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Case Report

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Elsberg Syndrome Associated with Herpes Simplex Virus Type 2: A Two-Patient Case Series

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Abstract

Elsberg syndrome is an uncommon but likely underrecognized cause of acute lumbosacral radiculitis and myeloradiculitis, most frequently associated with herpes simplex virus type 2 (HSV-2). It is characterized by lower limb neurological deficits and autonomic dysfunction, particularly urinary retention. Early diagnosis is essential, as prompt antiviral therapy may significantly improve outcomes. We present two adult patients with HSV-2–associated Elsberg syndrome presenting with acute urinary dysfunction and lumbosacral neurological symptoms. In both cases, spinal magnetic resonance imaging (MRI) was unremarkable, while cerebrospinal fluid (CSF) analysis demonstrated lymphocytic pleocytosis. Virological testing supported HSV-2 infection. Both patients showed significant clinical improvement following intravenous acyclovir therapy. These cases highlight the diagnostic challenges of Elsberg syndrome and emphasize the importance of maintaining clinical suspicion even in the setting of normal neuroimaging.

Keywords: *Elsberg Syndrome, HSV-2 Reactivation, Lumbosacral Radiculitis.*

Introduction

Elsberg syndrome refers to acute or subacute lumbosacral radiculitis, often accompanied by myelitis, typically associated with a number of viruses (varicella-zoster virus, cytomegalovirus, West- Nile, SARS-CoV-2) (1,2) but most commonly with HSV-2 infection. Firstly it was described in 1931 by neurosurgeon Elsberg (3). Clinically, it is characterized by urinary retention, lower extremity weakness, radicular pain, sensory disturbances, and bowel dysfunction (4).

HSV-2 establishes latency in the sacral dorsal root ganglia (5). Viral reactivation may lead to inflammation of the lumbosacral nerve roots, conus medullaris, or cauda equina, resulting in a constellation of motor, sensory, and autonomic symptoms (5). Diagnosis is primarily clinical and supported by CSF findings and virological evidence. Notably, MRI of the spine may be normal, particularly early in the disease course, which can complicate diagnostic evaluation (6).

Case Presentations

We describe two patients who were admitted to our Neurological Department over the past year and were diagnosed with Elsberg syndrome.

The first case is a 37-year-old female that presented with acute headache, neck stiffness, and fever, consistent with viral meningitis. Her past medical history was characterized by urinary symptoms the previous week, which were managed with antibiotic treatment, despite the negative urine culture and no evidence of urinary infection from the urine sample that was tested. Furthermore, she reported suffering from haemorrhoids the previous year. Due to her symptoms the patient underwent a lumber puncture and the CSF analysis revealed marked 800 white blood cells/mm^3 (with 95% lymphocytic predominance) and elevated protein levels. At first empiric management with ceftriaxone, acyclovir and vancomycin were administered. Polymerase chain reaction (PCR) testing confirmed the diagnosis HSV-2 infection. Further on, the patient was managed with acyclovir iv (10mg/kg tds).

During hospitalization, she developed perineal burning pain, dysuria, urinary retention, and bilateral medial thigh dysesthesia. MRI of the lumbosacral spine was performed during her hospitalization and showed no pathological abnormalities.

Given the confirmed HSV-2 infection, radicular pain, and autonomic dysfunction, a diagnosis of Elsberg syndrome was established. She was treated with intravenous acyclovir and neuropathic pain management. The patient demonstrated progressive improvement and was discharged clinically stable with significant resolution of symptoms.

On re-evaluation two months after her hospitalization, the patient had a normal neurological examination and didn't have any remaining symptoms.

The second case is a 25-year-old-male patient presented with progressive gait impairment, bilateral quadriceps myalgias, and electric-shock like paraesthesia's originating from the soles. He reported urinary hesitancy, incomplete bladder emptying, and constipation. Symptoms had evolved over several days. His past medical history was unremarkable.

Neurological examination revealed mild bilateral lower limb weakness (Medical Research Council grade 4+), brisk lower limb reflexes, and gait disturbance without a defined sensory level.

MRI of the entire spine and brain was unremarkable. CSF analysis showed 240 white blood cells/mm^3 (95% lymphocytic predominance), mildly elevated protein, and normal glucose. A meningoencephalitis routine PCR panel was negative. Serological testing demonstrated positive HSV-2 IgM and IgG antibodies, and further CSF analysis with real time PCR was equivocal for HSV-2 DNA.

Based on the clinical presentation of acute lumbosacral radiculitis with neurogenic bladder and supportive virological findings, HSV-2–associated Elsberg syndrome was diagnosed.

He completed a 15-day course of intravenous acyclovir (10mg/kg tds). Intermittent catheterization was required during hospitalization after urological evaluation due to urinary retention and suppository medication was given due to severe constipation. With antiviral therapy and supportive management, the patient experienced marked neurological improvement.

Discussion

Elsberg syndrome exhibits significant clinical variability, encompassing a spectrum of lumbosacral radiculitis, myelitis, and autonomic dysfunction of varying severity. These cases highlight the clinical variability of Elsberg syndrome and emphasize the importance of early recognition in patients presenting with acute cauda equina symptoms.

Prompt neuroimaging and cerebrospinal fluid (CSF) analysis are essential to differentiate Elsberg syndrome from compressive and other inflammatory aetiologies, enabling timely initiation of targeted therapy and improved neurological outcomes. Importantly, a negative routine herpes simplex virus (HSV) polymerase chain reaction (PCR) does not exclude the diagnosis, as false-negative results may occur due to low viral load, suboptimal timing of sampling, or limited assay sensitivity.

Real-time PCR (quantitative PCR, qPCR) is superior to conventional (endpoint) PCR because it detects and quantifies DNA amplification during the exponential phase of the reaction, whereas conventional PCR assesses amplified products only at the end of the process. qPCR offers greater sensitivity, faster turnaround time, and real-time quantitative results without the need for post-amplification electrophoresis. However, it is more expensive and technically complex. Importantly, qPCR enables accurate quantification of the initial nucleic acid concentration, while conventional PCR is primarily qualitative or, at best, semi-quantitative (7).

When clinical suspicion remains high, particularly in the presence of urinary retention, radicular pain, and lympho cytic pleocytosis, high-sensitivity testing should be considered to support the diagnosis, ensuring early antiviral treatment and favourable neurological outcomes. In some Elsberg cases alongside with acyclovir corticostero ids were added to the management of Elsberg, although with controversial efficacy (6,8).

Conclusion

Elsberg syndrome as a rare diagnosis should be considered in patients presenting with acute urinary retention and lumbosacral neurological symptoms, particularly when HSV-2 infection is suspected or confirmed.

Normal spinal imaging does not exclude the diagnosis, particularly in the early phase of the disease. CSF lymphocytic pleocytosis and supportive virological findings (as real time PCR) strengthen diagnostic certainty, but clinical judgment is paramount.

Prompt antiviral therapy (in the case of HSV-2 acyclovir) is associated with significant neurological recovery, as demonstrated in both cases. Increased awareness of this rare but treatable condition may prevent diagnostic delay and improve patients neurological outcome.

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