

SUBCAPSULAR RENAL HEMATOMA AFTER URETEROSCOPY AND TRANSURETEROSCOPIC LASER LITHOTRIPSY: A CASE REPORT IN A HOSPITAL OF THE WESTERN AMAZON

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ABSTRACT Perirenal hematoma is a rare complication of transureteroscopic laser lithotripsy occurring in about 0.15% of cases. This rate is significantly lower than other forms of treatment, such as extracorporeal shock wave lithotripsy which presents an incidence of perirenal hematoma of up to 25%. This study reports the case of a 56-year-old woman who presented a left ureterolithiasis and a right renal cyst. She underwent a left transureteroscopic laser lithotripsy and complained of pain postoperatively although without hypotension or fever. Her abdominal CT scan showed a huge hematoma subcapsular around her left kidney without any signs of a urinary leak. The patient was treated conservatively and exhibited favourable outcomes. Most renal subcapsular hematomas present spontaneous resolution with conservative treatment. However, the puncture or surgical approach may be necessary when associated with sepsis, impaired renal function, hemodynamic instability, or urinary tract leakage evidenced on CT scans.

KEYWORDS ureterolithiasis, ureteroscopic surgery, lithotripsy, laser therapy, Hematoma

Introduction

Transureteroscopic laser ureterolithotripsy is an effective and safe method for the management of ureterolithiasis and is currently one of the most frequent procedures in urology[1]. The use of Laser in this surgeries has become the gold standard, because of the new technologies applied in endourology, such as small-diameter, semi-rigid and flexible ureteroscopes, which facilitates the fragmentation of the stones and presents major complication rates as less as 0.1%[2].

A perirenal hematoma is a rare complication of transureteroscopic laser lithotripsy occurring in about 0.15% of cases. This rate is significantly lower than other forms of treatment, such as extracorporeal shock wave lithotripsy which presents an incidence of perirenal hematoma of up to 25%. [1,3]

The perirenal hematoma requires more attention because, although they by and large present favourable outcomes with conservative treatment, they may show major complications such as hemodynamic instability and even impaired renal function[4,5].

The authors were not able to find reports of similar cases of perirenal hematoma after ureteroscopy in Latin America, although there are few studies about this topic coming from other places. The databases chosen were PubMed, EBSCO and EM-BASE.

In this study, we present a case report of subcapsular hematoma after transureteroscopic ureterolithotripsy in a patient complaining of lumbar pain, without hypotension and with CT scan confirmation of the diagnosis.

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Case report

A 56-year-old woman complained of sudden left lumbar pain started 48 hours before the admission associated with nausea and vomiting. Non-contrast enhanced CT scan showed obstructive urolithiasis in left ureterovesical junction with a stone of 10 mm resulting mild left hydronephrosis (Figure 1 and 2). In addition to the obstructive condition, it was observed a right upper pole renal cyst measuring 7 x 6.5 cm (Bosniak I). She also told to have hypertension controlled with daily use of hydrochlorothiazide and nifedipine. At the patient's admission, laboratory tests with hemoglobin of 12.8 g / dl, hematocrit 39.90%, 8080 leukocytes per mm³ with absence of young cells and presence of 60% segmented, 255,000 platelets / mm³, INR of 1.0 with prothrombin activity of 100% and activated partial thromboplastin time of 25 seconds, creatinine of 1.10 mg / dl, urea of 30.90 mg / dl, and negative urine culture.

The patient was referred to the theatre. She underwent spinal anaesthesia with sedation, antibiotic prophylaxis with Ceftriaxone 2 grams in the anaesthetic induction and placed in a lithotomy position. The ureteroscopy was performed, using ureteroscopy 8F model 2700LA KARL STORZ, without previous ureteral dilation and with continuous saline irrigation, positioned 80 cm above the patient and pressurized by pressurizer bag which maintains a continuous pressure of 150 mmHg. There was no technical difficult to find the left ureteral meatus. The hydrophilic guidewire was introduced without resistance, and its proper position was confirmed by fluoroscopy. During the removal of the ureteroscope for the passage of the second guidewire, a 10Fr silicone catheter was inserted into the urethral meatus in order to bladder decompression. Then, the ureteroscope was inserted again and passed through a guide wire to enable smooth ureteroscopy. The stone was located in the distal ureter. The lithotripsy was performed using the following laser settings: fiber of 270 microns, energy of 0.8J at a rate of 8Hz (6,4W). The lithotripsy was successful and the fragments were extracted using a basket device. Using the safety guidewire still in place, a 7Fr-ureteral stent was inserted into the left ureter with fluoroscopy-confirmed position and a 16Fr-indwelling catheter was inserted, as well. The surgical procedure lasted 45 minutes, without complications and patient was maintained with mean blood pressure of 75 mmHg. Patient was referred to the ward and progressed well in the postoperative period, complaining of only mild left-back pain, with no fever or other symptoms. The position of the ureteral stent was confirmed by X-ray.

