

# Acute urinary retention due to severe constipation in a 5-Year-old boy

Yuhi Takagi, MD, George Imataka, MD, PhD, Yuji Kano, MD, Shigemi Yoshihara, MD, PhD

Department of Pediatrics, Dokkyo Medical University, Tochigi, Japan

### SUMMARY

**We report a 5-year-old Japanese boy with urinary retention due to severe constipation. He presented to the hospital with abdominal pain and inability to urinate for more than 24 h. Physical examination revealed distension above the umbilicus and a palpable cystic mass. Abdominal plain radiography indicated a large mass-like lesion in the lower abdomen. Abdominal computed tomography did not show any mass lesion. However, his bladder was remarkably dilated, and significant faecal impaction was detected. There were no urethral stones that could cause urethral obstruction. There were no abnormalities found in blood or urine. He had severe constipation since he was a baby. Treatment of constipation earlier improved urinary retention. Therefore, we considered constipation to be the cause of urinary retention. Acute urinary retention (AUR) due to a variety of causes is common in adults. However, AUR is rare in children. Paediatricians should be aware that severe habitual constipation may lead to temporary AUR in children.**

### INTRODUCTION

Acute urinary retention (AUR) is defined as a condition in which the bladder is filled with urine, and urination suddenly becomes completely impossible. Although the bladder detrusor muscle is often normal in patients with AUR, it frequently causes abdominal pain due to increased bladder capacity. Mainly, AUR can be associated with benign prostatic hyperplasia and drugs.<sup>1</sup> Although AUR is relatively common in adult males, it rarely occurs in children. Herein, we report a case of paediatric AUR due to severe constipation.

### CASE REPORT

A 5-year-old Japanese boy presented to the hospital with abdominal pain and inability to urinate for more than 24 h. He had no significant medical or surgical history. Physical examination showed distension above the umbilicus and a palpable cystic mass. Thus, he was hospitalised for evaluation of the possible causes of abdominal pain and AUR.

On admission, he was 110 cm tall (0.8SD) and weighed 17 kg (-0.3SD). On examination, he had a body temperature of 37.4°C, blood pressure of 99/61 mm Hg, pulse rate of 127/min, and respiratory rate of 18/min. In addition, his oxygen saturation was 98% on room air. His abdomen was tight, with significant pain and tenderness in the lower

abdomen. Laboratory test results revealed the following: white blood cell count, 14,800/ $\mu$ L (neutrophils: 80%; lymphocytes: 12.5%); haemoglobin level, 11.3g/dL; platelet count, 464,000/ $\mu$ L; blood urea nitrogen level, 10mg/dL; serum creatinine level, 0.27mg/dL (eGFR, 136.8 mL/min/1.73 m<sup>2</sup>); cystatin C, 0.7mg/dL (eGFR, 140.9 mL/min/1.73 m<sup>2</sup>); and serum C-reactive protein level, 3.1mg/dL. Urinalysis revealed a pH of 6.5 and proteinuria of 0.15 g/Cr. Haematuria or pyuria was not observed. Moreover, his urine culture was negative. Abdominal plain radiography and computed tomography (CT) were performed at the time of admission. Abdominal plain radiography indicated a large mass-like lesion in the lower abdomen (Fig. 1A). Abdominal CT did not show any mass lesion. However, the bladder was remarkably dilated, and significant faecal impaction was detected (Fig. 1B). However, there were no urethral stones that could cause urethral obstruction.

Based on the information gathered from the patient's family members, it is known that his stools were separate, hard, and nut-like lumps. In addition, his bowel movement occurred only twice a week in a standing position into diapers. Based on the Rome III criteria, he was diagnosed with severe constipation. His stool was graded as type 1 according to the Bristol Stool Form Scale. Furthermore, a presumptive diagnosis of AUR secondary to constipation was made. A urethral catheter was inserted, and 500 mL of clear urine was drained. The patient's abdominal distension and pain immediately improved. Magnesium oxide, probiotics, and sodium picosulfate were prescribed to treat his constipation. During hospitalisation, he was treated with 30mL of glycerine enema solution for three consecutive days. Spinal magnetic resonance imaging (MRI) and voiding cystourethrography (VCUG) were performed to assess the cause of AUR. Lumbar MRI did not show spinal lipoma or meningocele, which are potential causes of neurogenic bladder. There was no vesicoureteral reflux or urethral stricture on VCUG. No other causes of urinary retention were discovered. Therefore, we concluded that his AUR was due to severe constipation.

He was discharged without further recurrence of urinary retention. After discharge, he continued to take magnesium oxide and probiotics. His family members were taught the proper defecation technique (leaning forwards while sitting on a toilet seat of a Western-style toilet with both feet on the floor). At the 1-year follow-up, he had not experienced any episodes of AUR, and constipation had not recurred.

*This article was accepted: 01 May 2022*

*Corresponding Author: Yuhi Takagi*

*Email: t-yuhi@dokkyomed.ac.jp*

**Table I: Differential diagnosis of urinary retention in children**

<b>Mechanical</b>
Urethral stone
Urethral stricture
Bladder diverticulum
Phimosis
Neuroblastoma
<b>Neurologic</b>
Neurogenic bladder
Myelitis
Stroke
<b>Infection and inflammation</b>
Acute prostatitis
Urinary tract infection
Vulvovaginitis
HSV genitalis
<b>Fecal impaction</b>
<b>Adverse drug effect</b>
Anticholinergic drug
Tricyclic antidepressants
Nonsteroidal anti-inflammatory drugs (NSAIDs)



**Fig. 1a:** Radiography image taken on admission. Findings are suggestive of large masses, such as lesions in the lower abdomen, excluding the intestinal tract.



**Fig. 1b:** Abdominal computed tomography scan (transverse plane). No mass lesion or urethral stone is observed, but the bladder is notably dilated and prominent faecal impaction is evident.

## DISCUSSION

Although AUR is common in adults due to a variety of causes, it is rare in children (Table I).<sup>2,4</sup> Our patient underwent thorough examination, including spinal MRI, VCUG, and laboratory tests. These examinations did not reveal the primary cause of the urinary retention. After treatment of constipation, urinary retention resolved and did not recur. Chase et al.<sup>5</sup> evaluated the relationship between AUR and constipation and reported a close relationship between constipation and the urinary system. Based on this report, it is thought that stool mass mechanically presses on the bladder and bladder neck, causing urethral obstruction, which may induce deterioration in vesicoureteral reflux. Moreover, animal studies have shown that rectal dilation reduces bladder contractility.<sup>6</sup> In our case, the patient's urine volume was larger than the expected volume for his age,<sup>7</sup> and it was highly possible that his bladder dysfunction was due to

habitual constipation. In addition, his daily urinary frequency was low, which was indicative of bladder and bowel dysfunction.<sup>8</sup>

## CONCLUSION

Paediatricians should be aware that severe habitual constipation may lead to temporary AUR in children.

## ACKNOWLEDGEMENT

We would like to thank Editage ([www.editage.com](http://www.editage.com)) for English language editing.

## DISCLOSURE

The authors declare no conflict of interest.

**INFORMED CONSENT**

Informed consent for the publishing of this case report was obtained from the patient's parents.

**ETHICAL ISSUES**

We have received permission from the parents to publish this case report.

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