Elsberg Syndrome – Under-Recognition of HSV-2 Lumbosacral Radiculitis among Canadians

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Abstract
Elsberg syndrome is an underrecognized entity characterized by urinary retention, sacral radiculitis, and cerebrospinal fluid pleocytosis, associated with either an acute infection or herpes-simplex 2 virus (HSV-2) reactivation. With HSV-2 prevalence among Canadians averaging 10-15%, awareness of atypical presentations and potential complications is critical for clinicians. Early recognition and treatment may help improve patient outcomes and decrease neurologic disease morbidity, including neuropathic pain, chronic urinary retention, and paraplegia. Here, we report a case of Elsberg syndrome in a 56-year-old female with no known history of prior HSV-2 infection who presented with sacral radiculitis, myelitis, urinary retention, and a positive cerebrospinal fluid HSV-2 PCR. We use this case to illustrate the key clinical, diagnostic, and radiographic features clinicians should be familiar with in clinical practice. Elsberg syndrome is an uncommon but significant neurological manifestation of HSV-2, and improved recognition of Elsberg syndrome may lead to more timely diagnosis, treatment, and improved neurologic outcomes.

Keywords: HSV-2; Elsberg Syndrome; sacral radiculitis

Résumé
Le syndrome d’Elsberg est une entité méconnue caractérisée par une rétention urinaire, une radiculite sacrée et une pleiocytose du liquide céphalorachidien, associées à une infection aiguë ou à une réactivation du virus herpès-simplex 2 (HSV-2). La prévalence du HSV-2 au Canada étant en moyenne de 10 à 15 %, il est essentiel que les cliniciens soient conscients des présentations atypiques et des complications potentielles. La reconnaissance et le traitement précoces peuvent contribuer à améliorer l’état des patients et à réduire la morbidité des maladies neurologiques, notamment la douleur neuropathique, la rétention urinaire chronique et la paraplégie. Nous rapportons ici un cas de syndrome d’Elsberg chez une femme de 56 ans sans antécédents connus d’infection par le HSV-2, qui présentait une radiculite sacrée, une myélite, une rétention urinaire et une PCR HSV-2 positive dans le LCR. Nous utilisons ce cas pour illustrer les principales caractéristiques cliniques, diagnostiques et radiographiques que les cliniciens doivent connaître dans leur pratique clinique. Le syndrome d’Elsberg est une manifestation neurologique peu fréquente mais significative du HSV-2 et une meilleure reconnaissance du syndrome d’Elsberg peut conduire à un diagnostic et à un traitement plus rapide et à de meilleurs résultats neurologiques.

Keywords: HSV-2; Elsberg Syndrome; sacral radiculitis


Introduction

Herpes-simplex viruses (HSV) are among the most common sexually transmitted infections in North America. Seroprevalence studies are wide-ranging, but the estimated prevalence of HSV among those 15-49 lies between 20-80%. Though often minimally symptomatic, herpes viruses can contribute to significant neurological morbidity. Globally the prevalence of HSV-2 is less common than HSV-1 but is similarly associated with a broad spectrum of diseases, ranging from asymptomatic primary infection to severe disseminated disease. The transmission of HSV-2 in adults is predominantly through sexual contact and often results in primary urogenital infection with subsequent latency in the sacral dorsal root ganglia. The ability of HSV-2 to establish a latent reservoir and reactivate can enable recurrent cutaneous genital lesions. However, reactivation can also result in neural inflammation and involvement of local neurologic structures.

Almost a century ago, a self-limiting syndrome of acute urinary retention with variable spinal cord dysfunction was first described by Dr. Charles Elsberg. Patients were found to have symptoms suggestive of a spinal tumor localizing to the cauda equina, but upon surgery and autopsy, no structural or etiologic pathology could be identified. The only associated findings in these early cases was cerebrospinal fluid (CSF) pleocytosis. It was also noted that patients had resolution of their neurologic symptoms without surgical intervention. Over the years, advances in microbiology have now implicated HSV-2 as a causative pathogen responsible for this syndrome. Classically HSV-2 is the most common pathogen associated; however, other viruses such as SARS-CoV-2, HIV, Varicella, and West Nile virus have also been implicated. Both primary infection and viral reactivation have been identified as causative in driving neuroinflammation, which in turn can lead to bilateral lumbosacral radiculitis or myelitis.

