

# *Herpes zoster infection: a rare cause of acute urinary retention*

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*Herpes zoster (HZ) infection has been reported as a rare cause of acute urinary retention. HZ infection involving sacral, thoracolumbar, and rarely high thoracic dermatomes is believed to occasionally cause motor and sensory neuropathy of the bladder. This is specifically achieved by the interruption of the detrusor reflex causing*

*subsequent bladder atonia. As the course and management of this entity is quite benign, HZ should remain a diagnostic consideration in the management of urinary retention. We report a case of acute urinary retention of approximately 2.5 liters associated with HZ infection and review the proposed pathogenesis and therapeutic considerations in the management of this entity.*

**Key Words:** urinary retention, herpes zoster

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## Case presentation

A previously healthy 75-year-old female presented with complaints of acute-onset urinary retention following a 1-week history of overflow incontinence. A pelvic ultra-sound revealed a marked residual urine without noted hydronephrosis. On the subsequent insertion of a foley catheter, approximately 2.5 liters of urine was returned. There was no history of diabetes, urinary tract infection, pyelonephritis, or neurological deficits. The patient was not sexually active, experienced no bowel dysfunction, and was otherwise healthy. Of note, the patient suffered from intermittent herpes zoster infection that manifested as left-sided S 3-4 shingles over the duration of the last 2 years. This was managed conservatively with the application of 1% hydrocortisone cream. Physical examination prior to catheter insertion revealed a tender, palpable bladder and neurological examination and all other systems were otherwise

unremarkable. On laboratory evaluation, complete blood count with differential and chemistries were normal. Blood urea nitrogen and creatinine were 3.4 mmol/L and 58 mmol/L respectively. Urinalysis was also otherwise normal with the exception of trace blood. The patient continued to self-catheterize during the interim and outpatient cystoscopy revealed no noted pathology and was otherwise normal. While the patient was referred for urodynamic studies to further clarify her bladder dysfunction, her urinary retention resolved with resolution of her herpes zoster over the following 9 weeks.

## Discussion

Herpes Zoster (HZ) is a varicella-zoster virus infection which typically manifests with circumscribed, localizable, and painful vesicular eruptions involving the skin or mucous membranes of one or more dermatomes. Specifically, such eruptions reflect a concomitant inflammatory process that involves respective dorsal nerve roots, ganglia, and on occasion, the anterior horn.<sup>1</sup> While herpes zoster infection is a relatively well recognized condition, the occurrence of urinary retention as a subsequent complication is very rare, reported at a rate of only 3.5%.<sup>2</sup>

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In cases of urinary retention secondary to HZ infection, Richmond<sup>3</sup> reports spinal cord involvement as sacral in 78%, thoracolumbar in 11%, and high thoracic in 11% of cases respectively. Sacral involvement is believed to cause detrusor areflexia through an inflammatory process which originates in the dorsal root ganglia. As inflammation progresses proximally and distally, the subsequent involvement of sacral nerve roots may result in interruption of the detrusor reflex.<sup>4-6</sup> Urinary retention as a result of thoracolumbar and high thoracic cord involvement is believed to result from contraction of the internal sphincter secondary to activation of the lumbar sympathetic outflow.<sup>7,8</sup> Moreover, it has also been suggested that paresis of the bladder trigone occurs from the interruption of sympathetic outflow through L-1 and L-2 or hypogastric nerve involvement.<sup>9,10</sup> While skin or bladder eruptions associated with HZ are usually described as unilateral in presentation, it is believed that a bilateral depression of the detrusor reflex occurs. Yamanishi et al. suggests that in addition to involvement of the ipsilateral dorsal root ganglion and nerve, the virus also affects the meninges and the contralateral nerve roots.

Urinary retention secondary to HZ infection is often accompanied by constipation, hematuria, and symptoms associated with cystitis (dysuria, frequency, hesitancy).<sup>11</sup> While HZ commonly manifests as a characteristic unilateral segmental rash usually in the sacral dermatomes (S-2 to S-4), Patel et al. also describe a case of urinary retention associated with HZ in the absence of a clinically apparent cutaneous rash. Nevertheless, urinary retention has been described as acute in onset, developing either simultaneously or within one week.<sup>12</sup> Of 32 cases of bladder and/or bowel dysfunction in association with HZ reviewed by Cohen et al. since 1970,<sup>13</sup> 21 (66%) were men. Moreover, patients are described to typically present in the sixth to eighth decades of life.

In some instances, cystoscopic investigation was noted to reveal local inflammatory changes on the bladder mucosa, vesicles of the trigonal area, and occasional unilateral bladder ulceration suggestive of a herpetic cystitis.<sup>14-16</sup> In our patient, cystoscopy did not reveal any evidence of inflammation or eruption of the bladder mucosa. During the acute stage of urinary retention secondary to HZ, cystoscopy performed by Yamanishi et al. revealed no bladder mucosal inflammation in all seven of their patients. Furthermore, urodynamic study reported detrusor areflexia without bladder sensation in all cases while noting an inactive external sphincter on EMG for two patients.

Voiding dysfunction is typically transient when

associated with HZ infection and prognosis for full recovery of micturition is very good. Yamanishi et al. report a recovery of micturition within 4-8 weeks (average 5.4) after the onset of urinary retention. Management is generally conservative and consists of supportive measures with intermittent catheterizations and pain relief if necessary. After clinical diagnosis, options include antiviral treatment, agents to stimulate bladder contraction, and treatment of secondary bacterial infection. Of note, cholinergic medications for bladder are generally ineffective and the value of the aforementioned treatments in facilitating the recovery of normal micturition is speculative. In light of the benign course associated with conservative treatment, herpes zoster infection should be noted as a diagnostic consideration in the management of urinary retention. □

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