

Varicella-zoster virus longitudinally extensive myelitis in an immunocompetent patient

Mielite longitudinalmente extensa secundária ao vírus varicela-zóster em paciente imunocompetente

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ABSTRACT

Longitudinally extensive myelitis is a severe rare complication of varicella-zoster virus infection. We report a case in a 20-year-old immunocompetent patient who presented with a two-week history of lower-limb paresis and paresthesia below dermatome T12, and sphincter dysfunction. He presented with a zoster rash a week prior to the onset of neurological symptoms. Spinal cord magnetic resonance imaging revealed a C5-T12 intramedullary lesion and cerebrospinal fluid showed lymphocytic pleocytosis and elevated varicella-zoster virus immunoglobulin G. Patient had not gained much improvement after acyclovir and pulse therapy with methylprednisolone, which prompted a five-day course of plasmapheresis. He partially recovered, but remained with sphincter impairment.

Keywords: varicella-zoster virus, myelitis, infectious myelitis.

RESUMO

Mielite longitudinalmente extensa é uma rara e grave complicação da infecção pelo vírus varicela-zóster. Relatamos o caso de um paciente de 20 anos de idade, imunocompetente, que há duas semanas apresentou paresia de membros inferiores e parestesias abaixo do dermatomo T12, associadas com disfunção esfinteriana. Ele apresentou um rash cutâneo sugestivo de herpes uma semana antes do início dos sintomas neurológicos. A ressonância magnética de medula espinhal demonstrou uma lesão intramedular de C5 a T12, e o líquido cerebrospinal revelou uma pleocitose linfocítica com aumento de imunoglobulina IgG para o vírus varicela-zóster. O paciente não apresentou melhora após uso de aciclovir e pulsoterapia com metilprednisolona, o que motivou um curso de cinco dias de plasmáfereze. Houve recuperação parcial, porém ele permaneceu com distúrbio esfinteriano.

Palavras-chave: vírus varicela-zóster, mielite, mielites infecciosas.

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INTRODUCTION

Varicella-zoster virus (VZV) reactivation from latently infected ganglia causes multiple neurologic diseases. The most common is herpes zoster, which is frequently complicated by postherpetic neuralgia, meningoencephalitis and vasculopathy, including VZV temporal arteritis and retinal necrosis. VZV can spread centrally to the spinal cord to cause myelitis from frank invasion of virus or to produce spinal cord infarction¹. VZV myelitis usually presents with weakness and abnormal deep tendon reflexes that are most prominent ipsilateral to the rash. The motor dysfunction may remain ipsilaterally localized as segmental paresis or spread to the contralateral cord, causing paraparesis. Sensory findings also are frequent and bladder dysfunction may be seen. The myelitis can occur in immunocompetent patients, although it is most commonly related to immunocompromised states². We report a case of a longitudinally extensive myelitis due to VZV infection in an immunocompetent patient, which is very rarely seen in the literature.

CASE PRESENTATION

A 20-year-old previously healthy Brazilian man presented with a two-week history of lower-limb paresthesia that progressively worsened and involved all dermatomes below T12. He evolved with lower-limb weakness, ascending paresthesia, urinary retention and fecal incontinence. Neurological examination showed a T5 sensitive level and lower-limb paraparesis (grade 3 MRC muscle strength). The patient had developed a zoster rash a week prior to the onset of neurological symptoms, and presented to our unit with clustered dermatome crusted vesicles and later developed another suggestive rash during steroid use. Brain magnetic resonance imaging (MRI) was normal and spinal cord MRI revealed a C5-T12 intramedullary lesion (Figure 1). Cerebrospinal fluid (CSF) showed lymphocytic pleocytosis (200 cells/ μ L) and elevated VZV immunoglobulin G (0.95; reference values of < 0.1). CSF venereal disease research laboratory, polymerase chain reaction (PCR) for VZV and herpes simplex virus, bacteria, mycobacteria and fungi cultures were negative. Laboratory tests included normal levels of blood biochemistry, erythrocyte sedimentation

rate, C-reactive protein, antiphospholipid antibody panel, antinuclear factor and anti-DNA antibodies, anti-SSA and anti-SSB antibodies, c-ANCA and p-ANCA, rheumatoid factor, anti-cardiolipin antibodies, C3 and C4 complement, vitamin B12, folic acid, hepatitis B and C, lupus anticoagulant, thyroid stimulating hormone and anti-aquaporin 4 antibody. Serum HIV and HTLV were negative. IgG and IgM Lyme and herpes simplex serologies were negative. Thoracic and abdominal computed tomography was unrevealing as well as upper gastrointestinal endoscopy, testis and abdominal ultrasounds, carcinoembryonic and other cancer antigens (CA 19.9, CA 15.3 and CA 125). He was treated with methylprednisolone (1g/day) followed by oral steroids (60 mg/day) and acyclovir (10 mg/kg TID for 14 days). Patient had not gained much improvement after pulse therapy what prompted a five-day course of plasmapheresis. He achieved a grade 4+ MRC muscle strength improvement and partial recovery of paresthesia, but remained with impairment of sphincter.

