Giant bladder calculus in a male patient with chronic alcoholic liver disease

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ABSTRACT

Introduction: Giant bladder calculus in recent urologic practice is uncommon. Bladder calculi have been known to grow to significant sizes in delayed presentations. They may be associated with chronic liver disease. Literature search revealed few studies suggesting a link between chronic liver disease and urolithiasis. Case Report: A 23-year-old man presented to us with 17 year history of frequency, urgency, weak stream, feeling of incomplete emptying of the bladder, strangury, total painless hematuria and yellowness of the eyes of same duration. He also had a history of ingestion of alcohol for the past 10 years. On examination, he was pale and icteric. Abdominal examination revealed hepatomegaly and a hard non-tender suprapubic mass. Other systems were essentially normal. Urinalysis revealed triple phosphate crystals but his urine culture was negative. He had deranged renal and liver function tests. Serum calcium was low, 4.8 mg/dL, phosphorus was 13.93 mg/dL. He was nonreactive to Hepatitis B and C. Ultrasonography revealed an enlarged liver measuring 18 cm, echogenic foci with posterior acoustic shadowing in both kidneys, dilatation of both pelvicalyceal systems with a solid echogenic mass occupying the whole of the bladder lumen. Plain abdominal X-ray revealed a huge radio opaque mass measuring 10 cm x 6 cm, occupying the pelvic region and radio opaque masses measuring 2 cm x 2 cm in both kidneys. A diagnosis of urolithiasis (huge bladder calculus and nephrolithiasis) with chronic alcoholic liver disease was made. He had open cystolithotomy under spinal anaesthesia. No obstructive lesion was seen. The calculus measured 12 cm x 9 cm x 6 cm, weighed 1.5 kg and was adherent to the bladder mucosa. The calculus was removed and he was placed on continuous bladder drainage for 10 days, following which the catheter was removed. He has been on regular follow up in the outpatient clinic since discharge. He has no lower urinary tract symptoms but jaundice is still present. Conclusion: Giant bladder calculus is rare and should be considered in patients with long standing lower urinary tract symptoms and strangury. There may be an association between chronic liver disease and bladder calculus.

Keywords: Chronic alcoholic liver disease, Cystolithotomy, Giant bladder calculus, Nephrolithiasis

INTRODUCTION

Bladder stones that weigh more than 100g are termed giant bladder calculi [1]. Giant bladder calculi are uncommon in present day urologic practice [1]. Bladder calculi account for 5% of all urinary calculi [2, 3]. In
Nigeria bladder calculi account for 44.4% of all urinary stones [4]. Almost all bladder stones occur in men (95%), though they occasionally occur in women [5]. They usually present in the setting of bladder outlet obstruction and intravesical foreign bodies. These predispose to urinary stasis and infection both of which are predisposing factors for stone formation. Diet and the amount of fluid intake are also important factors [6].

Most bladder stones are secondary stones. Having originated from the kidneys, they can grow to very large proportions in the bladder. Our patient had both renal stones and a huge bladder stone. Recently, nephrolithiasis is considered a systemic disorder associated with chronic kidney disease, bone disease, coronary artery disease, hypertension, type 2 diabetes mellitus, metabolic syndrome, and chronic liver disease such as non-alcoholic fatty liver disease (NAFLD) [7], hepatitis C or alcoholic liver disease [8].

Our index patient had chronic liver disease and a huge bladder stone which may have originated from the kidney.

Patient typically presents with voiding or storage lower urinary tract symptoms. Rarely there may be asymptomatic presentation.

Options of treatment include open cystolithotomy, transurethral cystolithotripsy, shock wave lithotripsy or percutaneous cystolithotripsy [3, 9, 10].

The association between urolithiasis and chronic liver disease has received little attention. We therefore present this case so as to draw attention to this rare clinical condition and hopefully raise awareness of this additional morbidity that can attend chronic liver disease.

CASE REPORT

A 23-year-old man presented with 17 years history of frequency, urgency, weak stream, feeling of incomplete emptying of urine, strangury, total painless haematuria and jaundice of same duration. He took 600mls of 5.5% alcohol by volume daily for the past 10 years.

On examination, he was pale, icteric with bilateral gynecomastia. A non-tender hard mass was palpable in the suprapubic region. The liver was enlarged 6cm below the right coastal margin. Digital rectal examination revealed an impalpable prostate gland and no rectal masses.

Urinalysis yielded numerous WBCs and RBCs /HP and triple phosphate crystals. Urine culture didn’t yield any organism. Plain abdominal X-ray showed a huge radiopaque mass occupying the pelvic region (Figure 1) and multiple radiopaque masses in both kidneys. Abdominopelvic ultrasound scan revealed an ovoid intraluminal mass attached to the base of the bladder and completely occluding its lumen. The mass appeared lamellated, the study also showed bilateral dilated pelvicalyceal systems. Serum calcium was low; 4.8 mg/dL, phosphorus was 13.93 mg/dL. Liver function test was deranged. Total bilirubin was 64.8U/L. conjugated bilirubin was 56.4U/L. Aspartate Transaminase was 32U/L Akaline phospatase was normal, Urea and creatinine were elevated, 71.4 mg/dL and 3 mg/dL respectively.

Surgical management

He had open cystolithotomy under spinal anaesthesia. A yellowish–white stone with rough surface was delivered (Figure 2). The urinary bladder was inspected for stone Figure 1: Plain abdominal X-ray of the patient showing huge bladder calculus and multiple renal stones.

Figure 2: Showing the giant bladder calculus.
remnants and there was no bladder outlet obstruction noted.

