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**Rectal prolapse in a 30-year-old bladder stone male patient: An unusual case**

Rectal prolapse caused by bladder stone

Hong-Xiang Ding, Jia-Guo Huang, Chao Feng, Sheng-Cheng Tai

**Abstract****BACKGROUND**

Rectal prolapse occurs most commonly in children and middle-aged and elderly women and is relatively rare in young men and is occasionally, it is caused by bladder stones. Severe rectal prolapse, bilateral hydronephrosis and renal insufficiency caused by bladder stones are rare in a 30-year-old man.

**CASE SUMMARY**

We report the case of a 30-year-old male patient with cerebral palsy who presented with a large bladder stone that resulted in severe rectal prolapse, bilateral hydronephrosis, and renal insufficiency. Following a definitive diagnosis, the bladder stone was successfully removed, and his kidney function returned to normal. We assessed the patient's nutritional status and stone composition and concluded that the main cause was malnutrition.

**CONCLUSION**

Rectal prolapse is a rare clinical manifestation of bladder stones, particularly in young adults. Cerebral palsy patients are a vulnerable group in society because of their intellectual disabilities and communicative impairments. Accordingly, besides taking

care of their daily diet, abnormal signs in their bodies should receive the doctors' attention in a timely manner.

**Key Words:** Bladder stone; Rectal prolapse; Cerebral palsy; Malnutrition; Young

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**Core Tip:** Bladder stones are generally observed in elderly males and children but are rarely found in young adults. Similarly, rectal prolapse is extremely rare in young men. Clinically, the most common symptoms of bladder stones are urinary frequency, interrupted urine flow, typically terminal hematuria, dysuria, or suprapubic pain, which are worst at the end of urination. Rectal prolapse is a rare clinical manifestation of bladder stones. We report an unusual case of a young man with cerebral palsy who presented with rectal prolapse and finally confirmed a diagnosis of bladder stone. Patients with cerebral palsy are unable to accurately describe physical discomfort due to intellectual disability and communication disabilities. Therefore, the abnormal signs in their body should be given timely attention by doctors, and early diagnosis and provision of appropriate active treatment positively impact on the prognosis of patients.

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## INTRODUCTION

Bladder stones constitute approximately 5% of all urinary tract stones<sup>[1]</sup>. They are generally observed in elderly males and children and are rarely found in young adults<sup>[2-4]</sup>. The most common symptoms of bladder stones are urinary frequency, interrupted urine flow, typically terminal hematuria, dysuria, or suprapubic pain, which are worst at the end of urination. These symptoms may be exacerbated following sudden movement and exercise<sup>[5,6]</sup>. In addition to dysuria, children may experience pulling of the penis, urinary retention, enuresis, or rectal prolapse. Bladder

stones are incidental findings in 10% of cases<sup>[7,8]</sup>. Bladder stone presentations are often due to interrupted urination, dysuria, or gross hematuria. Rectal prolapse is an extremely rare reason for a doctor's visit for bladder stones in young adults. Here, we report the case of a 30-year-old male patient.

## **CASE PRESENTATION**

### ***Chief complaints***

A 30-year-old male patient with cerebral palsy presented to the emergency department with a history of recurrent rectal prolapse for one year and a six-hour failed manual reduction procedure.

### ***History of present illness***

The symptoms started one year before presentation with recurrent rectal prolapse. When rectal prolapse had occurred, the patient had shown obvious irritability and painful expressions. The obvious irritability and painful expressions could be relieved after manual reduction. Six hours before admission, the patient developed rectal prolapse. Because of a failed manual reduction procedure, he was brought to the emergency department of our hospital, accompanied by a doctor of his welfare home.

### ***History of past illness***

The patient had typical clinical manifestations of cerebral palsy, including central motor disorders, abnormal posture, intellectual disability, communicative impairments, and abnormal mental behavior. He could walk only short distances, spent most of his time sitting or resting in bed, and his emotional changes could only be guessed through facial expressions.

### ***Personal and family history***

The patient's family history was unknown because he was abandoned in an orphanage after being diagnosed with cerebral palsy in infancy.

### *Physical examination*

On physical examination, his body mass index (BMI), calculated from 145 cm of height and 35 kg of weight, was 16.6 kg/m<sup>2</sup>. A palpable mass in the bladder area of the lower abdomen demonstrated marked tenderness, and the rectum was prolapsed approximately 10 cm from the anus (Figure 1).

### *Laboratory examinations*

Blood biochemical analysis indicated a potassium level of 2.443 mmol/L, creatinine levels of 381 µmol/L, and blood urea nitrogen of 11.53 mmol/L.

### *Imaging examinations*

Abdominal computed tomography (CT) revealed a large bladder stone (Figure 2A), bilateral hydronephrosis (Figure 2B), and thickening of the bladder wall (Figure 2C).

