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Case Report

Case Report : Vesicolithotomy In 64 Year-Old Male With Giant Bladder Stone At Leona Hospital, Kupang, East Nusa Tenggara, Indonesia

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Abstract
Giant bladder stone is a rare case of urinary tract stones. These cases are strongly related to social economy status. The patient was a 64 year old male with bladder stone with the size of 10,5 cm x 7,5 cm. The patient presented to emergency department with pain on lower abdomen due to severe lower urinary tract symptoms. A hard mass was palpable in suprapubic area. Cystoscopy was performed, followed by vesicolithotomy. Conclusion : Giant bladder stone can be treated by vesicolithotomy preferably following cystoscopy procedure to eliminate the possibility of bladder mass.

Keywords *: giant bladder stones, open vesicolithotomy*

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Introduction

External genitalia in males are at high risk of injury in trauma because of their extracorporeal location, but scrotal trauma is a rare surgical emergency accounting for less than 1% of all traumatic injuries, largely because of its safe anatomical location and mobility. The injuries are predominantly more prevalent in 15–40 years of age group. However, 5% of trauma patients are less than 10 years old. In general, there are two broad domains to consider when evaluating scrotal trauma: blunt vs. penetrating injury. [1,2]

Bladder stones are solid calculi that are primarily found in the urinary bladder. While often calcified, they may also be composed of non-calcific material.[1] Stones can be categorized by etiology, chemical/mineral names, size and location. The most common stone type is calcium oxalate, and some Asian countries have a higher percentage of this chemical composition compared to other parts of the world. Stone composition is often associated with metabolic and/ or genetic abnormalities. [3]

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The incidence of bladder stone is higher in developing countries. The prevalence of bladder stones is higher in males, with a reported male : female ratio between 10:1 and 4:1.[2] The best treatment also depends on the circumstances of each individual case and is not uniform.[3]

Case Report

A 12 –year-old boy came to Bhayangkara Hospital's Emergency Room with pain at his genitalia. The injury was caused by cycling accident. Thee patient cycled in medium speed, hit a rock and fell in such way that the seat of his bicycle was detached and the frame of the bicycle seat penetrated his scrotum. During initial assessment, he was clinically stable with normal vital sign. There were no voiding complains, hematuria, abdominal pain or distention. On physical examination, there was an open wound, with the length of 6 cm on his right scrotum, exposing his funiculus spermaticus interna, revealing approximately 5 cm of his right testis. There was no hematoma found at the site of the laceration. There was no abnormality on his laboratory findings.

A 64-year-old-male, who worked as a farmer, brought in to emergency department of Leona hospitall with pain on lower abdomen caused by severe lower urinary tract symptoms. In the last few months, he suffered from urinary frequency, urgency, dysuria, and nocturia. It occurred several times over the last few years. He had history of recurrent UTIs. Patient's source of drinking water came from the river. The patient had the habit of consuming local alcohol products (white moke – traditional alcohol from East usa Tenggara) more than one glass per day. History of medication was denied. Patient had the same complaint in 2006 and was diagnosed with bladder stone through radiological finding in Bali, but the patient did not take any medication for the disease due to social economy condition.

On physixal examination, vital signs were within normal limits and normal body mass index (20,50 kg/m^2). In suprapubic area, a hard mass was palpable. Costo vertebral angle (CVA) knocking pain was found in both sides. There were no abnormalities in the external genitalia. Laboratory test showed white blood cell count were 23,5 x 10^3/uL Plain photo abdomen showed giant bladder stone at pelvic cavity (Figure 1). Urological ultrasound supported the diagnosis (Figure 2). Cystoscopy was performed prior to the surgery and no baldder mass was found. Therefore vesicolithotomy was carried out. Twelve cm suprapubic midline incision was performed. A single giant stone with 10,5 cm x 7,5 cm in size was collected from the urinary bladder. (Figure 3). The urinary bladder was closed by two layers water tight sutures using 3.0 plain catgut for the bladder muscularis mucose, and 3.0 vicryl for the bladder serosa. Twenty French

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Foley catheter was placed to allow wound healing of the bladder. The Foley catheter was preserved for 10 days. Uroflowmetry was performed 4 weeks after the surgery with normal result (Qmax = 23ml/s, PVR minimal, normal curve). All of lower urinary tract symptoms subsided. Patient was advised to have a healthy lifestyle as well as cleaner water source for consumption.