The constellation of Elsberg syndrome symptoms has changed little since its initial description. It is characterized by lumbosacral radiculitis, with or without myelitis, transient urinary retention, anogenital paraesthesia, and constipation. Clinically, patients often attend medical attention due to urinary retention or lower extremity weakness. Radiographically, about 40% of cases reported have MRI evidence of root enlargement or enhancement with a small percentage demonstrating true myelitis. Symptoms typically self-resolve without therapy, though symptoms can persist for one week to several months and, in a subset of patients, may result in chronic neuropathic pain.

Despite long-standing descriptions of Elsberg syndrome in the medical literature, it has remained underrecognized. This is likely multifactorial resulting from the lack of a clear case definition, poor clinical awareness, underreporting of cases, and infrequent confirmatory CSF testing. Given the challenges in defining and recognizing cases, most diagnoses of Elsberg are delayed, unrecognized, or misclassified.

Case

A 56-year-old Caucasian female with no prior medical history, presented to her family physician with a one-week history of dysuria, paraesthesias in the L1-L4 and S2-3 dermatomes, and vulvovaginal erythema and tenderness. She had trialed topical clotrimazole herself, presuming her symptoms were attributed to vulvovaginal candidiasis; however, she saw no improvement. She had no prior history of sexually transmitted infections, including syphilis, gonorrhea, chlamydia or HSV. Her persistent genital pain led her to present to her local emergency department several days later. At that time, a basic metabolic panel was unremarkable. Still, she had a positive urine analysis and was treated for a presumed urinary tract infection with five days of cephalaxin 500 mg orally four times a day.

Despite antimicrobials, her symptoms progressed and 48 hours later she noted new onset urinary retention, constipation, and paraesthesias extending bilaterally into the L5-S1 dermatomes. She re-presented to the hospital and required placement of a Foley catheter for urinary retention. A non-contrast computed tomography of the head and an MRI of the lumbar spine showed no abnormalities. Her neurologic exam revealed normal power, except for her bilateral hip flexors, which were slightly decreased. She had normal reflexes in the upper extremities, but 3+ bilaterally at the patella and absent reflexes in the Achilles tendons bilaterally. She had decreased pinprick sensation in the S1/S2 dermatomes, but with normal tone of the anal sphincter. She had no meningismus or appreciable genital lesions. A lumbar puncture showed a total nucleated cell count of 55, that was lymphocyte predominant with no xanthochromia. She had an elevated protein of 0.56 g/L and a normal glucose of 3.8 mmol. Her CSF culture was negative, but PCR testing was
positive for HSV-2. Ancillary testing for HIV, Lyme, syphilis, CMV, and Epstein-Barr virus (EBV) were all negative.

Given the constellation of urinary retention, lumbo-sacral radiculitis, and her CSF pleocytosis with a positive HSV-2 PCR, a diagnosis of Elsberg syndrome was made. She was started on treatment with intravenous acyclovir at a dose of 10 mg/kg every eight hours for five days and was then switched to valacyclovir 1g orally three times daily to complete a 14-day course. In addition, she received a 5-day course of dexamethasone 4 mg orally twice daily. Her Foley catheter was removed on day three of therapy and concurrently, she noted improvement in her paraesthesias. Follow-up in one month revealed almost complete resolution of her symptoms.

