Is Extracorporeal Shockwave Lithotripsy Safe in Patients With Chronic Bleeding Tendency?

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INTRODUCTION

Since 1980, the extracorporeal shockwave lithotripsy (SWL) has become the gold standard option for treatment of renal and ureteral calculi. But SWL is not without complication and has its own contraindications. Of absolute contraindication for SWL is bleeding tendency. Here, we report a case with bleeding diathesis who underwent SWL without bleeding tendency correction.

CASE REPORT

A 40-year-old active stone former woman with a 7-year history of autoimmune hepatitis and cirrhosis was found to have multiple kidney and ureteral stones. Laboratory examination revealed thrombocytopenia and coagulopathy (prolonged PT and PTT), which are contraindications for SWL, but she had undergone two sessions of SWL, previously. Her physician was not aware of her bleeding tendency. Both SWLs have been performed without any complications.

This patient presented to our clinic with bilateral ureteral stones and obstructive uropathy. She was scheduled for ureteroscopy, but because of her thrombocytopenia and coagulopathy, the anesthesiologist refused to perform a spinal or general anesthesia. Patient was insisting on undergoing SWL without correction of coagulopathy and thrombocytopenia. After obtaining her consent, she underwent 5 SWL sessions. Her platelate count, PT, and PTT were 50 000 to 60 000 μL, 19 seconds, and 49 seconds, respectively.

During the procedure, the physician was careful to focus on the kidney stones while paying close attention to not traumatize the surrounding tissue.

DISCUSSION

Extracorporeal shockwave lithotripsy has its own complications in a small percentage of patients, even though serious complications are unusual.[1] Since its introduction by Chaussy and Schmiedt in 1980, SWL has been proven to be a safe, effective, non-invasive, and preferred method of treatment for patients with the upper tract urolithiasis.[2]

Although the risks of this procedure are relatively low, the risk for perirenal or intrarenal hemorrhage is well known.[3-5] Routine post-SWL imaging by computed tomography scan

and magnetic resonance imaging has revealed perirenal or intrarenal hemorrhage in 20% to 25% of cases.[6-8] Hence, in the setting of deranged bleeding parameters, SWL has been considered to be an absolute contraindication. Acute urinary tract infection, uncorrected bleeding disorders, pregnancy, sepsis, and uncorrected obstruction distal to the stone, all are considered absolute contraindications for SWL. Development of perirenal or intrarenal hemorrhage following SWL is a frequent observation in those with normal bleeding parameters.[4] The incidence of clinically significant bleeding is less than 1%.[3-5] These reports taken together support the concept that SWL is potentially risky in the setting of bleeding diathesis. On the contrary, there are reports of successful use of SWL in known hemophilia after specific therapy with infusion of anti-hemophilic factor.[9,10] Ruiz Marcellan and colleagues have reported successful use of SWL in 17 patients with coagulation disorders, after instituting hemotherapy for blood factor deficiencies.[11]

Data support the use of SWL in selected patients with correctable bleeding diathesis, but all the subjects were managed with collaboration of the hematology department. Depending on the nature of the disorder, we suggest the following guidelines for treatment: In patients with von Willebrand disease, factor VIII level of $> 70\%$; in those with hemophilia A, the factor VIII level 80% to 100%, in idiopathic thrombocytopenic purpura, a platelet count of 60 000 μL; and for oral anticoagulant, international normalized ratio $< 1/5$ should be safe.
There is no overall or complete consensus about the appropriate management of bleeding tendency disorders and anticoagulation therapy for patients receiving long-term warfarin and/or antiplatelet drugs (Lip, 2005; VAMC, 2001).

