CASO CLÍNICO/CASE REPORT

Elsberg Syndrome due to HSV-2 in Pregnancy

Síndrome de Elsberg por VHS-2 na Gravidez

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Abstract

Elsberg syndrome is a rare, self-limiting radiculitis, often associated with HSV-2 infection. It typically presents with urinary retention and cauda equina involvement. We report a case of a 37-year-old woman, 36 weeks pregnant, who presented with fever, headache, photophobia, urinary retention, and left-leg numbness. Neurological examination suggested spinal cord involvement, despite an unremarkable magnetic resonance imaging (MRI). Cerebrospinal fluid analysis showed lymphocytic pleocytosis and was positive for HSV-2 by PCR. She was treated with acyclovir for 21 days, leading to clinical improvement. Labor was induced at 38 weeks, resulting in an uncomplicated vaginal delivery. Postpartum follow-up showed persistent mild hypoesthesia but overall recovery. This case highlights an atypical presentation of Elsberg syndrome in pregnancy, emphasizing the importance of multidisciplinary collaboration for timely diagnosis and management. Early antiviral therapy contributed to a favorable outcome for both mother and newborn.

Resumo

A síndrome de Elsberg (SE) é uma radiculite rara e autolimitada, frequentemente associada à infeção pelo HSV-2. Manifesta-se com retenção urinária e envolvimento da cauda equina. Apresentamos o caso de uma grávida de 36 semanas, 37 anos, que recorreu ao serviço de urgência por febre, cefaleia, fotofobia, retenção urinária e dormência na perna esquerda. O exame neurológico evidenciou envolvimento medular lombar, e a ressonância magnética (RM) não demonstrou alterações significativas. A análise do LCR revelou pleocitose linfocítica e teste PCR positivo para HSV-2. Foi tratada com aciclovir durante 21 dias, com melhoria clínica. O parto foi induzido às 38 semanas, resultando num parto vaginal sem complicações. No pós-parto, mantinha hipoestesia ligeira com recuperação dos restantes sintomas. Este caso destaca uma apresentação peculiar da SE na gravidez e a importância da colaboração multidisciplinar para diagnóstico e tratamento oportunos. A terapia antiviral precoce contribuiu para um desfecho favorável para a mãe e para o recém-nascido.

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Introduction

Elsberg syndrome (ES) is a rare, self-limiting lumbosacral radiculitis, with or without myelitis, often associated with viral infections, primarily herpes simplex virus type 2 (HSV-2). It typically presents with urinary retention, lower limb sensory deficits, and other signs of cauda equina involvement. The syndrome remains underdiagnosed due to its nonspecific presentation and the lack of definitive diagnostic markers.[1,2]

ES is frequently linked to aseptic meningitis caused by HSV-2, with cerebrospinal fluid (CSF) analysis showing lymphocytic pleocytosis, elevated protein, and positive HSV-2 PCR. While pathophysiology remains unclear, viral latency in the sacral root ganglia and subsequent reactivation under stress or immunomodulatory conditions have been proposed as key mechanisms.[1,3]

The occurrence of ES during pregnancy is exceedingly rare, with few cases reported. Pregnancy is a state of immunomodulation rather than true immunosuppression, which may influence viral reactivation, although it is not confirmed. The absence of typical genital lesions further complicates early recognition. Given the risks of neonatal HSV transmission and maternal neurological complications, early diagnosis and antiviral therapy are crucial.[4,5]

Case Report

A 37-year-old woman, 36 weeks pregnant, with a previous history of deep vein thrombosis, bariatric surgery, active smoking (15 pack-years), and three previous pregnancies (two vaginal deliveries and one voluntary termination of pregnancy). She was on prophylactic enoxaparin, folic acid, and iron supplementation. The patient sought medical attention due to a six-day history of progressively worsening holocranial headache, reaching an intensity of 9/10, accompanied by vomiting (initially mild but becoming intractable), daily fever, photophobia, and phonophobia, with no significant relief from analgesics. On the fifth day, she developed urinary retention and left leg numbness, which led to a fall. She reported no dyspnea or cough. No skin or vulvar lesions, and no inguinal lymphadenopathy were verified by the obstetric team.