On the fourth day after the surgical procedure, as she remained with few complains, a contrast-enhanced abdominal CT scan was performed and showed the presence of left renal subcapsular hematoma was demonstrated measuring about 2, 8 cm in width without evidence of urinary tract leakage (Figure 3). As the patient had only mild lumbar pain and was afebrile and hemodynamically stable, conservative treatment was chosen. Further laboratory tests showed a hemoglobin of 10.3 g / dl, hematocrit 30.60%, 10,270 leukocytes / mm³ with no evidence of young cells, creatinine of 0.86 mg/dl and urea of 30.60 mg/dl. At the physical examination, there was no palpable lesion in the left lumbar region.

The patient presented a good evolution with conservative treatment, and interventional measures were not necessary. She was discharged seven days after the diagnosis of hematoma and the CT scan, obtained 30 days after the procedure, didn't show any signs of hematoma. The patient is still being followed up. In December 2018, it had been seven months since the URL.

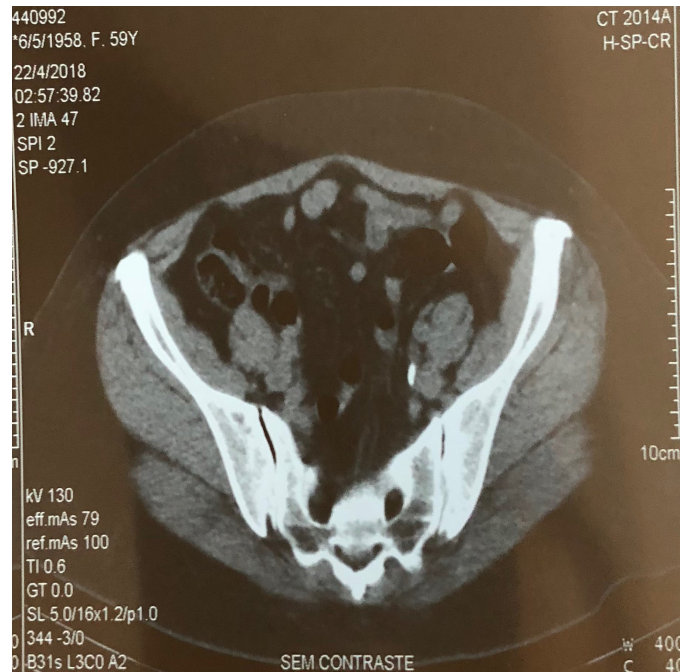


Fig.1. Preoperative non-contrast-enhanced pelvic CT scan - Lithiasis (1cm) in left distal ureter;

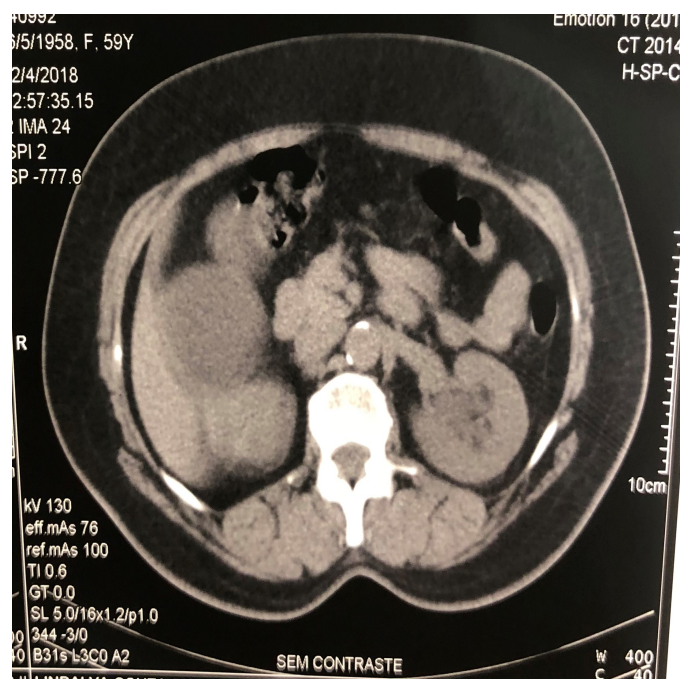


Fig.2. Preoperative non-contrast-enhanced abdominal CT scan - Left kidney hydronephrosis and upper-pole right kidney cyst (Bosniak I);

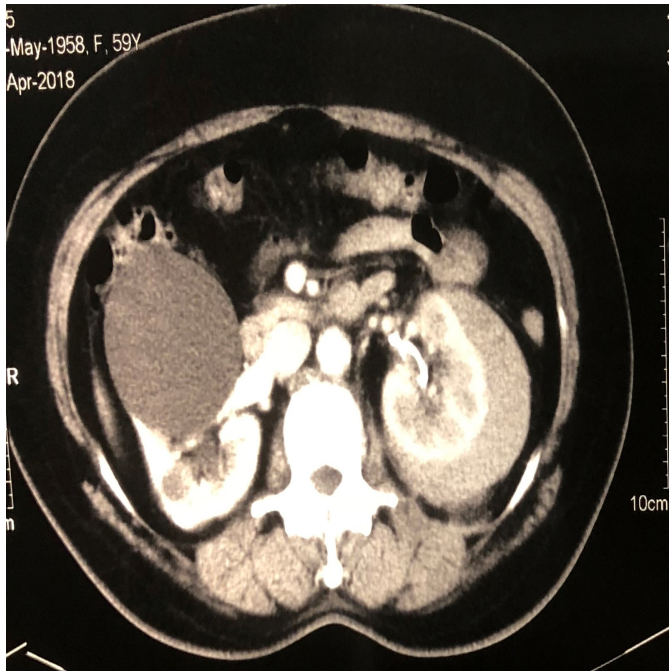


Fig.3. Post-operative contrast-enhanced abdominal CT scan - Subcapsular renal hematoma in left kidney and upper-pole right kidney cyst (Bosniak I);

