

## Case Report

# Acute Urinary Retention Following Primary Varicella-Zoster Virus Infection

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Received: Feb 27<sup>th</sup>, 2021; Accepted: Mar 2<sup>nd</sup>, 2021; Published: Mar 5<sup>th</sup>, 2021

Citation: Alhatou M, Bassuony M, Ghamoodi M, Bhatti KA. Acute urinary retention following primary varicella-zoster virus infection. *Urology Open A Open J.* 2021; 2(2): 59-61. doi: [10.33169/uro.UOAJ-2-116](https://doi.org/10.33169/uro.UOAJ-2-116)

## ABSTRACT

### Background

Acute urinary retention following primary varicella-zoster virus infection (chickenpox) is very rare.

### Case Presentation

We present a case of 34 years old male patient presented with acute urinary retention following primary varicella-zoster virus infection (chickenpox), there was no lesion detected neither by MRI brain nor whole spinal cord imaging. There was a typical blistering rash over the face, trunk, back and upper limbs but sparing the perineal and perianal area.

### Conclusion

Once herpes zoster is found in lumbar lumbosacral region be alert there is possibility of voiding dysfunction like acute retention of urine. The effective treatment plan includes antiviral therapy and urethral catheterization. Most of urological symptoms due to herpes zoster subsides in the very short duration with active guideline treatment.

**Keywords:** *Varicella-zoster virus infection; Blister-like rash; Acute urinary retention.*

## INTRODUCTION

Chickenpox is a very contagious disease caused by the Varicella-Zoster Virus (VZV). It causes a blister-like rash, itching, tiredness and fever. Chickenpox can be serious, especially in babies, adults, and people with weakened immune systems. It spreads easily from infected people to others who have never had chickenpox or received the chickenpox vaccine. Chickenpox spreads in the air through coughing or sneezing. It can also be spread by touching or breathing in the virus particles that come from chickenpox blisters.

The best way to prevent chickenpox is to get the chickenpox vaccine. Before the vaccine, about 4 million people would get chickenpox each year in the United States. Also, about 10,600 people were hospitalized and 100 to 150 died each year as a result of chickenpox.<sup>1</sup>

Neurological complications following primary chickenpox infection are extremely rare (0.01–0.03%), although some neurological complications are known.<sup>2</sup>

Herpes zoster associated with Urological dysfunction was first-time reported by Davidsohn in 1890 and since then around 150 cases have been reported in the literature.<sup>3,4</sup> Later on, Silvio Alencar, H He and Adel A also reported cases herpes zoster associated with retention of urine.<sup>5-7</sup>

Although rare presentation, the voiding dysfunction associated with herpes zoster infection should be recognized by primary physician, urologists and dermatologists for proper diagnosis and management.

## CASE REPORT

A 34 years old male patient who presented with acute urinary retention 3 days after developing blister like rash typically of chickenpox, there was no similar preceding history, trauma, use of anti-cholinergic medication, no constipation or other urinary or neurological signs or symptoms. Driver by profession, married having 3 kids, non-smoker, no addiction, no allergy, history of immunization. Urinary bladder was fully distended and palpable at the time of presentation and was catheterized smoothly and passed 1000ml of clear urine.

He experienced vesicular rash 2 days prior to admission which started over the face and disseminated to the trunk and upper extremities, sparing perineal & perianal region (Figure A). The patient was afebrile throughout the entire illness course.

Figure A. Blisters on the trunk and back



Physical examination; urinary Bladder distension. Neurological examination

No sensory or motor function loss, Sphincteric reflex, bulbospongiosus reflex and cremasteric reflex all normal response.

Varicella zoster Abs IgM was positive in serum. Renal function tests, complete blood count, blood electrolytes, C-reactive protein and urine dipstick were normal. Ultrasound Abdomen excluded bladder outlet obstruction; MRI brain and spinal cord with contrast were done which excluded transverse myelitis or any local spinal cord or brain demyelinating or inflammatory process.