Discussion

While reactivation of HSV-2 often presents as recurrent genital outbreaks, healthcare providers should be aware of less common but more significant neurologic manifestations including Elsberg syndrome. While this syndrome is uncommon, the high rates of HSV-2 seroprevalence in North America and other parts of the globe underscore its potential burden. A recent Canadian seroprevalence study estimated that 13% of people between the ages of 14-59 are likely to be seropositive for HSV-2 with a majority being unaware of their status.11 This is similar to seroprevalence data from the United States estimating seroprevalence at between 15-20%.12 Meanwhile, high reactivation and intermittent viral shedding rates have been well characterized among seropositive patients.13 This overlapping epidemiology of both high prevalence and high reactivation rates likely underscores the substantial under-recognition of Elsberg cases.

The case definition of Elsberg remains broad but more recently was consolidated by Savoldi et al., who published data validating objective criteria for diagnosis.9 Required diagnostic features included clinical signs and symptoms and MRI or electrophysiological evidence of cauda equina involvement. While part of the diagnostic definition, cauda equina is rare and only seen in less than 10% of Elsberg Syndromes.9 Other supportive criteria included overall time course of illness, co-existing or preceding history of genital herpes or systemic herpes infection, CSF pleocytosis, and documented herpes virus infection from CSF analysis.9

A brief review of the literature revealed 60 published Elsberg cases. The mean age of onset among these cases was 47.5 years with the majority occurring among males (65%). Only 15% of cases were among immunocompromised patients, with the majority (44%) of those cases having chronic HIV-1 infection. Antiviral monotherapy was given in 41.7% of cases, and 13.3% of cases were given dual therapy with steroids and an antiviral agent. Among those treated, 72.2% had full recovery, 22.2% had mild impairments and 5.5% had significant neurologic morbidity. There was only one report of mortality associated with progression of Elsberg syndrome to encephalomyelitis and eventual death.7,9

Despite robust data on clinical presentation, little exists to guide appropriate treatment modalities or delineate the clinical trajectory of those experiencing symptoms.4,9,10 Typically, Elsberg syndrome is self-limiting with a resolution of symptoms over weeks. Some studies found symptom resolution to occur within 4-10 days in immunocompetent patients, while others highlighted a longer recovery period of several weeks.7 Observational studies have reported the use of acyclovir and corticosteroids with mixed results. Traditionally intravenous acyclovir has been used to treat central nervous system infections with both HSV and varicella zoster virus. Still, no compelling evidence exists documenting the effectiveness and generalizability of antiviral use in Elsberg’s syndrome. Previous studies highlight the lack of alternative therapies and minimal potential harm as rational for utilizing acyclovir or corticosteroids as first-line therapy.7,9 While both therapies come with side effects, it may be worthwhile considering antiviral and corticosteroid therapy in high-risk immunocompromised patients due to the severity and fatality of disseminated HSV infections. Furthermore, given the lack of conclusive data, oral antivirals can also be considered as therapy options, and may have less side effects compared to intravenous antiviral use. Additionally, in those with recurrent HSV-2 genital lesions prophylaxis may be considered, although no data exists to support this use in the prevention of Elsberg syndrome in patients with known prior HSV-2 infections.

Conclusions

Elsberg syndrome is characterized by urinary retention, sacral radiculitis, and CSF pleocytosis, in the setting of HSV-2 infection and remains an underrecognized entity among Canadians. With HSV-2 prevalence ranging from 10-15% among the Canadian population, awareness of atypical presentations of HSV-2 and its potential complications remains essential for clinicians. Improved recognition
of Elsberg syndrome may lead to more timely diagnosis, treatment, and improved neurologic outcomes, thereby reducing neuropathic pain, chronic urinary retention, and paraplegia.

Despite challenges in defining and recognizing cases, this paper highlights the clinical, diagnostic, and radiographic features that clinicians should be familiar with in clinical practice. Treatment with antivirals and steroids should be considered in cases with significant neurologic dysfunction to shorten symptom duration, although evidence is limited. Further research is needed to establish standardized diagnostic criteria and treatment guidelines for Elsberg syndrome, considering the potential long-term consequences and morbidity associated with the condition.

References