Samiran and coworkers performed a total of 27 SWL sessions in 7 patients, including 1) von Willebrand disease; 2) idiopathic thrombocytopenic purpura and solitary right kidney; 3) mitral valve replacement on warfarin; 4) ischemic heart disease on aspirin; 5) cirrhosis and portal hypertension; and 6) hemophilia A. Deficient coagulation factors were administered. Two out of seven patients developed mild hematuria, which settled within 48 hours. None of them required blood transfusion. All, except 1 patient (case 3), were stone-free at one month. None of them required a secondary procedure. Case 1 had post procedure magnetic resonance imaging, which did not show any collection or perinephric hematoma. Other patients were observed clinically and did not undergo post procedure imaging. Therefore, SWL is a safe method of treatment of urolithiasis in patients with bleeding diathesis, provided that bleeding diathesis is corrected. These procedures should be undertaken in the setting of a tertiary care institution with hematological facilities.[12]

Tsuboi and associates reported two cases of idiopathic thrombocytopenic purpura in which ureteral stones were successfully extracted by transurethral ureterolithotripsy and SWL after high-dose gamma-globulin therapy and platelet transfusion with no bleeding complications.[13] In literature, all of the SWL procedures in patients who had contraindication for SWL, such as pregnancy, have been performed inadvertently. But we were aware of it.[14]

According to literature, in patients with bleeding tendency, SWL should be performed after necessary corrections. Our patients with coagulopathy did not develop bleeding following 5 SWL sessions.

CONFLICT OF INTEREST

None declared.

REFERENCES

1. Jeon BH, Jang JH, Oh JH, et al. Kidney rupture after extracorporeal shockwave lithotripsy: report of a case. J Emerg Med. 2009;37:13-4.
2. Chaussy C, Schmiedt E. Extracorporeal shock wave lithotripsy (ESWL) for kidney stones. An alternative to surgery? Urol Radiol. 1984;6:80-7.
3. Drach GW, Dretler S, Fair W, et al. Report of the United States cooperative study of extracorporeal shock wave lithotripsy. J Urol. 1986;135:1127-33.
4. Knapp PM, Kulb TB, Lingeman JE, et al. Extracorporeal shock wave lithotripsy-induced perirenal hematomas. J Urol. 1988;139:700-3.
5. Coptcoat MJ, Webb DR, Kellett MJ, et al. The complications of extracorporeal shockwave lithotripsy: management and prevention. Br J Urol. 1986;58:578-80.

6. Rubin JI, Arger PH, Pollack HM, et al. Kidney changes after extracorporeal shock wave lithotripsy: CT evaluation. Radiology. 1987;162:21-4.
7. 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;163:531-4.
8. Kaude JV, Williams CM, Millner MR, Scott KN, Finlayson B. Renal morphology and function immediately after extracorporeal shock-wave lithotripsy. AJR Am J Roentgenol. 1985;145:305-13.
9. Partney KL, Hollingsworth RL, Jordan WR, Beckham D, May CR. Hemophilia and extracorporeal shock wave lithotripsy: a case report. J Urol. 1987;138:393-4.
10. Czaplicki M, Jakubczyk T, Judycki J, et al. ESWL in hemophiliac patients. Eur Urol. 2000;38:302-5.
11. Ruiz Marcellan FJ, Mauri Cunill A, Cabre Fabre P, et al. [Extracorporeal shockwave lithotripsy in patients with coagulation disorders]. Arch Esp Urol. 1992;45:135-7.
12. Samiran A, Devasia A, Gnanaraj L, Chacko K, Kekre N, Gopalakrishnan G. Is shock wave lithotripsy safe in bleeding diathesis? Indian J Urol. 2006;22:122-4.
13. Tsuboi T, Fujita T, Maru N, Matsumoto K, Iwamura M, Baba S. Transurethral ureterolithotripsy and extracorporeal shock wave lithotripsy in patients with idiopathic thrombocytopenic purpura. Hinyokika Kiyo. 2008;54:17-22.
14. Asgari MA, Safarinejad MR, Hosseini SY, Dadkhah F. Extracorporeal shock wave lithotripsy of renal calculi during early pregnancy. BJU Int. 1999;84:615-7.