complications post procedure.[3,11]

Psoas abscess formation following ESWL remains an extremely rare complication. It was first described by Davidson *et al* in 1991[12] and again in 1998 by Qureshi *et al*[13] and to the best of our knowledge, this is the first case detailing bilateral psoas abscess as a complication of ESWL. In light of cystic, possibly haemorrhagic defects within renal parenchyma and fat stranding, we believe that the abscesses in our case might have formed secondary to damage from shock waves and extravasation of blood creating a nidus for infection. Psoas abscess can be a challenging diagnosis due to deep tissue site and non-specific clinical symptoms, therefore a high degree of suspicion must be maintained.[14] Widespread application of CT imaging has aided in more cases being identified at an earlier stage[15], thus averting progression to life-threatening sepsis. Secondary psoas abscess is associated with a 19% mortality rate, revealed in a large series of patients. Furthermore, a psoas abscess relapse may occur within 1 year in 15–36% of cases with inadequate drainage or antibiotic therapy.[16]

In conclusion, clinicians should understand and be aware of the possibility for more serious complications after ESWL, especially development of abscess formation in surrounding structures and/or sepsis. Although the possibility of post ESWL psoas abscess is very low, a high degree of clinical suspicion and CT imaging are essential for timely diagnosis and appropriate management to be initiated at the right time.

AUTHORS' CONTRIBUTION

SZ, SUBM, AT: Literature search. SZ: Conceptualization of study design. SZ, AT: Data collection. SZ, SUBM: Data Analysis. SUBM, AT: Data interpretation. SZ, NN: Write-up. NN: Proof reading.

REFERENCES

1. Chaussy C, Schüller J, Schmiedt E, Brandl H, Jocham D, Liedl B. Extracorporeal shock-wave lithotripsy (ESWL) for treatment of urolithiasis. Urology 1984;23(5):59–66.
2. Skolarikos A, Alivizatos G, de la Rosette J. Extracorporeal Shock Wave Lithotripsy 25 Years Later: Complications and Their Prevention. Eur Urol 2006;50(5):981–90.
3. McAteer JA, Evan AP. The Acute and Long-Term Adverse Effects of Shock Wave Lithotripsy. Semin Nephrol 2008;28(2):200–13.
4. Pearle MS, Lingeman JE, Leveillee R, Kuo R, Preminger GM, Nadler RB, *et al*. Prospective, randomized trial comparing shock wave lithotripsy and ureteroscopy for lower pole caliceal calculi 1 cm or less. J Urol 2005;173(6):2005–9.
5. Baumgartner BR, Dickey KW, Ambrose SS, Walton KN, Nelson RC, Bernardino ME. Kidney changes after extracorporeal shock wave lithotripsy: appearance on MR imaging. Radiology 1987;163(2):531–4.
6. Rubin JI, Arger PH, Pollack HM, Banner MP, Coleman BG, Mintz MC, *et al*. Kidney changes after extracorporeal shock wave lithotripsy: CT evaluation. Radiology 1987;162(1 Pt 1):21–4.
7. Mira Moreno A, Montoya Lirola MD, García Tabar PJ, Galiano Baena JF, Tenza Tenza JA, Lobato Encinas JJ. Incidence of Infectious Complications after Extracorporeal Shock Wave Lithotripsy in Patients Without Associated Risk Factors. J Urol 2014;192(5):1446–9.
8. Weng CH, Ho PY, Tsai CC, Hsu JM, Chen M, Lin WR. Severe acute pancreatitis with abscess after extracorporeal

shock wave lithotripsy: a rare complication. Urolithiasis 2013;41(2):133–6.
9. Karamalegos AZ, Diokno AC, Moylan DE. Formation of perinephric abscess following extracorporeal shock-wave lithotripsy. Urology 1989;34(5):277–80.
10. Fugita OE, Trigo-Rocha F, Mitre AI, Arap S. Splenic rupture and abscess after extracorporeal shock wave lithotripsy. Urology 1998;52(2):322–3.
11. D'Addessi A, Vittori M, Racioppi M, Pinto F, Sacco E, Bassi P. Complications of extracorporeal shock wave lithotripsy for urinary stones: To know and to manage them - a review. ScientificWorldJournal 2012;2012:619820.
12. Davidson T, Tung K, Constant O, Edwards L. Kidney Rupture and Psoas Abscess after ESWL. Br J Urol 1991;68(6):657–8.
13. Qureshi F, Thompson PM. Psoas Abscess Following Extracorporeal Shock Wave Lithotripsy. Scand J Urol Nephrol 1998;32(3):237–8.
14. Chern CH, Hu SC, Kao WF, Tsai J, Yen D, Lee CH. Psoas abscess: Making an early diagnosis in the ED. Am J Emerg Med 1997;15(1):83–8.
15. Zissin R, Gayer G, Kots E, Werner M, Shapiro-Feinberg M, Hertz M. Iliopsoas abscess: a report of 24 patients diagnosed by CT. Abdom Imaging 2001;26(5):533–9.
16. Navarro Lopez V, Ramos JM, Meseguer V, Perez Arellano JL, Serrano R, Garcia Ordonez MA, *et al*. Microbiology and outcome of iliopsoas abscess in 124 patients. Medicine (Baltimore) 2009;88(2):120–30.

Received: 10 August, 2017	*Revised: 16 May, 2018*	*Accepted: 18 May, 2018*

Address for Correspondence:
Syed Usman Bin Mahmood, Yale University, Yale University, New Haven, CT 06520-US
Email: syed.ubm@hotmail.com