

Case Report

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A rare cause of acute urinary retention: Meningitis-retention syndrome caused by varicella zoster virus

Ertuğrul KÖSE ^{1,*}, Onur KALAYCI ², Murat GÜLŞEN ²

¹Department of Urology, Gazi State Hospital, Samsun, Türkiye

²Department of Urology, Faculty of Medicine, Ondokuz Mayıs University, Samsun, Türkiye

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Abstract

A 33-year-old male patient presented to the urology clinic with complaints of headache, fatigue, and acute urinary retention. Physical examination revealed paresthesia/hypoesthesia in the S3–S5 dermatomes and decreased anal sphincter reflex. Blood and urine studies were performed, with results within normal limits. No abnormalities were observed in the urinary system on abdominal computed tomography. Cranial magnetic resonance imaging showed meningeal thickening and contrast enhancement. Lumbar puncture results reported a positive varicella zoster virus DNA. After the diagnosis, he was given intravenous acyclovir, and the symptoms gradually improved.

Keywords: meningitis-retention syndrome, varicella zoster virus, acute urinary retention

1. Introduction

Acute urinary retention (AUR) is a urological emergency characterized by the sudden inability to void urine voluntarily. AUR occurs with a male-to-female incidence ratio of 13:1, and its primary causes include obstructive, iatrogenic, inflammatory, and neurogenic factors (1). Obstructive factors are the most prevalent causes, with benign prostatic obstruction accounting for 53% of cases (2).

Varicella zoster virus (VZV) is a DNA virus from the Herpesvirus family. Following the initial varicella (chickenpox) infection, VZV establishes latency in the nervous system, which can remain dormant for years. Reactivation of the virus can be prompted by factors such as emotional stress, immunosuppression, acute or chronic illnesses, exposure to the virus, and malignancies (3). When latent VZV reactivates, it can cause inflammatory lesions in the sensory root ganglia, the meninges, and occasionally the spinal cord (4).

In this report, we present a case of acute urinary retention in a young patient triggered by the reactivation of VZV, for which informed consent was obtained from the patient.

2. Case Presentation

A 33-year-old male patient presented to the urology clinic with complaints of headache, fatigue, and inability to urinate. The patient was found to be in urinary retention. An indwelling urinary catheter was inserted, and 1100 mL of clear urine was drained immediately. The patient was hospitalized to investigate the etiology of his AUR. The patient stated that he had no history of instrumentation for AUR and did not experience any lower urinary tract symptoms or benign

prostatic obstruction. The patient had no history of chronic illnesses or previous surgeries. The physical exam was significant for paresthesia/hypoesthesia in the S3–S5 dermatomes and decreased anal sphincter reflex. There was no dermatomal rash. Urine microscopy and serum creatinine, total prostate specific antigen (TPSA), white blood cell (WBC), C-reactive protein levels were normal. Urine culture was subsequently negative for bacterial growth. No stones were detected on a non-contrast computed tomography scan performed to investigate suspected urinary tract stones.

