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GIANT URINARY BLADDER CALCULUS: CASE REPORT

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SUMMARY

A vertical calculus weighing more than 100 g is categorised as a giant urinary bladder stone. Giant urinary bladder stones are very rare and very few cases have been reported in English literature and only one case from Africa. This is a case report of a patient with a giant urinary bladder calculus presenting as a rectal tumour. The stone was removed by open cystolithotomy. Possible etiological factors and imaging modalities are discussed.

INTRODUCTION

A giant vesical calculus weighing more than 100g is a rare finding in the modern surgical practice. Fewer than 30 reports are available in the English literature with a weight of the stone of more than 100g. Only one case has been reported in Africa. The largest vesical calculus reported in the literature is of 6294 gram. While the exact causes of the formation of bladder stones are not completely understood, bladder stones usually occur because of urinary tract infection (UTI), obstruction of the urinary tract, enlargement of the prostate gland in men, or the presence of foreign bodies in the urinary tract. Diet and the amount of fluid intake also appear to be important factors in the development of bladder stones. These are more common in men and the majority of these are composed of triple phosphate. Available treatment options for vesical calculi include open surgical removal, extracorporeal fragmentation and endoscopic crushing followed by extraction of pieces. Recently, endosurgical mechanical cystolithotripsy followed by percutaneous extraction has been evolved for small or moderate-sized calculi. We report a rare case of a vesical calculus weighing 260 g which presented as a rectal tumour.

CASE REPORT

A 52 year old male presented with complaints of colicky lower abdominal pain, constipation, lower abdominal swelling, pain on passing urine and

overflow incontinence for eight (8) months. There was a history of passing blood stained stool on different occasions for which he was given medications for amoeba and enteric fever at Vihiga County Hospital.

On examination, a non-tender, firm lump was palpable in the suprapubic region. Per rectal examination revealed a hard and immobile solid mass in the anterior rectal wall. It measured about 8 cm x 7cm x7cm in size. Blood pressure was 132/96mmHg, temperature was 36.5C, respiratory rate was 19 and pulse rate was increased at 104 b/m.

Urethral catheterisation was tried but failed. A condom catheter was used instead. Routine urine examination revealed increased pus cells. Urine Culture was not done. Creatinine was elevated at 251.7 ulmol/L (80-115), while potassium and sodium levels were normal. The haemoglobin was low at 6.1g/dl and the patient was transfused one unit of packed red blood cells. Provisional diagnosis of a rectal tumour and chronic cystitis was made and patient started on intravenous Ceftriaxone and metronidazole. Abdominal-pelvic CT scan done for evaluation and staging of the rectal tumour revealed bilateral severe hydronephrosis, bilateral hydroureter and a large dense urinary bladder calculus (Figures 1, 2). There was minimal urine due to incontinence. The rectum was collapsed due to external compression by the calculus while the colon showed faecal loading and gaseous distension. There was no pathological colonic or rectal mass. Suprapubic extraperitoneal cystolithotomy was done under spinal anaesthesia and a yellowish brown hard stone weighing 260g,

with fine spicules on its surface, was removed (Figure 3). There was no bladder diverticulum.

The patient was catheterised and the bladder closed in two layers. The catheter was removed on the fourteenth day and the patient passed urine comfortably with good stream. Biochemical examination showed a calcium oxalate stone. Post operative pelvic ultrasound scan revealed a marginally enlarged prostate gland with a volume of 30cm³.

Figure 1

CT Scan image of a large radio-dense urinary bladder calculus (arrow)