(**Figure 1.** Plain X-ray shows a radiopaque shadow, well defined, regular margins in the pelvic cavity)

(**Figure 2.** USG Lower abdomen shows bladder stone (4,14 C))

(**Figure 3.** 10,5 cm x 7,5 cm bladder stone)

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Discussion

Bladder stones are solid calculi that are primarily found in the urinary bladder. While often calcified, they may also be composed of non-calcific material.[6] The incidence of bladder stones in Western countries are relatively low as they tend to be found more often in developing countries due to dietary factors. The areas most affected are countries in the Middle East and North Africa as well as Thailand, Indonesia, and Myanmar.[1]

In Indonesia, urinary tract stones still occupy the most common cases among all urological cases. There are no definite data on the incidence and prevalence of urinary stone in Indonesia currently, but it is estimated to be high. Indonesia is included in the group of "World Stone Belt" countries, where it has a higher prevalence of urinary stone than other countries. In some countries in the world it ranges from 1-20%. Men are more common than women, namely 3:1 with the peak incidence occurring at the age of 40-50 years.[4,5]

The formation of bladder stones is thought to correlate with urinary flow disorders, metabolic disorders, urinary tract infections, dehydration, and idiopathic. There are several risk factors for stone formation, including intrinsic and extrinsic factors. Intrinsic factors include heredity (heredity), age (often found at 30-50 years old), and gender (three times as many male patients as female patients). Some of the extrinsic factors include geography, climate, temperature, water intake (lack of water intake and high levels of calcium, minerals in the water consumed), diet (diet with lots of purines, oxalate, calcium), and work (lack of activity or sedentary life).[4]

Bladder stones can be classified into primary and secondary causes based on the presence or absence of accompanying diseases. The primary definition in question is the formation of stones in the absence of anatomical, functional, and infectious factors that can cause stone formation. While the secondary understanding is the etiology of the underlying disease. Primary bladder stones most often occur in children. The etiology is still unclear, but it often occurs in low socioeconomic areas and eats foods that can cause metabolic disorders such as increased uric acid levels, decreased urine production, hypophosphatemia, and hyperammonuria. Secondary bladder stones are often associated with impaired bladder emptying which can be a predisposing factor for stone formation and retention. In men, this condition is associated with BPH, whereas in women the presence of a cystocele or pelvic organ prolapse (POP) can be considered a cause of bladder stones. Neurogenic bladder and recurrent urinary tract infections are the most common causes of bladder stones in both men and women. Patients with bladder stones are more likely to have a history of kidney stones and gout than patients without

bladder stones. In patients with bladder stones there are high levels of urine uric acid, urine pH and low urine magnesium levels.[5]

In our patient, we found a male patient aged 64 years where the factors of gender and age are included in one of the intrinsic factors of bladder stones. Patient had been consuming unfiltered water from the river in a long periode of time. East nusa tenggara is an area with limestone structure at an altitude of about 200m above sea level with poor water quality. This limestone structure is the reason for the high levels of lime in the water source. Groundwater has a higher concentration of lime compared to surface water.[6]

The clinical presentation of bladder stone depends on the size and location of the stone. The typical symptoms and signs may include pain when urinating, intermittent, and hematuria. In particular, pain near the end of urination is the result of bladder stones.[5] Irritating urinary symptoms caused either by the stone itself or by associated urinary infections. Pain in the urination is felt at the tip of the penis, scrotum, perineum, waist, to toe. Most of these symptoms were found in the patient.[6]

The common tools to investigate a bladder stones are urine examination, where leucocyte, crystals, and eritrocyte were normally found. Urological ultrasound nad plain photo abdomen may support the diagnosis. Cystoscopy can be performed to confirm the presence of bladder stones while ruling out bladder mass.

This patient had leucocyturia hematuria, and crystaluria from the urinalysis examination which is a common initial finding in bladder stones. Plain photo abdomen and ultrasonography were performed, to support the diagnosis. No stones were found in the upper urinary tract. Mild bilateral hydronephrosis was found, due to the obstruction from the bladder stone.

Giant bladder stone can be single or in groups, and small or large in size to fill the entire bladder space. Bladder stone is mostly single and multiple stones are seen only in 25% to 30% of cases.[6] Our patients have single large stone with an oval shape which is consistent with the radiological imaging.

Management of the stones depends on the patient's age and their general health, as well as the size, number, and the density of the stones. Treatment options include shock wave litotripsy, endoscopic cystolithotripsy, transurethral cystolithotripsy, Percutaneus Cystolithotripsy and open vesicolithotomy.[5] In adults, open surgery should be strongly considered for large stones (>25 mm). All bladder stones can be removed by open surgery. A giant bladder stone may occupy most of the bladder space and causes bladder inflammation and obstruction to urinary flow by blocking both of ureteric

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orifices. This causes changes similar to bladder outlet obstruction leading to renal failure.[6] In this case the giant bladder stone was 10,5 cm X 7,5 cm in size, therefore open vesicolithotomy was performed as soon as possible to prevent complications.

Conclusion

Giant bladder stone can be treated successfully by vesicolithotomy, preferably following cystoscopy procedure to eliminate the possibility of bladder mass.

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