Discussion

Ureterolithiasis is a disease with a high prevalence in the modern era, ranging from 5% to 10% and a recurrence rate of almost 50%.[6] Clinical manifestations of ureterolithiasis can be acute with lumbar pain, hematuria, fever, nausea, vomiting and it generates about two million outpatient visits in the United States at an economic cost of renal colic and ureterolithiasis of about \$ 2, 1 billion in 2000.[8] It is worth mentioning that even patients with asymptomatic urolithiasis may develop complications such as recurrent urinary tract infection or ureteral obstruction. Therefore, patients deserve either active surveillance or even an indication of intervention[9].

We currently have many options for the treatment of patients with ureterolithiasis, such as expulsive medical therapy, ureterolithotripsy, extracorporeal shock wave lithotripsy (LECO), percutaneous nephrolithotripsy and the surgical removal of the stones[6,7].

Transureteroscopic ureterolithotripsy (URL) with the use of a laser is an effective and safe method for the management of ureterolithiasis and is currently the treatment of choice for ureterolithiasis.[1] Nowadays, new endourology technologies provide small-diameter, semi-rigid and flexible ureteroscopes, that facilitates the fragmentation of stone and reduces the incidence of major complications up to 0.1%, which is less than is observed in other procedures, such as extracorporeal lithotripsy by shock waves, and percutaneous nephrolithotripsy.[2,5]

Subcapsular renal hematoma after URL is a rare complication occurring in about 0.15% of cases. The aetiology of subcapsular renal hematoma after the URL remains uncertain, with the most likely explanation supposed to be either trauma to the pelvic system by a guidewire or increased intra-renal pressure.[1] The relation between the large experience of the surgeon and the reduction of the complication rate is a known factor in several medical specialties and probably has a role in this scenario, as

well[10,11].

Obstructive ureterolithiasis causes hydronephrosis resulting in an increase in intra-renal pressure and consequently obstruction of the capsular veins, a fact that is abruptly interrupted after ureterolithotripsy, promoting ureteral recanalization and sudden expansion with rupture of these vessels, which can promote separation of the capsule from the parenchyma and formation of the subcapsular hematoma in the kidney.[11]

The subcapsular area of the kidney is a space where fluid can accumulate, resulting in compression of the renal parenchyma. Subcapsular renal hematomas are usually related to renal trauma, complications well known in LECO and can occur spontaneously by tumors, vascular diseases, infections, cystic diseases, hydronephrosis, preeclampsia and blood dyscrasias[1].

Some factors may increase the incidence of subcapsular hematoma after URL, such as systemic hypertension, diabetes mellitus and urinary tract infection and female gender [1,5]. The size of the stone, the presence of severe hydronephrosis, prolonged surgical time, and elevated hydraulic irrigation pressures during the procedure are operative-related risk factors significantly associated with the development of subcapsular renal hematoma[2,11].

To prevent subcapsular hematoma after URL, it is recommended the use of ureteral access sheath in flexible ureterolithotripsy as it can improve visualization and to maintain a low-pressure system by facilitating the flow of irrigation[2]. Moreover, it is suggested decrease as short as possible the operating time, stabilize potential risk factors before surgery, such as glycemic control, blood pressure and urinary tract infection, decrease hydraulic flow during surgery and introducing a transurethral catheter of 10F to decrease bladder pressure[11].

The main symptom reported by these patients is low back pain. However, it also may be presented with fever, abdominal pain, palpable mass, hematuria, signs of hypovolemic shock due to blood loss, or even no symptoms.[2] The real incidence rate of subcapsular hematoma post URL is not known, since many complaints of lumbar pain reported in the postoperative period are attributed to other etiologies, such as the stent reaction. Thus, a complementary investigation is frequently not ordered.[5]

Most renal subcapsular hematomas present spontaneous resolution with conservative treatment; however, the puncture or surgical approach may be necessary when associated with sepsis, significant impairment of renal function, pressure instability or perirenal contrast leakage on CT scan[11,12].

For the authors, this case of renal subcapsular hematoma after URL is the first reported in Brazil. We thought it would be interesting to alert to this unusual diagnosis with high potential severity to provide early timely diagnosis and appropriate therapy in similar cases. Furthermore, this report can motivate future studies on the same topic.

Conclusion

Subcapsular renal hematoma after URL is a rare and frequently neglected complication. Spontaneous resolution with conservative treatment is often observed, even though the puncture or surgical approach may be necessary when associated with sepsis, significant impairment of renal function, pressure instability or perirenal contrast leakage on CT scan.

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