

Subcapsular renal haematoma of unusual cause: a case report

AS Nedjim,  H Haggui, EM Abdi, A Nachid, H Ait Mahanna, A Moataz, M Dakir, A Debbagh, R Aboutaieb

Urology Department, Ibn Rochd University Hospital, Casablanca/Morocco

Corresponding author, email: nedjimsaleh@gmail.com

Subcapsular renal haematoma is a rare and almost unknown complication of ureteroscopic lithotripsy. We report a 42-year-old female patient who was seen for a febrile left lower back pain following ureteroscopic lithotripsy three weeks earlier. Imaging (ultrasound and CT scan) showed the presence of left renal subcapsular collection. Management included antibiotics and immediate drainage of the collection by percutaneous nephrostomy. The clinical evolution was favourable.

Keywords: lithiasis, ureteroscopy, lithotripsy, subcapsular renal haematoma

Introduction

Laser ureteroscopic lithotripsy is currently the technique of choice for the treatment of ureteral stones.¹ The postoperative complication rate of this procedure is low.² The main complications described are fever, pain and ureteral trauma.³ Subcapsular renal haematoma (SCRH) is a rare complication of ureteroscopic lithotripsy. We report here a 42-year-old woman who was treated by percutaneous nephrostomy with a favourable outcome.

Presentation of the case

A 42-year-old female patient, without any known comorbidities, presented to the emergency department with a fever and left lower back pain of progressive onset. Three weeks earlier, she had undergone ureteroscopy and laser lithotripsy for a left lumbar ureteral stone of 1.8 x 7.3 mm with a density of 1 534 Hounsfield units. The stone fragmentation was complete and a double J ureteral stent was placed. The postoperative follow-up was uncomplicated.

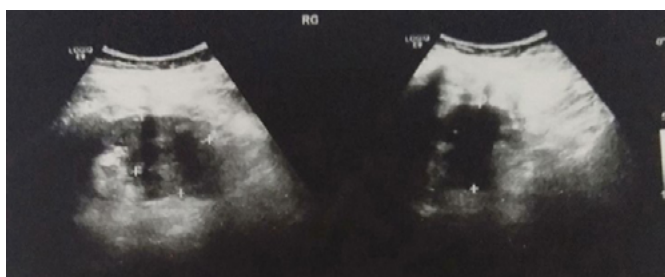


Figure 1: Ultrasound image showed a non-vascularised collection at the lower pole of the left kidney



Figure 2: CT scan showed a left renal subcapsular collection measuring 5.7 x 7.5 x 9 cm with infiltration of perirenal fat without dilatation of the caliceal cavities suggesting a subcapsular haematoma

On admission, the clinical examination found an asthenic, conscious and haemodynamically stable patient, febrile at 38.3 °C. The left lumbar fossa was tender and rigors were noted. An ultrasound (Figure 1) examination revealed a non-vascularised collection at the inferior pole measuring 4.5 x 6 x 7 cm. The examination was completed by a CT scan (Figure 2), showing a left renal subcapsular collection with heterogeneous liquid content of 5.7 x 7.5 x 9 cm infiltrating the perirenal fat without hydronephrosis, suggesting a subcapsular haematoma. Laboratory results showed a normocytic normochromic anaemia with a haemoglobin level at 8.3 mg/L, leukocytosis at 11050/mm³ and CRP at 252.

Our therapeutic plan consisted of drainage of the subcapsular haematoma by a percutaneous nephrostomy (with an immediate drainage of about 180 ml), the introduction of antibiotic therapy, analgesic, rehydration and clinical-biological monitoring. The bacteriological study of the urine and the drained fluid isolated a unique multi-sensitive germ *Escherichia coli*. The ultimate evolution was favourable with improvement of clinical signs, normalisation of biological parameters and subsidence of the haematoma.

Discussion

SCRH is a common complication in shockwave lithotripsy, renal trauma, and renal angiographic procedures.⁴ Its occurrence following ureteroscopic lithotripsy is rare. Whitehurst et al.,⁵ in a systematic review, estimated its incidence at 0.45%. It occurs mainly in female subjects with a mean age of 53 years and a mean stone size of 1.7 cm. The main factors significantly associated with the occurrence of SCRH are the stone size, degree of dilatation, duration of surgery and perioperative irrigation pressure. Some of these factors were encountered in our case, namely: female gender, stone size and irrigation pressure. The combination of these risk factors could explain the occurrence of the haematoma.

During the ureteroscopic lithotripsy, there is a change in the renal intrapelvic pressure due to perioperative irrigation leading to expansion and sudden rupture of the renal parenchyma and/or capsular vessels. Thus, blood and fluid will accumulate in the subcapsular area of the kidney, the renal capsule will gradually separate from the renal parenchyma and a haematoma will be formed.⁶ This haematoma will compress the renal parenchyma.⁷

This compression may explain the symptomatology marked by loin pain.

