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Case Report

A case report of a giant bladder stone (12 x 8 cm, 610 g) ☆,☆☆

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ABSTRACT

Bladder lithiasis is common in developing countries. It has become rare in industrialized countries and exceptional in the absence of associated lower tract pathology. usually caused by urinary tract infections, urethral obstruction or the presence of intravesical foreign bodies. Open cystolithotomy was performed on a 45-year-old patient with lower abdominal pain, moderate dysuria, pollakiuria, nocturia, and hematuria for a long time. A stone of 12 x 8cm in size and approximately 620 grams in weight was removed. The cystoscopy was performed without any infravesical obstruction during the operation. The stone analysis showed 21% struvite and 79% carbonate apatite. Bladder lithiasis is common in Morocco. However, giant lithiasis is rare and is the consequence of neglected voiding disorders. Open cystolithotomy remains the most treatment in the management of giant stones.

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Introduction

Bladder lithiasis is common in developing countries. It has become rare in industrialized countries and exceptional in the absence of associated lower tract pathology [1–4]. In humans, urinary stasis is the essential factor in the formation of bladder stones. This urinary stasis is often the consequence of a cervicoprostatic or urethral obstruction or neurological dysfunction of the bladder [5]. In women, bladder lithiasis can

complicate a vesicovaginal fistula with the formation of large embedded stones [6].

Bladder lithiasis is moderate in size and rarely reaches 10 cm in diameter and is accessible to endoscopic treatments. Large lithiasis weighing more than 100 grams or giant lithiasis are rare. Their treatment is based on classic surgery: cystolithotomy associated with the treatment of the obstructive pathology of the lower urinary tract responsible for the stone formation. We report a case of giant stone found in the pelvic region of a man patient.

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Fig. 1 – Large pelvic stone with an estimated long axis of 10 cm.

Case presentation

A 45-year-old man presented to the emergency department of Anoual Clinic, Kenitra complaining of lower abdominal pain, moderate dysuria, pollakiuria, nocturia (8 to 10 times) and hematuria for a long time. After listening to complaints, he was subsequently hospitalized.

An X-ray showed a bladder stone measuring 10 cm in size (Fig. 1). Bilateral hydronephrosis was revealed in the ultrasonography. Intravenous urography exam showed several cal-

cium opacities; next to the renal area on the left kidney with a coralliform stone measuring 1.5 cm long axis (at least 4 opacities) and a median pelvic of 10 cm long axis. No opacification of the pyelic cavities were detected by this exam.

Urine lab work showed 30 to 35 red blood cells per high power field and more than 100 pus cells per high power field. His blood examinations show a severe anemia with a hemoglobin level of 7.8 g/100 mL, and a low rate of hematocrit. Rectal examination revealed a normal prostate. Urine analysis showed a high white blood cell count mainly neutrophil cells indicating an inflammation of urinary tract. The urine culture showed an infection by *Escherichia coli* (10^7 CFU/mL).

The blood tests show that the patient had a history of anemia. He was admitted to the hospital 10 years ago due to anemia; has given then, 5 units of blood were transfused, and he was given. In addition, the patient had received oral iron supplementation and medical treatment for urinary incontinence over the past 10 years.

After urinary tract infection treatment with intravenous antibiotics, our patient underwent a cystoscopic examination. Then, an open cystolithotomy was performed. During the operation, digital rectal manipulation was used to remove the stone (Fig. 2), which was adherent to the bladder mucosa. There was no anatomical urethral obstruction.

A stone 12 × 8 cm in size and approximately 620 g in weight was removed (Fig. 3). Biochemical analysis indicated that the stone consisted of 21% struvite and 79% carbonate apatite. The stratified lamellae stone was composed of carbonate apatite and magnesium ammonium phosphate.

On the 15th postoperative day, the urethral catheter was removed, and the patient's urinary output was normal. The postoperative events were simple and the patient was voiding normally but with dysuria upon removal of the probe. The bilateral hydronephrosis improved markedly within several weeks.



Fig. 2 – Stone after removal from bladder.



Fig. 3 – 12 × 8 cm bladder stone extracted by open cystolithotomy.

Discussion

Epidemiological surveys have shown that bladder lithiasis is found mainly in countries with low income [1–5]. In males, urinary stasis is the essential factor in the formation of these lithiasis. This urinary stasis is often the consequence of a cervicoprostatic, urinary tract infection, urethral obstruction or a neurogenic voiding dysfunction [6–8]. It affects mostly females than males [5,9].

Bladder stones exceeding 100 g in weight are infrequent in contemporary urology, especially in developed countries such as those in Europe and the United States [10,11]. Several studies have showed largest bladder stone cases of largest bladder stones remains higher in developing countries and countries with low income [12–16]. In Morocco, this case is the first recorded stone of giant bladder with 12 × 8 cm of size.

Recurrent urinary tract infection, hematuria and urinary retention are common disorders in these patients with bladder stone [17], which dietary intake and socio-economic constitute an influential factor in the formation of bladder stone [18–21].

Bladder stones are mainly associated with kidney or ureteral stones, and they are rarely without stones associated with the upper urinary tract, as in our case study [7].

Infectious stones represent approximately 15% of urinary stone-related diseases and therefore constitute an important group [22]. These stones are mostly composed of struvite and/or carbonate apatite. Urease-positive urinary tract infection constitutes the basic condition for the formation of infected kidney stones, allowing the formation of ammonium ions and consequently the development of alkaline urine which favors the formation of struvite and apatite carbonate crystals. When these crystals deposit themselves infectious stones form [22].

Several methods are used in the diagnosis of vesical stone like X-ray, ultrasound, computed tomography (CT) scan, or cystoscopy [23,24].

Several methods are used for the treatment of bladder stone including endoscopic (transurethral or percutaneous)

surgery or robotic assisted laparoscopic. Recently, minimally invasive techniques have been widely used to remove bladder stone without complication complications [17]. According to bladder size, cystolithotomy is generally the most treatment for a giant bladder stone.

Several methods are used by the local population including Extracorporeal shock wave lithotripsy [25,26], surgery and traditional therapy based in the use of medicinal plants [18,19]. The transurethral cystolithotripsy is the treatment of choice for removing bladder stones [10]. However, for giant stones, open cystolithotomy is considered as the effective treatment requiring general anesthesia.

Apart from the urinary tract infection (UTI), distinct predisposing factors likely contributed to the formation of the bladder stone in this case. The patient hailed from an extremely remote and inaccessible village, which lacked essential medical diagnostic facilities, including X-ray and ultrasound technology. These advanced tools could have been employed to detect the calculus at an earlier, smaller stage. Additionally, the patient faced dietary challenges and had a reduced fluid intake, likely exacerbating the UTI and leading to the development of the large bladder stone.

Conclusion

Giant bladder stones are rare in Morocco. They lead to a significant alteration in the quality of life of patients. Their constitution extends over several years and can be favored by social and cultural beliefs, with some patients consulting late for questions relating to the genital sphere.

These stones should be viewed as a different clinical presentation than small bladder stones, especially regarding the cause of their formation and treatment option. Further evaluations seem necessary in the medical management of these cases.

Patient consent

Written informed consent was obtained from the patient for publication of this case report and any accompanying images. A copy of the written consent is available for review by the editor-in-chief of this journal.

Availability of data and materials

Available in the process of authors.

Authors' contributions

MC and AM Collected clinical details and drafted the manuscript; MC and AA were involved in managing the patient; All authors read and approved the final manuscript.

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