On neurological examination, there were no alterations in higher nervous functions or cranial nerve examination. Hypoalgesia was present in the left lower limb, with a sensory level around T8–T10. Vibration sense testing showed reduced perception in the left lower limb (ankle: 5 seconds; knee: 6 seconds; radial styloid: 13 seconds) compared to the right. Position sense testing revealed three errors at the left hallux. Opposition testing showed mild paresis (grade 4+) in the left lower limbs, and the left patellar reflex was hypoactive compared to the contralateral side, while the remaining deep tendon reflexes were brisk and symmetrical. Due to safety concerns, gait testing was not performed. Given the hypoalgesia with a sensory level at T8–T10, an urgent thoracic spine magnetic resonance imaging (MRI) was requested to evaluate for signal alterations. A cranial and thoracic spine MRI performed in the emergency department showed no abnormalities (**Figs. 1 and 2**). She underwent urinary catheterization and was started on empirical treatment with ceftriaxone (2 g IV every 12 hours), ampicillin (1 g IV every 4 hours), acyclovir (750 mg IV every 8 hours), and dexamethasone (10 mg IV every 6 hours).

A lumbar puncture was performed, revealing an apparently turbid cerebrospinal fluid (CSF), with lymphocytic pleocytosis of 747/mm^3, protein concentration of 215 mg/dL, and glucose level of 30 mg/dL (53 mg/dL in blood). A multiplex PCR test on CSF was positive for HSV-2. Blood serology revealed positive HSV-2 IgG and IgM. She was admitted to the obstetrics department with joint follow-up by the infectious diseases team. After CSF cytology, biochemistry and PCR results, she continued treatment only with acyclovir for 21 days, and corticosteroid for 5 days, showing improvement in headache and neck pain, as well as partial recovery of the neurological deficits, maintaining left-sided hypoesthesia at the T10 level.

Labor was induced at 38 weeks with vaginal misoprostol, resulting in an uncomplicated vaginal delivery. The multidisciplinary team also determined that labor induction and an attempted vaginal delivery were more advantageous for both mother and newborn than elective cesarean delivery. The decision to proceed with induction was based on maternal clinical stability, a favorable Bishop score indicating good cervical maturation and a high likelihood of successful vaginal delivery, confirmed fetal maturity ensuring adequate adaptation to extrauterine life, a negative vaginal PCR swab for HSV-1/2, and the lack of benefits in prolonging the pregnancy given the maternal condition and the expected symptomatic improvement in postpartum.

The newborn male weighed 2890 g and had APGAR scores of 9/10/10. During hospitalization, the neonatology team conducted PCR testing for HSV-1 and HSV-2 using

Figures 1 and 2. Figure 1 is a MRI: T2 sequence, sagittal plane; Figure 2 is a MRI: STIR sequence, sagittal plane. Spinal dorsal vertebro-medullary MRI without evidence of spinal cord or nerve root signal changes. The absence of findings in the imaging exam is also reported in the literature; however, it is possible to detect changes when imaging exams are repeated after 7 days.[1,6]

swabs from multiple mucosal sites (nasopharyngeal, oropharyngeal, conjunctival, and rectal) and assessed viral load in peripheral blood, all of which were negative. A transfontanellar ultrasound showed no abnormalities, with normal flowmetry (IR: 0.72). Physical examination was unremarkable, with no detected anomalies. He exhibited healthy development without complications. Two weeks after hospital discharge, the patient was reassessed in a neurology follow-up consultation and remained stable.

Discussion

Extragenital Complications of HSV-2 and Pathophysiology

Extragenital complications of HSV-2 infection are uncommon, but well-documented, particularly in the form of aseptic meningitis and radiculomyelitis.[1,3] HSV-2 is neurotropic and can cause recurrent episodes of meningitis, known as Mollaret's meningitis, which may coexist with ES. They can occur due to the virus's ability to remain dormant in up to 40% of dorsal root ganglia, and under certain physiological stressors – such as pregnancy, immunomodulation, or concurrent infections – reactivation can lead to viral dissemination into spinal cord and nerve roots, resulting in radiculitis, myelitis, or meningitis.[4]

Pregnancy represents a unique immunological state, characterized by shifts in adaptive and innate immunity to support fetal development while maintaining host defense. This immunomodulation, rather than overt immunosuppression, may contribute to viral reactivation in susceptible individuals.[5] Despite this theoretical risk, ES remains exceedingly rare in pregnancy, with only a few cases reported.[1] This rarity underscores the need for heightened clinical suspicion, particularly in the absence of genital lesions or other classic signs of primary HSV-2 infection.[2]

Diagnostic Challenges and Certainty in Elsberg Syndrome

The diagnosis of Elsberg syndrome (ES) is often difficult due to its nonspecific presentation and overlap with other neurological disorders, such as Guillain-Barré

syndrome, transverse myelitis, and meningitis-retention syndrome.[5] The Mayo Clinic review has proposed diagnostic criteria that stratify ES cases into definite, probable, and possible categories based on clinical, laboratory, and imaging findings. This case meets the definite ES criteria, as the patient presented with characteristic neurological symptoms, had a CSF profile consistent with viral meningitis (monomorphonuclear pleocytosis and elevated protein), and was confirmed to have HSV-2 by PCR.[1,2]