The bladder was washed with normal saline. A size 18F Foley catheter was inserted through the urethra with no resistance. Bladder was closed in 2 layers using 2-0 vicryl sutures. Urethral catheter was left in situ for continuous bladder drainage. The rectus sheath was approximated using nylon 1 sutures.

The stone weighed 1.5kg and measured 12cm x 9cm x 6cm. The patient was discharged home on the 12th postoperative day. There was no postoperative complication.

He is currently on follow up at the surgical outpatient clinic. He has no lower urinary tract symptoms but jaundice is still present.

Serial abdominopelvic ultrasound scans show that the renal stones are still present but the patient is asymptomatic and hydronephrosis is resolving. He is being worked up for open nephrolithotomy or referral to a centre with facilities for percutaneous nephrolithotomy. He was counseled on behavioral modification i.e. discontinuation of alcohol and was placed on antihistamine. He is regular with his medical outpatient clinic appointments.

DISCUSSION

Giant bladder calculi still remain uncommon in present day urologic practice [1]. Fewer than thirty giant vesical stones have been reported in English Literature [11]. It is commoner in males due to the high prevalence of bladder outlet obstruction [6]. A vesical stone of similar dimension has been reported in Nigeria [12].

Most cases of bladder calculi are composed of triple phosphate, calcium carbonate, and calcium oxalate [13]. The index patient had triple phosphate crystals from urinalysis. We couldn’t do a stone analysis because of financial constraints.

Bladder calculi occur following bladder outlet obstruction, neurogenic voiding dysfunction, urinary tract infection or foreign body. It is typically seen in males with prostate disease, or previous prostate surgery and women who undergo anti-incontinence surgery. Spinal cord injured patients on indwelling catheter are at high risk of developing bladder calculi [6]. Usually bladder calculi arise from the upper tract and then grow in the bladder. This is likely to be the case in our index patient. The patient may have had a migrating stone which was formed in the upper tract due to the underlying chronic liver disease and got trapped in the bladder because of the reduced dimensions of the bladder neck in children and progressively increased in size.

Several aetiologic factors may be responsible for the bladder stone in this patient. It may be an endemic stone as the index patient did not have any of the typical aetiologic factors such as bladder outlet obstruction. This finding agrees with a report by Rahman et al. from University of Ilorin Teaching Hospital and other series where they found no aetiological factor for the bladder calculus [11, 14, 15]. Such endemic calculi occur without any anatomic abnormality. They are often due to dietary deficiencies and socioeconomic factors. Our index patient came from a poor background and has been consuming nutritionally-deficient diets consisting mainly of cereals, which is acidogenic and low in animal protein and phosphorus [16]. Another factor which may be responsible for the bladder calculus in this patient is the chronic liver disease.

Recently nephrolithiasis has been postulated to be a systemic disease that may be associated with chronic kidney disease and chronic liver disease [7, 8, 17, 18].

The association between urolithiasis especially renal stone and chronic liver disease has been made by a few authors. Porter et al. [8] in his review of 198 chronic liver disease patients found that the risk of nephrolithiasis was two times higher in chronic liver disease patients compared to controls. In his cross sectional case-control study he found a statistically significant difference in prevalence of nephrolithiasis between the chronic liver disease group compared to controls; 26% Vs 14% respectively. The most common chronic liver disease in this study was hepatitis C (30%) followed closely by alcoholic cirrhosis (21.2%). Our index patient had chronic alcoholic liver disease. Other workers [7, 17, 18] have also found an association between chronic liver disease and nephrolithiasis but these studies were limited to only patients with non alcoholic fatty liver disease (NAFLD).

The exact mechanism of urolithiasis in chronic liver disease is not known. Porter et al [8] noted that chronic liver disease and nephrolithiasis share a common pathogenesis (e.g. obesity) or exacerbating factors (e.g., dehydration). In NAFLD, It is suggested that lipid peroxidation, oxidative stress and changes in the urinary constituents lead to an increased risk of both uric and calcium oxalate stone formations [7, 17, 18].

A further mechanism may be in relation to low urinary albumin levels. Albumin is an important urinary constituent that has been demonstrated to inhibit calcium oxalate crystal nucleation [19]. Hepatic albumin synthesis is impaired in chronic liver disease with subsequent decrease in urinary albumin levels. The decreased urinary albumin levels in chronic liver disease permits easy nucleation of calcium oxalate stones. The index case had calcium oxalate crystals in urinalysis.

It is also possible that our index patient had two separate disease entities, chronic liver disease being an incidental finding with the bladder stone. Recurrent haematuria, urinary tract infection, and urine retention are frequent presentation in these patients [15].

Diagnosis is preferably made by plain abdominal X-ray but abdominopelvic ultrasound scan can also be used.

Various treatment modalities exist for bladder calculi, such as open vesicolithotomy, extracorporeal fragmentation and endoscopic crushing of the stone [3,
9, 10]. The choice of procedure is influenced by the age and physical condition of the patient, size and hardness of the calculus and the presence or absence of coexisting pathologic lesion involving the urethra, the bladder neck, or the bladder itself [11]. Available facility and skill of the surgeon are also factors influencing the choice of treatment. Surgery has remained the treatment of choice for managing giant vesical calculus. Most literature reports recommend open suprapubic vesicolithotomy as treatment of choice [9]. Our index patient was treated by vesicolithotomy with satisfactory outcome.

CONCLUSION

This report draws our attention to a possible association between urolithiasis, bladder calculus and chronic liver disease. There should be a high index of suspicion for urolithiasis in patients with chronic liver disease. Also further research is needed to unravel the connection between chronic liver disease and urolithiasis.

REFERENCES


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Author Contributions

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Written informed consent was obtained from the patient for publication of this case report.

Conflict of Interest

Authors declare no conflict of interest.

Data Availability

All relevant data are within the paper and its Supporting Information files.

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