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MULTIPLE BLADDER STONES AND SEVERE URETHRAL INJURY IN A PATIENT WITH ACUTE ABDOMEN: A CASE REPORT

AKUT KARIN TABLOSUNDAKİ BİR HASTADA ÇOKLU MESANE TAŞLARI VE AĞIR ÜRETRA YARALANMASI, OLGU SUNUMU

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ABSTRACT

Bladder stones are very common in the elderly population with lower urinary tract obstruction, and they are associated with adverse outcomes such as recurrent infections and lower urinary tract obstruction. Managing bladder stones has traditionally been done using open procedures such as a cystolithotomy or endoscopic removal. The objective of the study is to present a rare case of multiple bladder stones in a surgical emergency where urinary diversion was mandatory, as endoscopic manipulation appeared impossible for an 85-year-old man who presented with acute abdomen symptoms, hemodynamically unstable severe urethral injury, and multiple bladder stones. Abdominopelvic non-contrast computerized tomography showed free fluid in the abdomen, gas in the bladder, and numerous bladder stones. Emergency surgery was performed on the patient, and the preexisting perforated stomach ulcer was surgically reconstructed. For urinary diversion, the decision was made to perform open cystolithotomy to eliminate more than 80 bladder stones of different shapes and sizes. We placed a urinary catheter using a Benique bougie and performed the cystostomy to open a second route.

Keywords: Bladder stones, urethral injury, acute abdomen

ÖZET

Mesane taşları, alt üriner sistem obstrüksiyonu olan yaşlı popülasyonda çok yaygındır ve tekrarlayan enfeksiyonlar ve alt üriner sistem obstrüksiyonu gibi olumsuz sonuçlarla ilişkilidir. Mesane taşlarının yönetimi geleneksel olarak sistolitotomi gibi açık tekniklerle veya endoskopik olarak çıkarılmasıyla yapılmaktadır. Çalışmanın amacı, çoklu mesane taşı olan ve endoskopik manüpulasyon yapılamadığından üriner diversiyon yapılması için acil cerrahi müdahale gerektiren nadir bir olgununun sunulmasıdır. Akut abdominal bulguları olan 85 yaşındaki erkek olgunun hemodinamik olarak stabil olmayan ağır üretral hasarı bulunmaktaydı. Abdominopelvik kontrastsız bilgisayarlı tomografide batında serbest sıvı, mesanede gaz ve çok sayıda mesane taşı görüldü. Acil cerrahiye alınan hastanın önceden var olan ve perfore olmuş mide ülserine müdahale yapıldı. Farklı şekil ve boyuttaki 80'den fazla taşın alınması için uygulanacak üriner diversiyonun açık sistolitotomi şeklinde yapılmasına karar verildi. Benique buji kullanılarak üriner kateter yerleştirildi ve ikinci bir yol açmak amacı ile sistostomi uygulandı.

Anahtar Kelimeler: Mesane taşları, uretral yaralanma, akut karın

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INTRODUCTION

Bladder calculi account for approximately 5% of patients presenting urinary stone disease. These stones are usually a consequence of foreign bodies, obstruction, or infection Bladder stones are more common in developing countries, with a higher prevalence in men than women at an approximate ratio of 10:1 (1-4). The main causes of secondary bladder calculi in men involve urinary tract infections, urethral stricture, benign prostatic hyperplasia, and intravesical foreign body (3).

The symptoms most commonly associated with bladder stones are frequent urination, hematuria (typically terminal), and dysuria/suprapubic pain, which becomes worse toward the end of micturition. Sudden movement and exercise may exacerbate these symptoms. Detrusor overactivity is found in over two-thirds of adult male patients with vesical calculi and is significantly more common in patients with larger stones (> 4 cm).

Iatrogenic injury is the most common type of urethral trauma and mostly occurs during urethral catheterization (5). The incidence of male urethral injury during transurethral catheterization is 13.4:1,000 catheters inserted (6). Injuries can occur as a result of the tip of the catheter creating a false passage or of the anchoring balloon being inadvertently inflated in the urethra (7).

CASE REPORT

An 85-year-old man was referred to a Department of Urology in an overall poor condition, with blue hands, severe abdominal pain, and hemodynamic instability. No diagnostic procedures related to abdominal pain were performed at the hospital from which he had been referred.

Urological examination showed severe urethrorrhagia. Catheterization was also unsuccessful, with the bladder appearing empty on palpation. In addition, the abdomen was diffusely painful on manual review. The ultrasound showed an empty bladder with echoes/calculi; however, the stomach contained a lot of free liquid. An urgent abdominopelvic non-contrast computerized tomography (NCCT) was performed immediately while the patient was hypotensive and hemodynamically unstable; he was put on dopaminergic and adrenergic drugs while being transported to the intensive care unit (Figure 1).