Figure 2

CT Scan: bilateral severe hydronephrosis

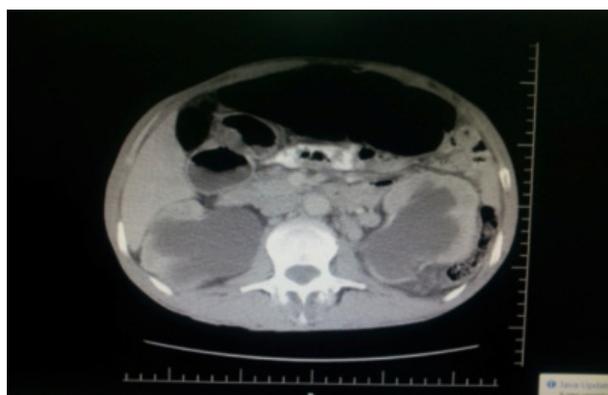


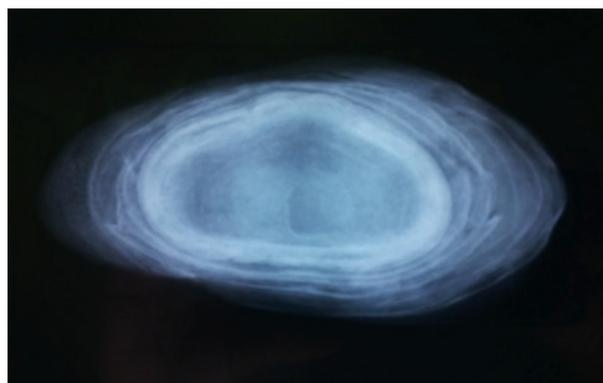
Figure 3

Specimen of large urinary stone weighing 260g



Figure 4

Radiograph of the stone showing characteristic layering



DISCUSSION

Urinary bladder calculi are a rare clinical entity (accounting for 5% of all urinary calculi)(8). Giant vesical calculi weighing more than 100g are even rarer. This is supported by the fact that only about 30 cases of urinary bladder calculi having more than 100g of weight have been reported in the English literature. The largest one ever reported in the history is of 6294g by Arthure et al (1,2,3).

Bladder calculi most often occur in conditions of chronic urinary retention, bladder outlet obstruction or urinary tract infection. These conditions are commonly precipitated by development of a bladder diverticulum 5, benign prostatic hypertrophy in males, genital prolapse in females 3 or urethral stricture. Prolonged catheterisation, neurogenic bladder, foreign body and trauma are other rarer causes. There are case reports of formation of bladder stones around a foreign body, sutures, catheters or other objects introduced into the bladder which act as a nidus for stone formation (4-8). It is thought that a giant vesical calculus develops from the nidus of the infected material or from a single ureteric calculus with progressive layer-wise deposition of calcified matrix. Dietary risk factors for stone disease were shown different by age and sex. In particular in younger women dietary calcium, phytate and fluid intake were associated with a reduced risk of stone formation whereas animal protein and sucrose increased the risk of stone incidence. In older adults there was no association between dietary calcium and stone formation whereas magnesium, potassium and fluid intakes decreased and total vitamin C intake increased the risk of symptomatic nephrolithiasis. Animal protein was associated with risk only in men with a body mass index < 25 kg/m² (8).

Most of the vesical calculi are composed of triple phosphate, calcium carbonate, and calcium oxalate. Presentation of patients with giant vesical calculus is commonly with recurrent urinary tract infection, hematuria, inability to pass urine and azotaemia (8).

Besides the above complaints, our patient presented primarily with Complaints of lower abdominal pain, difficulty in passing stool, constipation and abdominal distension. The foregoing led to a presumptive diagnosis of rectal tumour.

Chronic obstruction to urine flow due to a vesical calculus usually leads to infection, and, rarely, bladder perforation, hydronephrosis, and acute renal failure. The majority of bladder calculi are radiopaque and detected by plain radiograph. Other investigations which can show bladder calculi are ultrasound, CT-scan, magnetic resonance imaging and intravenous urogram but non-contrast-enhanced CT is the investigation of choice as it has remarkable sensitivity in detecting urinary tract stones, including uric acid stones. It can reveal the concentric nature of stones (2). Micturating cystourethrograms (MCU) may be used if complications such as vesicoureteric reflux or bladder perforation are suspected (9). Surgical treatment of bladder stones has evolved over years from 'blind' insertion of crushing forceps into the bladder to open surgical removal and extracorporeal fragmentation or lithotripsy. Open surgery is the recommended modality of treatment for large stones. In small or moderate stones, endoscopic procedures such as optical mechanical cystolithotripsy have an added advantage as it can be combined with corrective procedure for the cause of bladder outlet obstruction. Zhaowu *et al* (1988) have recommended that electrohydraulic shockwave lithotripsy (EHSWL) preferably to be avoided in large, hard bladder stones and divercular stone or when a stone is stuck to the mucosa (4,5,6). This case was managed by Suprapubic

extraperitoneal cystolithotomy done under spinal anaesthesia and a yellowish brown hard stone weighing 260g, extracted.

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