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CASE REPORT

Urosepsis Due to Neglected Bladder Stone in Child: A Case Report

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ABSTRACT

Bladder stones in children are more likely to be exposed to society in developing countries than in developed countries due to malnutrition and urinary tract infections. These conditions if not treated immediately can cause urosepsis even to death. We report a case in a 13-year-old boy with neglected bladder stones. There were multiple stone, with the largest 7 cm in diameter. This patient had cystoscopy and vesicolithotomy for therapy with acute kidney injury, urosepsis, marasmus, uremic encephalopathy, hypoalbuminaemia and anemia.

Key Words: *Bladder stone, Children, Urosepsis*

INTRODUCTION

Bladder stones in children are still prevalent, males typically having more bladder stones than females. Despite constituting only approximately 5% of all urinary tract stones, bladder stones (BSs) are responsible for 14% of hospital admissions and 8% of urolithiasis-related deaths in developing countries.¹ Malnutrition, dehydration, and dietary imbalance support lithogenesis in children. In addition, it can be associated with urinary tract infections.² Common symptoms of bladder stones in children are vague abdominal pain, hypogastric discomfort, interruption of urinary stream, pulling, and rubbing of the penis. Some children present with dysuria, frequency, and dribbling or retention of urine. Open surgery was considered the gold standard treatment with excellent success rates. Complications occur in some cases with malnourished children.³

CASE REPORT

A 13-year-old male patient with malnutrition had cystoscopy and vesicolithotomy for bladder stone therapy, two days ago. The patient was weak, conscious, and complained of abdominal pain

from the surgery. A few hours later, the patient had focal seizures, three times with, fever and vomiting. After that, the patient had decreased consciousness. Vital signs were within normal limits but on physical examination the patient had poor nutritional status (Waterloo criteria 44.4%). The patient was limp, semi-coma those pale in the head and neck, with chest retractions, pain in post-operative wounds, brown residue in the abdomen, and muscle atrophy.

Laboratory tests were obtained. Hb 8.3 g/L, WBC $29.4 \times 10^9/L$, platelets count $279 \times 10^9/L$, and 24% HCT, creatinine 3 mg/dL, BUN 29 mg/dL, Urea 277 mg/dL, uric acid 13 mg/dL, albumin 2.7 g/L and electrolytes within normal limits. Urinalysis showed cloudy yellow urine, increased pH, proteinuria, leukocyturia, and hematuria. A plain abdominal radiograph showed vesicolithiasis (fig 1) and ultrasound examination showed parenchymal kidney disease with bilateral severe hydronephrosis and vesicolithiasis (fig 2). The patient was diagnosed with multiple bladder stones post-delete vesicolithotomy cystoscopy with Acute Kidney Injury, urosepsis, marasmus, uremic encephalopathy, hypoalbuminemia, and anemia.



Fig 1: Plain abdominal radiograph view vesiculolithiasis



Fig 2: Ultrasonography view parenchymal kidney disease bilateral hydronephrosis and Vesiculolithiasis

The stones found after vesicolithotomy had a size of 7 cm (fig 3). He experience decreased consciousness and seizures two days after surgery due to severe sepsis. He received 5%, Dextrose, ½ N. saline, 1400 cc, Metamizole i.v 300 mg four times a day, Ranitidine i.v 25 mg twice a day, Ceftriaxone i.v 800 mg twice a day, Ondansentron i.v 2 mg three times a day, Amino acid i.v 100 cc once a day, Paracetamol 200 mg (if fever), Phenytoin i.v 50 mg, albumin 20% 100 cc. On the following day, the patient was given the

same therapy also the administration of 200 ccs PRC transfusion. The patient was unconscious for two days, got worse and finally, passed away after 7 days post vesicolithotomy. This patient had suffered from urolithiasis for several years but refused surgery because of poor economic conditions.



