Endourology

Giant bladder stone of 152g in an 11-year child with recurrent urinary tract infections: A rare case report and review of the literature

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ABSTRACT

In the literature, there are few case reports regarding pediatric giant bladder stones, although they are more common in children living in low-income countries due to low socioeconomic status, a diet with low protein, animal milk (goat milk), and dehydration. Herein, we report a child with a giant bladder stone of 72 × 42 × 44 mm in dimension and 152 gm in weight successfully managed with open cystolithotomy. Early diagnosis and management of bladder stones in the pediatric age group are crucial to prevent subsequent complications including recurrent urinary tract infections, excessive antimicrobial use and dissemination of antimicrobial resistance, and consequent renal insufficiency.

Introduction

Bladder stones are rare in developed countries particularly in the pediatric age group though more common in middle and low-income countries due to nutritional obstacles, water sanitations, and warm climates. Bladder stones constitute 5% of urinary stones.1 Bladder outlet obstruction, neurogenic bladder, recurrent urinary tract infections (UTI), and foreign bodies are the leading risk factors for bladder stones.2

In recent decades the management of bladder stones evolved from open surgery to minimally invasive modalities (transurethral cystolithotripsy, shock wave lithotripsy, and percutaneous cystolithotripsy), although open cystolithotomy remains a resort for the management of giant stones.3

There are few case reports regarding giant bladder stones; the literature is scarce for the pathophysiology and management of this rare aspect of bladder stones.

Herein, we report an 11-year-old male with a 7 cm bladder stone with recurrent urinary tract infection who presented with a complaint of irritative voiding symptoms and suprapubic pain successfully managed with open cystolithotomy.

Case report

An eleventh-year-old male presented with complaints of irritative voiding symptoms, suprapubic pain, and recurrent UTI in our clinic. Physical examination was unremarkable except for suprapubic tenderness. Laboratory investigation including renal function tests and hematological parameters were within normal limits. The urinalysis revealed hematuria (six red blood cells per high power field) and pyuria (30 white blood cells). The kidney, ureter, and bladder radiography (KUB X-ray) showed a giant stone in the bladder about 70 × 43 mm in diameter (Fig. 1).

Abdominal ultrasound confirmed the monstrous bladder stone about 7 cm in diameter, and the other organs were unremarkable (no hydronephrosis). Open cystolithotomy was performed successfully after discussion with the family. Fig. 2 shows the giant extracted stone.

The dimensions of the extracted stone were 72 × 42 × 44 mm, and with a weight of 152 g. Unfortunately, a stone analysis was not available in our settings. The drain was removed on postoperative day 2, and the patient was discharged home with a foley catheter in situ. The continuous drainage of the foley catheter was obstructed, and the patient returned to the hospital on a postoperative day 7 with a suprapubic fistula. After culture and antimicrobial adjustment with continuous bladder drainage, the suprapubic fistula resolved spontaneously.

Discussion

A giant bladder stone is a sub-entity that is extremely rare, and the pathogenesis and management are scarce in the literature due to their rarity. In the literature, there are few case reports regarding pediatric giant bladder stones. Palirruni MA et al. reported a giant bladder stone in a seven-year-old girl formed around a sewing-needle.4 Schwentner C

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and colleagues reported a two-year-old girl with a vesical giant cystine stone with a small atrophic left kidney. In the current case, we report a rare case of a giant bladder stone with $72 \times 42 \times 44$ mm in dimension and 152 gm in weight with recurrent UTI successfully managed with open cystolithotomy.

In our young pediatric case, the underlying cause probably was recurrent UTI from urea-splitting microorganisms. The patient received multiple episodes of antibiotics from primary health physicians with recurrent symptoms following completing medications. A bladder stone is more common in children living in developing countries due to low socioeconomic status, a diet with low protein and animal milk especially goat milk, dehydration, and improper water sanitation.

Primary, secondary, and migrant are the three primary categories of bladder stones. A primary idiopathic bladder stone is the most common in pediatric populations.

Minimally invasive modalities have become popular in the last decades for the management of bladder stones to decrease morbidity associated with open cystolithotomy although open cystolithotomy remains a good option for giant vesical stones as the presenting case underwent a successful open cystolithotomy.

**Conclusion**

Adequate daily fluid intake, prevention of dehydration, and nutritional support are the essential strategies to minimize the rising incidence of bladder stones in children living in endemic areas. Early diagnosis and management of bladder stones in the pediatric age group are crucial to prevent subsequent recurrent urinary tract infections, excessive antimicrobial use, dissemination of antimicrobial resistance, and consequent renal insufficiency.

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None.

**Consent for publication**

Informed consent was taken from the parents.

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