

Multiple giant prostatic urethral stones with an ureteral stone in a young patient

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Received: 20 September 2011 / Accepted: 21 October 2011 / Published online: 11 November 2011
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Abstract Giant prostatic urethral stones have been reported as a very rare entity, and the etiology of these stones is not clear. We report a case of a 40-year-old man with giant multiple prostatic urethral stones whereby the entire gland was replaced, and a big ureteral stone presented with voiding difficulty and recurrent urinary tract infections. In the literature, to our knowledge, this is the youngest case wherein giant prostatic urethral stones coexisted with a big ureteral stone. Many different-sized stones were observed endoscopically, some protruding into the urethra, and some filling different cavities on the prostate. Following cystoscopy, multiple giant prostatic stones weighing a total of 151 g were removed by the open retropubic route. We treated the big ureteral stone endoscopically.

Keywords Giant · Prostate stone · Ureter stone

Introduction

Even though giant prostatic urethral stones are reported to be not uncommon in elderly men, it is quite exceptional to be encountered in younger adults. Prostatic parenchymal calculi are common, usually incidental, findings on computed tomographic (CT) scan or transrectal ultrasound.

They are typically asymptomatic and may be present in association with normal glands, benign prostatic hyperplasia, and prostate cancer [1]. In the literature, the coexistence of giant prostatic urethral stones with a big ureteral stone was not present in males particularly before the sixth decade [2]. We present a first case of a young male patient in literature, with multiple giant prostatic stones coexisting with a big ureteral stone and treated by the open retropubic route for multiple giant prostatic stones that were removed and the ureteral endoscopic approach.

Case report

A 40-year-old man presented with a 12-month history of urgency, frequency and strangury. He denied any prior obstructive or irritative urinary symptoms or history of urinary tract infections and had no urinary stone disease. His rectal examination revealed a moderately enlarged prostate gland and with stony hard consistence in some areas. His urinary sediment demonstrated microscopic hematuria and pyuria, but his urine culture remained sterile. An examination of the kidneys, ureter, and bladder (KUB), X-ray study (Fig. 1), and CT scan (Fig. 2) were performed and revealed multiple giant prostatic urethral stones each greater than 2.5 cm in size and a left ureteral stone 1.7 cm in size. Upper urinary tract and bladder appeared to be normal in intravenous urography (IVU) (Fig. 3). Prostate-specific antigen (PSA) level and biochemical results were in normal limits. The patient underwent cystourethroscopy. Cystourethroscopy revealed almost complete closure of the prostatic urethra by the multiple giant stones. After cystourethroscopy, the patient underwent left ureterorenoscopy and we performed successful pneumatic lithotripsy of the ureteral stone. After

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Fig. 1 KUB showing multiple giant prostatic urethral stones and left ureteral stone



Fig. 3 Intravenous urography

treatment of the ureteral stone, multiple giant prostatic urethral stones weighing a total of 151 g were removed by the open retropubic route (Fig. 4). After surgery a urethral catheter was placed. The mineral composition of the stone was reported to be calcium phosphate (70%) and calcium carbonate (30%). At the first month of operation, the patient had no complaints regarding his voiding pattern. His urine culture remained sterile. Ultrasonography and X-ray studies revealed no remaining calculi in the lower urinary tract.

Discussion

Although prostatic calculi are relatively common, complications are rare [2]. Less than 20 cases of giant prostatic calculi have been reported in the English literature. They occur more frequently in younger men, unlike microscopic prostatic calculi, which are usually seen in men above the age of 50 [3]. Patients can present with lower urinary tract symptoms, urinary retention, pain, and urethral strictures [3]. The etiology of prostatic calculi is not clear.

Fig. 2 **a** Unenhanced CT scan showing replacement of prostate gland with multiple giant stones. **b** Left ureteral stone





Fig. 4 Prostate calculi extracted via open retropubic prostatectomy

The general acceptance is that prostatic calculi are part of the normal process of aging and they may have clinical importance only rarely [4]. True prostate calculi are formed by deposition of calcareous material on corpora amylacea [2]. The pathogenesis of the formation of prostate calculi is thought to be the deposition of hydroxyapatite crystals in corpora amylacea, which is assembled by desquamation of aciner cells and stasis of prostatic fluid following obstruction of prostate ducts [5]. Prostatitis is implicated as one of the predisposing causes in initiating the cascade of prostatic calculi formation [5]. Chronic prostatitis and recurrent urinary tract infections have been implicated in their development [6]. Such infection and stasis likely result in increased pressure and often results in “autoprostatectomy” of the prostate tissue [7]. Enucleation of the gland is therefore seldom necessary as part of stone management. In the current patient, stone composition was calcium phosphate and calcium carbonate; similar chemical compositions have been reported for other giant prostatic calculi [6–8]. Prostatic calculi have also been reported in association with ochronosis, hemospermia, hyperparathyroidism, prostatic hyperplasia and carcinoma in the literature [5]. Recently, Kamai et al. [2] reported a sudden urinary retention in a 70-year-old man with giant prostatic calculi. Since the patient had no prior history of any known predisposing diseases, such as urethral stricture, prostatic hyperplasia and chronic prostatitis, they suggested a congenital diverticulum in prostatic urethra or a persistent utricle as the cause of giant prostatic stones. Since the

present case provides no history of common predisposing factors such as a congenital diverticulum or a persistent utricle could be claimed to be the possible cause, as well. However, endoscopy remained unrevealing for any anatomic abnormality in the lower urinary tract. It should be emphasized that the present patient is the youngest having multiple giant prostatic urethral stones and big ureteral stone in the literature. On the other hand, a point should be emphasized that our patient is the youngest with coexistence of multiple giant prostatic stones and big ureteral stone in the literature [1, 2, 5].

Management techniques for giant prostatic calculi have included radical prostatectomy, cystotomy with bladder neck incision, and endoscopic lithotripsy [6, 9]. In our case, the patient underwent open retropubic prostatectomy without removing prostate tissue for the multiple giant prostatic urethral stones were removed by using retropubic route.

Although the endoscopic approach is the first choice, we suggest that open prostatectomy without removing the prostate tissue for the multiple giant prostate stones were removed by using retropubic route in young patients is important with shorter operation duration and for prevention of the urethral complications.

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