

A Cause of Renal Dysfunction: A Giant Bladder Stone

Renal Disfonksiyon Sebebi: Dev Mesane Taşı

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Abstract

Bladder stones are frequently seen in elderly men and account for 5% of all urinary stones. They develop secondary to infravesical obstructions, such as prostatic hyperplasia and neurogenic bladder. A 56-year-old patient with frequent and painful urination, dysuria, and minor complaints of suprapubic pain was referred to our clinic. He was diagnosed with bladder stones by non-contrast abdominopelvic computerized tomography, kidney-ureter-bladder radiography, and urinary system ultrasonography. Cystolithotomy was applied on a giant stone measuring 11x6.5x10 cm that filled the intravesical cavity nearly completely. Here, we present this case of a giant bladder stone causing renal dysfunction within the context of findings in the literature.

Key Words: Bladder Stone, Renal dysfunction.

Özet

Mesane taşları sıklıkla ileri yaş erkeklerde görülürler ve üriner sistem taşlarının % 5' inden sorumludurlar. Prostat hiperplazisi ve nörojenik mesane gibi infravezikal obstrüksiyonlara sekonder oluşurlar. Sık idrara çıkma, idrar yaparken yanma sızı ve hafif suprapubik ağrı şikayetleri olan 56 yaşındaki hasta kliniğimize başvurdu. Böbrek-üreter-mesane radyografisi, üriner sistem ultrasonografisi ve non-kontrast abdomino-pelvik bilgisayarlı tomografi ile mesane taşı tanısı konuldu. Mesaneyi tama yakın dolduran 11x6.5x10 cm ebatlarındaki dev mesane taşına sistolitotomi uygulandı. Böbrek fonksiyon bozukluğuna sebep olan dev mesane taşı olgunun literatür bilgileri ışığında sunulması amaçlandı.

Anahtar Kelimeler: Mesane taşı, Renal disfonksiyon

Introduction

Bladder stones are responsible for 5% of all urinary system stones [1]. They are frequently seen in elderly men and develop secondary to infravesical obstructions, such as prostatic hyperplasia and neurogenic bladder. Among the possible predisposing factors for bladder stones are infections, foreign substances, bladder diverticula, anti-incontinence surgery for women, and, rarely, upper urinary tract stones [2, 3]. In current urological practice, giant bladder stones weighing over 100 g are rarely seen [4]. Here, we present a case of renal dysfunction secondary to a giant bladder stone.

Case Report

A 56-year-old patient complaining of nocturia, dysuria and mild suprapubic pain was referred to our clinic for a consult. His urinalysis revealed abundant white blood cells (WBC) and 6-7 red blood cells (RBC). In the patient's urine culture, a growth of > 100.000 colony-forming units (CFU) of *Escherichia coli* was noted. His preoperative blood urea and creatinine values were 50 mg/dl and 1.6 mg/dl, respectively. Upon

kidney-ureter-bladder radiography (KUB), an intravesical opacity consistent with a bladder stone measuring nearly 10 cm was detected (Figure 1). Upon urinary system ultrasound (US), a hyperechoic image of a nearly 10 cm stone almost completely filling the intravesical cavity was observed. No symptoms indicative of hydronephrosis or parenchymal diseases of the upper urinary system were detected. His medical and family histories were unremarkable and contained no past history of operation or drug use. The patient had previously received antibiotherapy in compliance with his urine culture results; subsequently, cystoscopy had been performed. Upon cystoscopic examination, the urethra and bladder were found to be intact, and the lateral lobes of the prostate did not cause any degree of obstruction. Then, a cystolithotomy was performed, and the stone was extracted as one complete piece. The stone had dimensions of 11x6.5x10 cm and weighed 402 g (Figure 2). An analysis of the stone determined that it was composed of calcium oxalate. Postoperative follow-up visits revealed a complete resolution of the patient's complaints at the first post-procedural month, at which time the results of his urinalysis, KUB, and urinary US examinations were all within normal limits, and his

Received: February 25, 2013 / **Accepted:** April 18, 2013

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doi:10.5152/eajm.2013.41





Figure 1. Giant pelvic opacities seen in KUB.



Figure 2. Macroscopic view of the giant bladder stone.

serum creatinine level was 1.2 mg/dL.

Discussion

Bladder stones are seen more frequently in men than women, and they rarely develop spontaneously. The formation of bladder stones generally requires the presence of predisposing factors, such as obstructions or infections. Risk factors for the development of bladder stones consist of bladder outlet obstruction, neurogenic bladder, chronic bacteriuria, presence of intravesical foreign substances, bladder diverticula and,

rarely, upper urinary tract stones [1, 2]. The diagnosis of a bladder stone is generally made during the evaluation of obstructive and irritating voiding symptoms, which are often confused with symptoms of prostatism. Recurrent urinary system infections are prevalent and constitute significant risk factors for bladder stones. Relatively large stones can lead to dysuria and even acute urinary retention [2, 3]. Patients may present with dysuria, macroscopic haematuria and suprapubic pain. In our case, recurrent urinary system infections and irritation were the most prominent side effects.

Most bladder stones are composed of struvite calculi. However, calcium oxalate and uric acid stones are also prevalent. Any observation of an intravesical calcium oxalate or cystine stone also indicates the presence of a probable renal stone [3]. In our case, only a calcium oxalate stone was detected, without any upper urinary tract stone. As no sign of bladder outlet obstruction was detected, we believe that a renal or ureteral stone that had passed into the intravesical cavity might have caused the development of a giant bladder stone. In such cases, only one stone is usually observed inside the bladder, while multiple bladder stones can be detected in patients with urinary retention [5].

In contrast to the relatively high number of case reports of giant bladder stones, a limited number of cases of giant bladder stones causing renal dysfunction have been cited in the literature [6-9]. Generally, bladder stones are mobile in the intravesical cavity. Therefore, they do not interfere with urine flow and rarely lead to the development of renal failure secondary to bladder outlet obstruction. However, if left untreated, relatively larger stones become impacted in the bladder neck and exert mechanical compression on the ureteral orifices, leading to the emergence of infravesical obstructive uropathy [9].

Cystolithotomy, endoscopic or percutaneous cystolithotripsy, and extracorporeal shock wave lithotripsy (ESWL) are options that may be used in the management of bladder stones [10]. We performed an open cystolithotomy due to the huge size of the bladder stone. Despite the lack of hydronephrosis in our patient at presentation, he experienced symptoms of renal dysfunction. Our treatment was able to lower the higher baseline urea and creatinine values to normal levels. We attributed the development of baseline renal dysfunction to his extremely low oral fluid intake, which had resulted from his symptoms and eventually led to pre-renal kidney failure.

In conclusion, giant bladder stones weighing more than 100 g are rarely seen in our urological practice. Among patients presenting with recurrent complaints of urinary tract infection and prostatism, the possibility of bladder stones, which can induce renal dysfunction without the development of hydronephrosis, should not be forgotten.

Conflict of interest statement: The authors declare that they have no conflict of interest to the publication of this article.

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