

## **Acute Urinary Retention in a Young Man Secondary to Severe Dysentery: A Case Report**

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### **Abstract**

*Urinary bladder has complex Autonomic innervation regulated by a hierarchy of mechanisms of the central nervous system. Any dysfunction in these regulatory mechanisms can lead to acute urinary retention. A 25 years old man presented with acute urinary retention following severe dysentery. His urinary bladder was decompressed and his normal voiding mechanism was restored thereafter. It is postulated that excessive straining to pass stool during dysentery / diarrhea can stimulate the recto-vesicourethral reflex and lead to acute urinary retention.*

**Keywords:** Acute urinary retention, Recto-vesicourethral reflex, Dysentery

### **Introduction**

Complaint of acute retention urine in healthy young men is a rare presentation. Acute urinary retention can be defined as an emergency situation characterized by a sudden inability to void urine and is associated with lower abdominal discomfort and distention [1].

The reasons of acute urinary retention in young men are broadly categorized into neurogenic, obstructive or pharmacologic [2]. The neurogenic causes of acute urinary retention are less common and are injury to spinal cord, multiple sclerosis and prolapsed disc [2]. The obstructive causes of acute urinary retention could also be associated with stricture, severe inflammation of prostate or calculi within the urethra [2]. Narcotics and liquor abuse are thought to be pharmacologic causes of acute urinary retention.

Urgent management of acute urinary retention requires insertion of a urinary catheter to empty the bladder and relieve patient's distress. Nonetheless, more urological investigations ought to be done to see the underlying pathology of such dysfunctional discharge [2].

The manifestation of AUR as results of intestinal abnormalities are explained partially by the common embryology of the lower urinary and anorectal systems. Additionally, significantly, the recto-vesicourethral reflex is that the main physiologic reflexive mechanism that harmonizes the stool passing and micturition functions within the traditional state. Specific pathophysiological issues like prolonged rectal distention can disrupt the recto-vesicourethral reflex and ultimately cause the event of acute urinary retention.

### **Case presentation**

A twenty five years old man reported to the emergency department with 08-hours history of acute pain in lower abdominal and distension along with the inability to void urine. The patient had loose stools containing blood and mucous since morning. The dysentery was thus severe that on one occasion he had to remain in the bathroom for about 02 hours making an attempt to force stool out. After that he was unable to void urine. He made several attempts to void urine however no success. Then he developed swelling and pain at suprapubic region and he was taken to emergency department.

There was no history of injury, any urological, neurological or STD. He had no history of substance or liquor abuse. There were no previous lower urinary tract symptoms.

On examination, the patient was in extreme suprapubic discomfort. A painful suprapubic mass was palpable up to the umbilicus. His genital, penile, and digital rectal examination revealed normal. His cardiorespiratory and neurological examinations were also normal. A

provisional diagnosis of acute urinary retention was made and his bladder was emptied by passing 18 FG self retaining Foley catheter that yielded 3500 cc of clear urine.

The results of laboratory blood tests including complete blood picture, C-reactive protein, ESR and blood sugar random were all within the normal limits. The biochemical tests revealed marked rise of s.creatinine level 680  $\mu\text{mol/l}$  (range is sixty to one hundred  $\mu\text{mol/l}$ ) on admission. His urine R/E was normal without pyuria or haematuria. Bilateral moderate hydronephrosis to the level of the urinary bladder was present on renal ultrasonography. His s.creatinine levels dropped to 103  $\mu\text{mol/l}$  eight hours after urinary catheterization.

The patient was then admitted and afterward underwent complete urological and radiological investigations. Post-void residual, uroflowmetry and cystoscopy examinations were performed throughout consecutive few days after hospitalization and the findings were normal. Findings of Urodynamic studies were normal. MRI, (Multiple Sclerosis protocol) of his brain and spinal cord were both normal. Serum creatinine level returned to normal on the second post-admission day. 02 days later, a repeat kidney ultrasonographic examination showed normal sized kidneys and no proof of urinary obstruction.