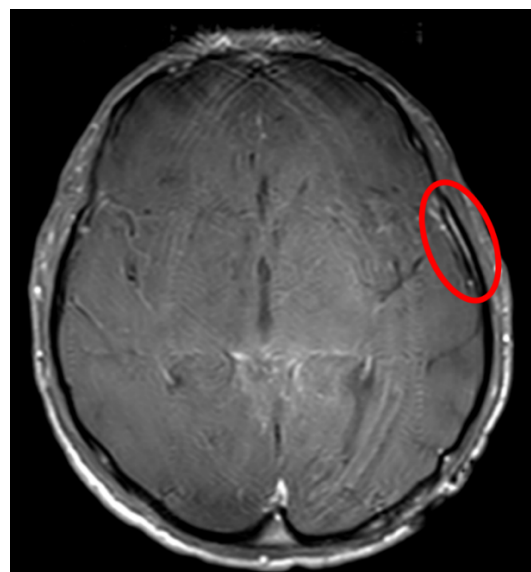


Fig. 1. Cranial MRI showing meningeal thickening and contrast enhancement

*Correspondence: ertugrul_kose@hotmail.com

Considering the patient's primary neurogenic etiology, a neurology consultation was requested. The electromyography was normal. Cranial contrast-enhanced magnetic resonance imaging (MRI) showed meningeal thickening and contrast enhancement (Fig.1), no abnormalities were observed in the spine on MRI. Because of the MRI findings, his cerebrospinal fluid was examined for confirmation of the diagnosis. The lumbar puncture findings were consistent with aseptic meningitis, and VZV DNA was positive by polymerase chain reaction (PCR) assay. While investigating the causes of the virus reactivation, the anti-HIV antibody test was reported positive. Subsequently, the HIV RNA test also came back positive, confirming the diagnosis of HIV.

The final diagnosis was meningitis-retention syndrome (MRS). After the diagnosis, acyclovir 750 mg x 3 / day for the VZV and a combination of nucleoside/nucleotide reverse transcriptase inhibitors and integrase strand transfer inhibitors for the HIV were promptly started. Two weeks after the treatment, the patient failed to void and required clean intermittent catheterization. The urinary stream was good nine weeks after the treatment, with 20 cc post-void residual urine.

3. Discussion

We report a case of AUR caused by aseptic meningitis. Urinary retention occurring in the setting of aseptic meningitis is referred to as MRS, first described by Sakakibara in 2005 (5). MRS is a rare condition, furthermore due to VZV is rare. Neurological complications affecting the peripheral and central nervous systems arise in 0.1% to 0.75% of individuals with VZV infection (6). In the last review in March 2023, Pellegrino et al. reported 29 MRS cases (7). After reviewing the literature, the present, we found further 4 MRS cases (8-11) except our case. In most cases, the subtle nature of encephalitic symptoms and findings, along with neurophysiological studies generally being within normal limits, makes diagnosing MRS challenging. MRS is considered a self-limiting condition, with no evidence indicating that any treatment significantly alters its clinical progression (7). The underlying pathological mechanisms have yet to be fully elucidated. However, clinical observations have documented elevated basal myelin protein levels in several cases, which may indicate an inflammatory demyelinating process primarily involving the sacral spinal segments. Hypotheses suggest that mechanisms analogous to those observed in acute disseminated encephalomyelitis (ADEM), potentially initiated by viral infections, may contribute to this pathology (12).

The patient's symptoms and findings were non-specific for both VZV and encephalitis. Infection with the VZV typically presents with a skin rash. However, as in our case, the typical skin rash is not observed in approximately 40% of meningoencephalitis cases caused by VZV (13). Therefore, VZV should be included in the differential diagnosis of aseptic meningitis, even without a skin rash.

Lesions in the upper motor neurons affecting the brain or

spinal cord result in an underactive detrusor, especially during the acute shock phase. An underactive detrusor is considered the primary cause of voiding dysfunction in neurological disorders (5). Since we determined that the primary cause of AUR was an underactive detrusor and that the results of a urodynamic study would not alter the treatment plan, we chose not to perform the study.

Acyclovir is administered in cases of VZV encephalitis due to its potential for enhanced efficacy. Although VZV accounts for only approximately 5% of encephalitis cases, early empirical treatment is essential, necessitating a careful balance with toxicity monitoring (14). Based on this rationale, we initiated acyclovir therapy for the patient.

This case highlights the rare but significant association between aseptic meningitis and AUR, identified as MRS. The reactivation of VZV in the absence of a typical skin rash, as well as the simultaneous diagnosis of HIV, further complicates the clinical presentation and emphasizes the need for a thorough diagnostic workup, including cerebrospinal fluid analysis and PCR testing for VZV. Although we know MRS is a self-limiting disease, we believe that etiology-specific treatment would benefit once the underlying cause is identified. Further studies are necessary to understand the pathophysiology of MRS better and to establish standardized treatment protocols.

Conflict of interest

The authors declared no conflict of interest.

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None to declare.

Authors' contributions

Concept: E.K., M.G., Design: E.K., Data Collection or Processing: O.K., Analysis or Interpretation: E.K., Literature Search: E.K., M.G., Writing: E.K., O.K.

Ethical Statement

This case report is not required ethical decision.

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