The CT scan is the reference examination for the diagnosis. The scanographic characteristics of the SCRH are the location of haematoma, irregularity, heterogeneity and the density, which is lower than that of the arterial or the renal parenchyma, without active bleeding. It also allows definition of the extent of the renal lesions, the precise diameter of the haematoma and the presence of active bleeding.⁸ This was the case in our patient, because the ultrasound concluded that there was a collection at the inferior pole, but the uro-CT scan made it possible to make the diagnosis by accurately characterising this collection.

As the resorption is rapid and spontaneous, the subcapsular haematoma of the kidney may not require an intervention. In this case, the appearance was similar to that of kidney trauma.⁹ In the case of conservative management, the evolution will be judged on the disappearance of clinical signs, the normalisation of biological parameters, and the evolution of the haematoma on the CT scan. In the case of persistent low back pain or failure of resolution, percutaneous drainage may be indicated. Percutaneous drainage may be placed to decompress the perirenal space.¹⁰ Given the duration (three weeks after the procedure), the febrile back pain with febrile infectious syndrome, and the size of the haematoma on the CT scan, our plan was to use percutaneous nephrostomy. The ultimate clinical evolution was favourable, marked by the improvement of clinical signs and the normalisation of biological parameters.

Conclusion

Although it is rare, SCRH can occur in post-ureteroscopic lithotripsy. It is a serious complication that can be life-threatening. Any post-lithotripsy presentation of back pain should indicate that imaging should be performed to look for this complication. The therapeutic plan (conservative or interventional) will depend on the patient's

condition. In case of a significant haematoma, percutaneous drainage may be necessary, as it allows decompression of the renal parenchyma.

Conflict of interest

The authors declare that they have no conflict of interest.

Funding source

None.

ORCID

AS Nedjim  <https://orcid.org/0000-0002-3494-6350>

References

- Seitz C, Tanovic E, Kikic Z, Fajkovic H. Impact of stone size, location, composition, impaction, and hydronephrosis on the efficacy of holmium:YAG-laser ureterolithotripsy. *Eur Urol.* 2007;52(6):1751-7. <https://doi.org/10.1016/j.eururo.2007.04.029>.
- De la Rosette J, Denstedt J, Geavlete P, et al. The clinical research office of the endourological society ureteroscopy global study: Indications, complications and outcomes in 11,885 patients. *J Endourol.* 2014;28(2):131-9. <https://doi.org/10.1089/end.2013.0436>.
- Hyams ES, Monga M, Pearle MS, et al. A prospective, multiinstitutional study of flexible ureteroscopy for proximal ureteral stones < 2 cm. *J Urol.* 2015;193(1):165-9. <https://doi.org/10.1016/j.juro.2014.07.002>.
- Schnabel MJ, Gierth M, Chaussy CG, et al. Incidence and risk factors of renal hematoma: A prospective study of 1,300 SWL treatments. *Urolithiasis.* 2014;42(3):247-53. <https://doi.org/10.1007/s00240-014-0637-4>.
- Whitehurst LA, Somani BK. Perirenal hematoma after ureteroscopy: A systematic review. *J Endourol.* 2017;31(5):438-45. <https://doi.org/10.1089/end.2016.0832>.
- Xu L, Gonghui L. Life-threatening subcapsular renal hematoma after flexible ureteroscopic laser lithotripsy: Treatment with superselective renal arterial embolization. *Urolithiasis.* 2013;41(5):449-51. <https://doi.org/10.1007/s00240-013-0585-4>.
- Chao YC, Ming HL, Yeu CC, Sun YC. Spontaneous bilateral renal subcapsular hematoma as a possible complication of myeloproliferative disorders. *J Med Sci.* 2009;29:273-5.
- Bai J, Li C, Wang S, et al. Subcapsular renal haematoma after holmium:yttrium-aluminum-garnet laser ureterolithotripsy. *BJU Int.* 2012;109(8):1230-4. <https://doi.org/10.1111/j.1464-410X.2011.10490.x>.
- Chiu PKF, Chan CK, Ma WK, et al. Subcapsular hematoma after ureteroscopy and laser lithotripsy. *J Endourol.* 2013;27(9):1115-9. <https://doi.org/10.1089/end.2013.0128>.
- Shen Z, He W, Liu D, et al. Novel technique for the treatment of large subcapsular renal hematoma: Combined use of percutaneous drainage and urokinase injection. *Int Urol Nephrol.* 2014;46(9):1751-5. <https://doi.org/10.1007/s11255-014-0710-5>.