MRI findings in ES can be variable, ranging from normal studies to subtle spinal cord hyperintensities and nerve root enhancement.[2] In this case, although there were symptoms localizing to the lumbosacral roots and cauda equina, a lumbosacral MRI was not performed initially. The primary concern at the time was the rapidly evolving neurological deficits, including the thoracic sensory level and urinary retention, which raised suspicion for myelitis or myeloradiculitis. The decision was made to prioritize urgent thoracic imaging, with plans for further lumbosacral evaluation if clinically indicated. Additionally, considering the risks associated with gadolinium-based contrast agents (GBCAs) during pregnancy, contrast administration was avoided. GBCA use is contraindicated during pregnancy due to its potential for placental transfer, amniotic fluid excretion, and possible fetal recirculation, with concerns about stillbirth, neonatal complications, and long-term effects that remain incompletely understood.[8]

Despite a normal MRI, early imaging may appear unremarkable, particularly when performed before the development of radicular inflammation.[4] This could also be explained by motion artifacts or subtle lesions compatible with this case presentation. Follow-up imaging after one week could have revealed subtle nerve root enhancement, as described in prior cases, but given the absence of significant findings on the thoracic MRI and subsequent clinical stabilization, lumbosacral imaging was deferred. Normal MRI findings, therefore, do not exclude the diagnosis, especially when strong clinical and laboratory evidence is present.[1,2]

Management Approach: Treating the Mother Before Delivery

Although antiviral therapy with acyclovir is frequently used in the treatment of Elsberg syndrome, the evidence supporting its effectiveness is limited to case series and isolated reports. According to the Centers for Disease Control and Prevention (CDC) guidelines, intravenous acyclovir is recommended for patients with severe HSV disease or complications requiring hospitalization, such as disseminated infections or central nervous system involvement. However, the absence of large-scale, controlled clinical studies makes the actual benefit of this intervention uncertain. Furthermore, Elsberg syndrome is a rare condition, with few documented cases in the medical literature, making it challenging to conduct robust clinical trials to assess the efficacy of antiviral treatment in this specific population.[2,6]

Neonatal herpes simplex virus (HSV) infection is associated with high morbidity, particularly in cases of disseminated disease or central nervous system involvement. Transmission primarily occurs through direct exposure to active maternal genital lesions during delivery. However, neonatal infection can also occur in utero or postnatally, especially in the presence of maternal viremia.[1] In this case, the patient had no visible genital lesions, PCR for HSV-2 on the vaginal swab was negative, and the infection was confirmed in the cerebrospinal fluid (CSF) via HSV-2 PCR. Additionally, serum antibodies indicated recent infection or reactivation (positive IgM and IgG). Given these findings, systemic antiviral therapy was considered a reasonable and safe approach for the patient, although it was recognized that the risk of transmission to the fetus was improbable.

While cesarean section is generally recommended for women with active genital HSV lesions near term, in this case, the absence of genital lesions led to the decision to delay delivery to allow for the completion of the pregnancy and maternal treatment, provided that both maternal and fetal conditions remained stable.[7] Moreover, labor induction and vaginal delivery offer significant benefits for both maternal and neonatal health, leading to improved outcomes compared to cesarean section. For mothers, advantages include reduced hemorrhage, lower risks of thromboembolism and infection, decreased morbidity in future pregnancies, and faster postpartum recovery. For neonates, vaginal delivery promotes short-term respiratory and cardiovascular adaptation to extrauterine life, with potential long-term health benefits.[9]

Conclusion

This case highlights a rare and atypical presentation of Elsberg syndrome in pregnancy, emphasizing the importance of multidisciplinary collaboration for timely

diagnosis and management. Given the diagnostic complexity, a thorough understanding of clinical, laboratory, and virological criteria is essential to differentiate ES from other neurological disorders.

Further research is needed to better define the duration of antiviral therapy in pregnant patients with neurological HSV-2 involvement, as well as to clarify the extent of passive immunity transfer to neonates. Additionally, a deeper understanding of the role of HSV suppression therapy in reducing the risk of late gestational reactivation and transmission could further refine management strategies. ■

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NF, MM: Conception and design.

NF, MM: Writing.

PGS, CS, AJ: Critical review of an important part of its intellectual content.

All authors approved the final version to be published.

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