DISCUSSION

Diagnosis of VZV myelitis is based on clinical and radiological features and is supported by the detection of VZV DNA PCR or the production of VZV IgG in the CSF. The VZV IgG index is a quotient expressed as CSF antibody titer/serum antibody titer/CSF total IgG/serum total IgG. A high quotient value provides evidence of intrathecal production of anti-VZV antibody. Our patient had an extremely elevated index, making very improbable that the immunoglobulin had been produced outside the thecal space and crossed the blood-brain barrier^{1,2}.

To the best of our knowledge, longitudinally extensive VZV myelitis has only been reported once in Japan³. However, the authors reported a longitudinally disseminated spinal cord involvement, which is different from the contiguously extensive lesion of our case, mimicking the neuroimaging features of neuromyelitis optica spectrum disorder (NMOSD). In our case, NMOSD was not the primary diagnostic consideration because of the inflammatory pattern of the CSF. A recent paper described the CSF profile in 211 lumbar punctures of 84 patients with NMOSD. A CSF pleocytosis greater than 100 leucocytes/ μ L

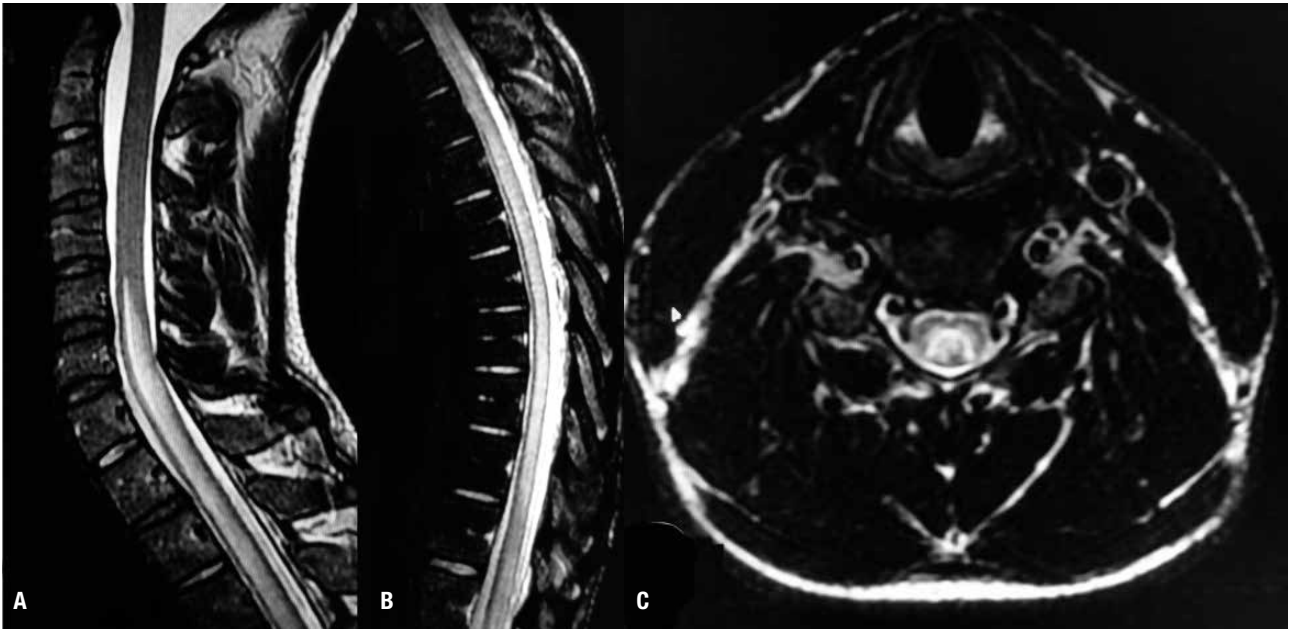


Figure 1. Magnetic resonance imaging (MRI) of the lesion. **(A)** Sagittal T2-weighted cervical spinal cord MRI showing an extensive intramedullary lesion ranging from C5 to T3 vertebral levels. **(B)** Sagittal T2-weighted thoracic spinal cord MRI showing a longitudinally extensive and continuous intramedullary lesion of the entire thoracic cord. **(C)** Axial T2-weighted C6 spinal cord MRI showing intramedullary centrally-located hyperintense lesion in a H-shaped pattern.

was observed only in 6.2% of the samples and an even smaller percentage had greater than 200 leucocytes/ μ L count⁴. Another interesting feature of our case is that the extensive involvement occurred in an otherwise healthy patient and in whom neoplastic and immunodeficiency states were ruled out.

CONCLUSION

VZV infection must be included in the differential diagnosis of longitudinally extensive myelitis, particularly of neuromyelitis optica and NMO. Physicians should bear in mind that immunocompetent patients can also present with VZV infection and a severe and extensive spinal cord involvement.

CONFLICT OF INTEREST

We declare no conflicts of interest/no financial support. Patient has consented with the publication of this manuscript.

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