## Discussion

This is a rare case of acute urinary retention in a young man and it is inferred that this was associated with severe dysentery. There's no similar case within the literature. After full urological and neurological assessments, conclusion was that ano-rectal dilation caused by dysentery was the reason behind his acute urinary retention. Normal urination was restored on second day of presentation in this patient.

Sudden retention of urine followed by dysentery / diarrhea has not been reported. It is explained by the very fact that severe dysentery resulting in rectal distension appears to induce diminished reflex referred to as "recto-vesicourethral reflex." This reflex is seemingly evoked during stool passing to abort simultaneous micturition.

Nerve supply of the bladder is complicated and controlled by a hierarchy of CNS mechanisms, and abnormalities will bring about acute urinary retention. Bladder has two important functions storage and voiding. During storage phase, the sympathetic drive (T10 - L2) exerts repressive impact on the parasympathetic mediated detrusor tone and permits external anatomical sphincter (rhabdosphincter) contractions. Detrusor contraction is generally coordinated by the excitative impact of the parasympathetic nerve (S2-S4) managed by pontine urination centre within the brainstem (voiding phase).

Omer A Raheem et al, in a case report ascertained AUR in an exceedingly young man secondary to intensive purging of colon for hygiene purposes [13]

Miyazato et al. [8], in associate experimental animal model, observed the repressive role of distention of rectum on detrusor contraction in rats. The rectum was inflated by a balloon and also the bladder detrusor pressure was then measured cystometrically. This was followed by intrathecal injection of strychnine (a selective glycine receptor antagonist) or bicuculline (GABA receptor antagonist), that blocked the reflex and fixed traditional detrusor contraction. During this study, it had been illustrated that the induced rectal distention, up to 3 cm<sup>3</sup>, reduced bladder contraction. This study inferred the presence of an repressive recto-vesical reflex, that is controlled by the glycinergic or GABAergic mechanisms within the lumbosacral cord of rats [8].

Shafik et al. [9] afterwards developed a human based model supported on Miyazato's findings. They confirmed the presence of the recto-vesicourethral reflex. Fifteen healthy people had their rectum anaesthetized with xylocaine solution consisting of twenty cc of 2 percent xylocaine to inhibit the stretch receptors. The rectum was then distended with a balloon in increments of fifty cc to three hundred cc. The vesical and urethral pressures were obtained with catheter transducers in response to balloon distension of rectum 3 hours and twenty minutes after xylocaine administration. The procedure was then repeated using normal saline administration into rectum instead of xylocaine. During this study, distention of rectum

up to three hundred cc was related to a major decrease within the intra-vesical pressure (mean pressure:  $3.2 \pm 0.5$  cmH<sub>2</sub>O; range: 1.7 to 4 cmH<sub>2</sub>O), whereas increasing urethral pressure (average pressure:  $103.2 \pm 10.8$  cmH<sub>2</sub>O; range: 87 to 126 cmH<sub>2</sub>O) [9].

This reflex physiological method is explained by rectal distention resulting in vesical dilatation and rise within the urethral sphincter tone facilitated by the recto-vesicourethral reflex. Therefore the recto-vesicourethral reflex acts alone to harmonize passing stool and micturition mechanisms within the traditional state. If distention of rectum occurs for prolonged time, the recto-vesicourethral reflex is over-stimulated resulting in retention of urine via considerably diminished vesical and raised urethral sphincter pressure. The clinical significance of such reflex could also be manifested in patients with severe constipation [9]. Injury to the pelvic nerve following anorectal surgery can even cause dysfunctional discharge of urine [10].

Godec antecedently recorded the event of acute urinary retention following anal dilatation created by homosexual activity in young males [11]. He afterwards designed an experimental human study to gauge the impact of anal dilatation on dysfunction of bladder supported his observations [12]. The cystometrical measurement of bladder pressure was done in 5 individuals with significant urgency and urge incontinence. This showed detrusor over activity and a mean bladder capacity of eighty six cc. Anus was dilated from 3.5 cm to five cm that raised bladder capability to a mean value of 406 cc on cystometrogram. This shows that mechanical stretch stimulation of the anal region will generate reflex bladder inhibition [12].