Fig 3: Stone bladder, length 7 cm. Vesicolithotomy by urological surgeons

DISCUSSION

Bladder stones occur mainly in children who are often dehydrated, infected, and have low protein intake. Incidence in children based on available data is estimated to be between 1:10,000 to 1:7,000. The ratio of males to females is 15:1 with the highest incidence in children aged 2-5 years. Worldwide the prevalence of urinary tract stones varies, ranging from 7% to 13% in North America, 5%-9% in Europe, and 1%-5% in Asia.⁴ In addition to differences in prevalence, the stone composition also varies and has changed in recent decades. These differences are influenced by non-modifiable factors such as age, gender, climate, race, genetics, and modifiable factors, namely diet and fluid intake, occupation and education level, socioeconomic status, and metabolic diseases.^{5,6} Diagnosis is often delayed because new complaints arise when the volume of stones increases and causes obstruction, leading to complications and infections.²

Kidney stones are commoner in the younger ages in developing countries and the incidence of stone disease are equally high in both genders in both developed and developing countries. Composition wise, uric acid stones are commoner than in

developing countries and there is a progressive increase in calcium oxalate stones and calcium phosphate in developing countries.⁷

Certain types of infections may cause the development of urinary stones. Unfortunately, the infection that occurred in this patient could not be identified. The most common bacteria that cause urinary tract infections (UTIs) that can lead to urolithiasis is *Proteus mirabilis* (70%) because of its urease-producing profile. The stone is formed due to the alkalization of urine from the hydrolysis of urea which is catalyzed by the urease enzyme produced by this bacterium. The components of the stone formed are struvite ($MgNH_3PO_4$) or apatite ($CaPO_4$). This disease can develop into bacteremia and sepsis which have high mortality rates. Open surgery is the preferred treatment of choice for removing bladder stones (If the stones are >2.5 cm in diameter or too numerous), and surgical intervention through cystolithotomy can achieve satisfactory results.⁸⁻¹⁰

In this case, the bladder stone was 7 cm in diameter and open vesicolithotomy was chosen. The surgery went smoothly, but the patient experienced seizures and decreased consciousness post-surgery. The patient's worsened, passing away after seven days post condition vesicolithotomy. The cause of death was urosepsis with multiple organ dysfunction.

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REFERENCES

1. Donaldson JF, Ruhayel Y, Skolarikos A, MacLennan S, Yuan Y, Shepherd R, et al. Treatment of Bladder Stones in Adults and Children: A Systematic Review and Meta-analysis on Behalf of the European Association of Urology Urolithiasis Guideline Panel(Figure presented.). Vol. 76, European Urology. Elsevier B.V.; 2019. p. 352–67.
2. Chow K-S, Chou C-Y. Case Report A Boy with a Large Bladder Stone. Vol. 49, *Pediatr Neonatol*. 2008.
3. Lal B, Paryani J., Memon S-R. Childhood Bladder Stones-An Endemic Disease Of Developing Countries - PubMed. *J Ayub Med Coll Abbottabad*. 2015;27:17–21.
4. Sorokin I, Mamoulakis C, Miyazawa K, Rodgers A, Talati J, Lotan Y. Epidemiology of stone disease across the world. *World J Urol*. 2017;35:1301–20.
5. Rizvi SAH, Sultan S, Zafar MN, Ahmed B, Aba Umer S, Naqvi SAA. Paediatric urolithiasis in emerging economies. Vol. 36, *International Journal of Surgery*. Elsevier Ltd; 2016. p. 705–12.
6. Liu Y, Chen Y, Liao B, Luo D, Wang K, Li H, et al. Epidemiology of urolithiasis in Asia. *Asian J Urol*. 2018;5:205–14.
7. Alatab S, Pourmand G, El Howairis MEF, Buchholz N, Najafi I, Pourmand, Mohammad Reza Mashhadi R, et al. National Profiles Of Urinary Calculi: a Comparison Between Developing and Developed Worlds - PubMed. *Iran J Kidney Dis*. 2016;10:51–6.
8. Ozturk H, Dagistan E, Uyeturk U. A child with a large bladder stone: A case report. *Pediatr Urol Case Reports*. 2014;1:22–8.
9. Armbruster CE, Mobley HLT, Pearson MM. Pathogenesis of *Proteus mirabilis* Infection. *EcoSal Plus*. 2018;8.
10. Prywer J, Olszynski M. Bacterially Induced Formation of Infectious Urinary Stones: Recent Developments and Future Challenges. *Curr Med Chem*. 2017;24:292–311.