The abdominal and pelvic NCCT examination showed pneumoperitoneum and a large amount of free fluids in the abdominal cavity, with air in the bladder and multiple bladder stones. The aboratory examination showed slightly increased CRP 54 mg/L, but surprisingly normal levels of WBC ($4.3x10^3$), RBC ($4.64x10^6$), Hgb (142 g/L), glucose (10.8 mmol/L), urea (9.9 mmol/L), creatinine (174 mmol/L), albumin (22 g/L), total protein (49 g/L), chloride

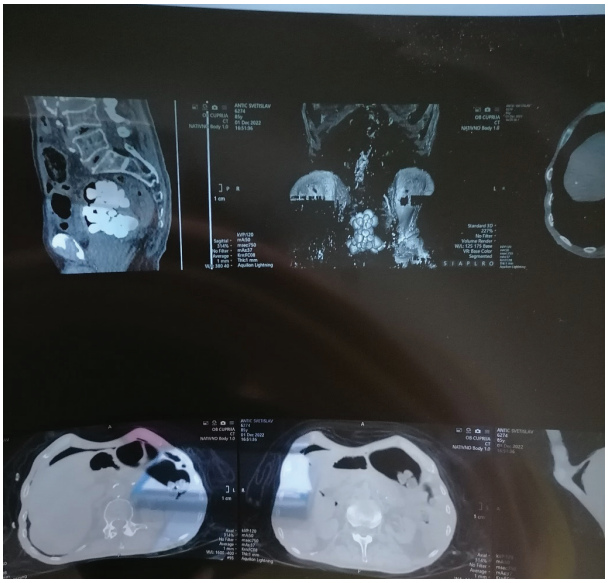

Figure 1: Initial preoperative abdominopelvic CT shows multiple bladder stones

(108 mmol/L), calcium (1.98 mmol/L), and potassium (4.8 mmol/L). Due to the worsening of the patient's hemodynamic condition, the decision was made to perform emergency surgery.

After the median exploratory laparotomy, a hemorrhagic and perforated stomach ulcer was identified and surgically repaired. Because the NCCT showed gas in the bladder, the bladder wall was opened to make a cystolithotomy. With the help of this procedure, more than 84 stones of different shapes and sizes were removed. Urinary diversion was established using the cystostom. A second catheter was introduced into the bladder using a Benique bougie through the completely injured urethra in order to establish early urethral realignment. The calculi that were manually eliminated from the bladder (a total of 84 as counted by staff) are shown in Figure 2, with many of the small ones missing. The urethra was not sutured due to potential hemorrhage of the prostate.

The surgery was followed by triple antimicrobial stewardship, dopaminergic and adrenergic stimulation, proton pump inhibitors, and thromboprophylaxis according to the Emergency Use Authorization (EUA) protocol (13).

DISCUSSION

The urethral injury had been followed by severe urethrorrhagia, which eliminated early endoscopic management as an option due to the overall poor condition and HD instability. Classical catheterization of the urethra was unsuccessful. Cystofix cystostomy was contraindicated as a result of the bladder being empty due to acute kidney injury. Retrograde urethrography was postponed due to the patient's instability (8, 9). Contrast-enhanced NCCT was not performed due

Figure 2: The postoperative picture shows the majority of extracted bladder calculi, in particular the largest ones.

to azotemia and haemodynamic instability.

The patient immediately underwent median laparotomy to explore the abdominal cavity. A large amount of free purulent fluid was removed. Further exploration showed an old stomach perforation with hemorrhage. A large amount of free fluid was found in the liver and spleen. Perforation was managed surgically.

The bladder was opened along the middle line, followed by the extraction of gas and many bladder stones (Figure 2). The staff counted 84 stones of different sizes and shapes, many of which are shown in Figure 2. Due to complete urethral injury, the Benique technique for Foley catheter placement was used to set the urinary diversion to make an early realignment of the urethra (11, 12). Haemodynamic instability was one of the reasons for not suturing the urethra. Urinary diversion was ensured by placing a cystostomy catheter. The bladder was then surgically closed.

Postoperatively, three broad-spectrum antibiotics were administrated, as well as corrections to the electrolyte and metabolic disbalance due to renal insufficiency. Post-operative follow-up was performed every day with blood and gas analyses. The early realignment of the urethra without suturing allowed the urethral injury to be decently managed, as this facilitated manual re-catheterization seven days after surgery.

A cystography was performed eight days post-surgery. No leaking of urine had occurred regarding the cystography, nor was any other extravasation of iodine contrast found from the bladder (14).

The data and literature search involved the use of PubMed to identify similar articles involving case reports and review articles. Some of these have been included in the full article.

CONCLUSION

Urethral injury due to incorrect catheterization is widespread in urological practice. The presence of massive and/or multiple bladder stones can affect catheterization and lead to urethral injury. Bladder stones and urethral injury require urinary diversion. In an ordinary situation, urethral injury indicates a retrograde urethrogram (RUG) or previous attempt at catheterization with endoscopic realignment. In the case presented in this study, the acute abdomen indicated the need for open surgical exploration and cystostomy with transurethral catheterization, further delaying treatment.

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