## **FINAL DIAGNOSIS**

Bladder stone, rectal prolapse.

## **TREATMENT**

The anorectal surgeon manually reset the prolapsed rectum, and the patient was referred to the urology department for treatment. After the patient's hypokalemia was corrected and nutritional support was provided, we performed a cystotomy and excised the bladder stone. We analyzed the components of the bladder stone and found that the main components were ammonium uric acid and calcium oxalate.

## **OUTCOME AND FOLLOW-UP**

One week after the operation, the patient's catheter was removed, and he returned to normal urination. The renal function and serum potassium were normal upon

reexamination. The patient with rectal prolapse underwent surgery in the proctology department.

## DISCUSSION

Bladder stones are rare causes of rectal prolapse. In the past few decades, only four papers have reported rectal prolapse caused by bladder stones. Among them, three cases were of primary bladder stones in infants and young children<sup>[9-11]</sup>, and one case was of secondary bladder stones caused by foreign bodies in an adult's bladder<sup>[12]</sup>. There have been no reports of bladder stones as the primary cause of rectal prolapse in adults. This study reports a patient aged 30 years without prior history of benign prostatic hyperplasia (BPH), whose large bladder stone led to severe rectal prolapse, bilateral hydronephrosis, and renal insufficiency.

Rectal prolapse mostly occurs in children, middle-aged, and elderly women and is generally related to an increase in abdominal pressure (such as constipation), chronic cough, difficulty in urinating, or multiple deliveries, which often leads to increased abdominal pressure and pushes the rectum to prolapse downward<sup>[13]</sup>. Rectal prolapse is rarer in men than it is in women. Some theories suggest that the prostate is a powerful anchor for the pelvic organ and may also be associated with low-frequency constipation<sup>[14]</sup>. In this patient, dysuria due to bladder stones was a probable cause, accompanied by a persistent increase in the abdominal pressure required to urinate, ultimately leading to rectal prolapse. Additionally, the prolapsed rectum, pulling the floor of the bladder may have caused chronic, incomplete bladder emptying favoring urine residue and stone formation. They affect each other, leading to a vicious circle.

In recent decades, the incidence of bladder stones has decreased annually<sup>[15]</sup>. Bladder stones are usually multi-factorial in etiology<sup>[3]</sup> and are classified as primary, secondary, or migratory<sup>[16]</sup>. Primary or endemic bladder stones are usually observed in children in areas with poor hydration, recurrent diarrhea, and a diet deficient in animal protein without any other urinary tract pathology<sup>[7]</sup>. Secondary bladder stones are most commonly caused by bladder outlet obstruction (BOO) in adults, accounting for 45%–

79% of bladder stones. They are also associated with neurogenic bladder dysfunction, chronic bacteriuria, foreign bodies, catheters, bladder diverticula, bladder augmentation, and urinary diversion<sup>[3,5,6,17,18]</sup>. The term “migratory” refers to stones that have left the upper urinary tract after forming and may serve as a site for bladder stone growth once they have passed<sup>[19]</sup>. It was necessary to analyze the etiology of the patient’s bladder stone; its composition was mainly ammonium acid urate and calcium oxalate, which is consistent with research findings on bladder stones caused by malnutrition<sup>[20]</sup>. Furthermore, the patient’s BMI of 16.6 indicated a poor nutritional state. Thus, the stone formation in the patient was due to malnutrition and low water intake but was also aggravated by secondary urinary tract infection after stone formation.

It is also likely that rectal prolapse and bladder stones are two separate pathologies. The patient had cerebral palsy and could have been prone to chronic constipation as an underlying risk factor for rectal prolapse. However, the outcome of the disease is often not caused by a single factor; therefore it is necessary to consider whether there is an interaction between pathogenic factors when studying the pathogenic mechanism.

The patient was diagnosed with cerebral palsy and was unable to live independently. Residing in a welfare home, he could not express his physical discomfort clearly. In the early stage of rectal prolapse, the patient had abnormal physical signs, but the doctors did not notice them promptly, and he did not receive treatment until severe rectal prolapse occurred one year later. It is possible that the doctors in the welfare home did not conduct a comprehensive evaluation of the patient, which may have accounted for the delayed diagnosis and treatment. However, patients with cerebral palsy are a vulnerable group in society and deserve special attention.

## **CONCLUSION**

Bladder stones are a rare cause of rectal prolapse, particularly in young adults. In this case, the diagnosis and treatment were delayed because of the patient’s cerebral palsy, intellectual disability, and communication impairment. Patients with cerebral

palsy are a vulnerable group in society and deserve particular attention. Accordingly, besides taking care of their daily diet, clinicians should be keenly aware of any abnormal signs in the patient's body and make timely diagnoses and treatments.

## **ACKNOWLEDGEMENTS**

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