Urolithiasis Associated with Bilateral Pelvic Diverticula: A Case Report

Gholam-Ali Hamedbarghi MD*, Mohammad-Hossein Daghighi MD*

We present a case of renal stone associated with bilateral pelvic diverticula. The initial diagnosis by ultrasonography and plain abdomen radiography (KUB) was urolithiasis with a 15-mm calculus in the right renal pelvis. The patient was referred for extracorporeal shock wave lithotripsy, but no stone fragments were yielded. So, further evaluations were performed by using repeated ultrasonography, intravenous urography, and computerized tomography, which revealed the presence of diverticula in both right and left renal pelvises with stone fragments within the right sided diverticulum.

We concluded that intravenous urography and contrast-enhanced computerized tomography are essential for confirmation of diagnosis when ultrasonographic findings suggest the presence of renal cystic lesions, or when stone fragments are not yielded after extracorporeal shock wave lithotripsy.

Keywords: CT scan • diverticulum • intravenous urography (IVU) • renal calculus

Introduction

Caliceal (or pyelocaliceal) diverticula are cystic, urine containing intrarenal cavities of an embryonic etiology lined with transitional cell epithelium that communicate with the collecting system through a narrow fornical channel. It is a rare anatomic anomaly with an incidence of 0.21% to 0.6% based on intravenous urography (IVU) reviews.1-4 Although there are numerous reports about various interventions, management techniques, treatments, complications, and imaging findings in patients with caliceal diverticulum, there are few reports on renal pelvic diverticula specially those complicated by urolithiasis.5-10

Herein, we present a case of bilateral caliceal diverticula complicated by urolithiasis. To the best of our knowledge, few cases of urolithiasis within pyelocaliceal diverticula have been reported.1-11

Case Report

A 41-year-old man with mild and intermittent right flank pain and normal urine analysis, underwent ultrasonography eventually, which revealed the presence of a 15-mm stone in the right kidney and a simple cyst on the left side (Figure 1). The patient was recommended to perform a plain abdomen radiography (kidney, ureter, bladder) (KUB), which confirmed the urolithiasis. He was then referred to perform extracorporal shock wave lithotripsy (ESWL), but no stone fragments were passed in the urine after the procedure (Figure 2). The patient did not follow the treatments for one year. Then, he presented again with renal colic and the second KUB revealed some fine stone fragments in middle portion of the right kidney. Stone basketing was recommended by urologists but the patient refused it.

One year later, the patient revisited by radiologist only for follow-up of his kidney stone situation; in this period, he was asymptomatic. Repeated ultrasonography, IVU, and computerized tomography (CT) scan with and without contrast medium were done because of suspected urinary system anomalies. At this time, all of imaging modalities confirmed the presence of pelvic...
diverticula in both kidneys with urolithiasis within the right one (Figures 3 and 4). Then, the patient was referred to the urologists for further management, but the patient did not accept the recommended invasive management and he was only followed up with sonography every 6 months.

Discussion

Pyelocaliceal diverticulum is a rare disorder in which a urine-filled cavity lined with transitional epithelium is connected to the renal calyx or pelvis by a narrow or stenotic isthmus.\(^2,\)\(^11,\)\(^12\) It may be associated with stone formation and infections because of urinary stasis.\(^3,\)\(^6\) The diverticular lining is nonsecretory but calyx contains urine from passive filling via the adjacent collecting system.\(^4,\)\(^13\) Most patients are asymptomatic and the pathologic features are often discovered incident-
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Figure 4. IVU obtained one year after ESWL shows renal diverticulum filled with contrast medium in the right kidney and compression effect on the lower main calyx in the left kidney.

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We concluded that IVU and contrast-enhanced CT scan are essential for confirmation of diagnosis when ultrasonographic findings suggest the presence of renal cystic lesions, or when stone fragments are not yielded after ESWL.15

Initial noninvasive management with the next more specific diagnostic modalities (IVU) help to determine the definitive diagnosis of calyceal diverticula.15 However, a variety of therapeutic modalities such as ESWL, percutaneous endoscopy, and laparoscopy exist now. Since percutaneous extraction and diverticulum fulguration associated with canal dilation provide good immediate success rate and low morbidity, it is now accepted as the standard treatment.25,26

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Damavand peak (5,671 meters high). Alborz mountain chain, North-East of Tehran, Iran.