The patient continued his course of Acyclovir 200mg 5times daily course, 3days later urinary catheter was temporarily removed, and he was gradually able to urinate spontaneously. Ultra sound KUB for residual urine it was nil. Uroflowmetry results showing Q max 16 mL/sec, Patient had no urinary complaint at time of discharge. He was diagnosed as primary varicella-zoster related urinary retention.

Follow-up was done after 3months, no voiding difficulty, Ultrasound KUB residual urine was nil. Uroflowmetry results showing Q max 18 mL/second.

## DISCUSSION

Chickenpox can be more serious in adults than in children. Adults with the virus are more likely to be admitted into hospital.<sup>8</sup> Neurological complications secondary to chicken pox are very scarce; commonly they may occur during or after exanthemas. Encephalitis, the most serious

complications of varicella, has an incidence of 1-2 episodes per 10,000 varicella cases, with the highest incidence in adults and infants.<sup>9</sup>

Once the self-limiting initial infection is contained by the immune system, the virus establishes itself within the spinal cord ganglia (dorsal root/sensory ganglia being the most common site) and becomes latent. Transport to the ganglia is thought to be via retrograde axonal transport (from the skin) and via haematogenous spread.<sup>10</sup>

Re-activation of dormant varicella-zoster virus occurs when cell mediated immunity is weakened, allowing viral replication within the infected ganglia. Viral spread along the nerves associated with the affected ganglia causes symptoms associated with nerve dysfunction.<sup>11</sup> Re-activation within sensory ganglia results in a painful dermatomal zoster rash where as signs of re-activation within the autonomic sacral ganglia includes urinary retention, zoster cystitis, or anorectal dysfunction.<sup>10-12</sup> Previous literatures suggested that men are more commonly affected by herpes zoster with bladder involvement than women.<sup>13</sup>

Voiding dysfunction is defined as poor coordination between the bladder muscle and urethra. It classified as obstructive, infectious, inflammatory, iatrogenic, neurogenic, and others. Common causes include prostatitis, cystitis, benign prostatic hyperplasia, medication like anticholinergic or alpha- adrenergic agonists, and cortical, spinal or peripheral nerve lesions. Detailed history and physical examination and diagnostic testing showed identify the cause of voiding dysfunction.

There are 3 mechanisms have been described in the etiology of the voiding dysfunction associated with sacral herpes zoster. First is ipsilateral hemi-cystitis, virus directly invades and replicate in the bladder wall, causing increased frequency and rarely urinary retention. Second is neuritis associated voiding dysfunction, atonic bladder due to interruption in detrusor reflex. Patient presented with acute urinary retention. The third is myelitis associated with voiding dysfunction spastic bladder.<sup>14</sup>

Non sacral herpes zoster can lead to voiding dysfunction especially it directly involves the upper lumbar vertebra (L1 -L 2). Dales and Wilson proposed that infection of upper limb segment spreads to the adjacent spinal cord and involvement of the sympathetic motor fibers to the bladder trigone. Acute retention of urine associated with L1-L2 infection was possible result of trigone paresis.<sup>15</sup>

We believe that after the initial prodromal stage subsided, the virus attacked the ganglion prior to the stage of latency which subsequently raised his urinary retention presentation. Our patient's neuritis associated voiding dysfunction was most probably the result of S2 dermatomal involvement, trigone paresis is another possible cause given the L1-L2 dermatomal involvement. Also, it's expected that on reactivation of the virus later in life or in case of any immune suppression; the patient may represent with the same presentation again

## CONCLUSION

Once herpes zoster is found in lumbar lumbosacral region be alert there is possibility of voiding dysfunction like acute retention of urine. The effective treatment plan includes antiviral therapy and urethral catheterization. Most of urological symptoms due to herpes zoster subsides in the very short duration with active guideline treatment.

## CONFLICTS OF INTEREST

None.

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