## Conclusion

Severe dysentery resulting in rectal dilatation appears to induce diminished vesical, but raised urethral sphincter tone, an impact that is presumably mediated through a reflex referred to as "recto-vesicourethral reflex." This reflex is seemingly induced at defecation to abort coincidental urination. The happening of acute urinary retention followed by severe dysentery in a young man is extraordinarily rare. This case report highlights the importance of considering the likelihood of such diagnosis when examining a young patient with acute urinary retention. Appropriate and elaborate history and clinical examinations are mandatory to avoid inappropriate management. Restoration of traditional urination is achieved after minimal intervention.

## References

- [1]. Clark LE, Dipalma JA. Safety issues regarding colonic cleansing for diagnostic and surgical procedures. *Drug Saf.* 2004; 27:1235–1242. doi: 10.2165/00002018-200427150-00006. [PubMed]
- [2]. Emberton M, Anson K. Acute urinary retention in men: an age old problem. *BMJ.* 1999; 318:921–925. [PMC free article] [PubMed]
- [3]. Edis RH. Retention of urine and sacral paraesthesia in anogenital herpes simplex infection. *Clin Exp Neurol.* 1981; 18:152–155. [PubMed]
- [4]. Godec CJ. Acute urinary retention in young homosexuals. *Urology.* 1979; 14 doi: 10.1016/0090-4295(79)90528-4. [PubMed]
- [5]. Godec CJ, Cass AS, Ruiz E. Another aspect of acute urinary retention in young patients. *Ann Emerg Med.* 1982; 11:471–474. doi: 10.1016/S0196-0644(82)80064-4. [PubMed]
- [6]. Hussain IF, Taylor W, Mundy AR, Fowler CJ. Acute urinary retention: an unusual presentation of a spinal arteriovenous malformation. *BJU.* 1999; 83:1079–1080. doi: 10.1046/j.1464-410x.1999.00136.x. [PubMed]
- [7]. Miyazato M, Sugaya K, Nishijima S, Ashitomi K, Ohyama C, Ogawa Y. Rectal distention inhibits bladder activity via glycinergic and gabaergic mechanisms in rats. *J Urol.* 2004; 171:1353–1356. doi: 10.1097/01.ju.0000099840.09816.22. [PubMed]
- [8]. Mosiello G, Gatti C, De Gennaro M, Capitanucci ML, Silveri M, Inserra A, Milano GM, De Laurentis C, Boglino C. Neurovesical dysfunction in children after treating pelvic neoplasms. *BJU Int.* 2003; 92:289–292. doi: 10.1046/j.1464-410X.2003.04326.x. [PubMed]

- [9]. Omer A Raheem, Ronan M Long, Rowan G Casey, Frank T D'Arcy, and Thomas H Lynch. Acute urinary retention in a young man secondary to colonic irrigation: a case report. *J Med Case Reports*. 2009; 3: 6757. 2009 Jun 11. doi: 10.4076/1752-1947-3-6757. [PMC]
- [10]. Thomas K, Chow K, Kirby RS. Acute urinary retention: a review of the aetiology and management. *Prostate Cancer Prostatic Dis*. 2004; 7:32–37. doi: 10.1038/sj.pcan.4500700. [PubMed]
- [11]. Shafik A, Shafik I, El-Sibai O. Effect of rectal distension on vesical motor activity in humans: the identification of the recto-vesicourethral reflex. *J Spinal Cord Med*. 2007;30:36–39.[PMC free article] [PubMed]
- [12]. Tiguert R, Lewis RA, Gheiler EL, Tefilli MV, Gudziak MR. Case report: acute urinary retention secondary to Isaacs' syndrome. *Neurourol Urodyn*. 1999; 18:113–114. doi: 10.1002/(SICI)1520-6777(1999)18:2<113::AID-NAU6>3.0.CO;2-M. [PubMed]
- [13]. Zenda T, Soma R, Muramoto H, Hayase H, Orito M, Okada T, Mabuchi H, Okino S. Acute urinary retention as an unusual manifestation of aseptic meningitis. *Intern Med*. 2002; 41:392–394. doi: 10.2169/internalmedicine.41.392. [PubMed] [Cross Ref]