Case Report/Relato de Caso

Acute meningoencephalomyelitis due to varicella-zoster virus in an AIDS patient: report of a case and review of the literature

Meningoencefalomielite aguda pelo vírus varicela-zoster em um paciente com AIDS: relato de um caso e revisão da literatura

Marcelo Corti[1], Norberto Trione[1], María Florencia Villafañe[1], Daniel Risso[1], Claudio Yampolsky[1] and Lilia Mamanna[2]

ABSTRACT

Varicella-zoster virus (VZV) meningoencephalomyelitis is a rare but severe neurological complication of VZV reactivation in immunocompromised patients. We report the case of an HIV-infected individual who developed an acute and severe meningoencephalomyelitis accompanied by a disseminated cutaneous eruption due to VZV. The presence of VZV DNA in cerebrospinal fluid was confirmed by polymerase chain reaction (PCR) technique. The patient started undergoing an intravenous acyclovir therapy with a mild recovery of neurological manifestations. Varicella-zoster virus should be included as a cause of acute meningoencephalomyelitis in patients with AIDS. Early diagnosis followed by specific therapy should modify the rapid and fulminant course for this kind of patients.

Keywords: Varicella-zoster virus. Meningoencephalomyelitis. AIDS.

RESUMO

A meningoencefalomielite pelo vírus varicela-zoster (VVZ) é uma complicação neurológica rara mas grave da reativação do VVZ em pacientes imunocomprometidos. Nós relatamos o caso de um indivíduo infectado por HIV que desenvolveu uma meningoencefalomielite aguda e grave acompanhada por uma erupção cutânea por causa do VVZ. A presença do DNA do VVZ no líquor foi confirmada pela técnica de reação em cadeia da polimerase (PCR). O paciente iniciou uma terapia intravenosa com aciclovir com uma leve recuperação das manifestações neurológicas. O vírus varicela-zoster deve ser incluído como uma causa de meningoencefalomielite nos pacientes com AIDS. O diagnóstico precoce seguido por terapia específica pode modificar o curso rápido e fulminante deste tipo de pacientes.

Palavras-chaves: Vírus varicela-zoster. Meningoencefalomielite. AIDS.

INTRODUCTION

Varicella-zoster virus (VZV) is a member of the herpesvirus family causing chickenpox (varicella) generally in infants and may reactivate decades later to produce shingles (zoster)[1].

Neurological complications of the reactivation of latent VZV infection occur more frequently in immunocompromised patients[2]. The most severe neurological complications associated with VZV reactivation in AIDS patients include meningitis, encephalitis with vasculitis and ventriculitis, and severe necrotizing myelitis[3].

1. Divisão de HIV/AIDS, Hospital de Doenças Infecciosas F. J. Muñiz, Buenos Aires, Argentina. 2. Laboratório de Virologia, Hospital de Doenças Infecciosas F.J. Muñiz, Buenos Aires, Argentina.
Address to: Dr. Marcelo Corti. Divisão de HIV/AIDS/Hospital de Doenças Infecciosas F. J. Muñiz Hospital. Puán 381/2º, C1406CQG, Buenos Aires, Argentina.
Phone: 54 11 4432-3762
e-mail: marcelocorti@fibertel.com.ar
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Here, we present a patient with disseminated infection due to VZV and neurological involvement expressed as an acute meningoencephalomyeloradiculitis.

CASE REPORT

A 24-year-old man was admitted to our HIV/AIDS Division with 5-day history of fever, headache, paraplegia, and a disseminated maculovesicular skin rash. He was diagnosed with human immunodeficiency virus (HIV) infection 5 years before; he was negative to hepatitis C and B virus antibodies. During the past years, he received highly active antiretroviral therapy (HAART) with poor adherence, virological and immunological failure, and clinical progression of the retroviral disease.

On physical examination, the patient had fever (39ºC) and a diffuse maculovesicular exanthema. Neurological examination revealed a rapid and progressive paraplegia with sensory loss, bladder sphincter compromise with urinary retention, and patellar and Achilles hyperreflexia. The plantar response (Babinski sign) was absent. Percussion of the spine elicited tenderness over L3 to L5. No retinal exudates were seen. Lung auscultation was normal, the abdominal examination revealed hepatomegaly, and the spleen was not palpable.

Relevant laboratory findings were anemia with hematocrit 30%, hemoglobin 9.7g/dL, leukocytes 4,500/mm^3 (84% of PMN), platelet count 182,000/mm^3, and glycemia of 75mg/dL. Liver enzyme levels were normal with elevated alkaline phosphatase (894 u/L); creatinine level, coagulation tests, and chest radiograph were normal. Blood and urine cultures for bacteria, mycobacteria, and fungus were negative. Tzanck smear examination of the vesicular lesions showed the presence of viral sincitios compatible with herpesvirus infection. Cerebrospinal fluid (CSF) examination at presentation revealed increased protein level (3.45g/L) and mild pleocytosis, with 30 cells/uL (80% lymphocytes). Glucose level was normal. VZV DNA was detected in CSF specimens by polymerase chain reaction (PCR) analysis. CSF direct examination and cultures for bacteria, mycobacteria, and fungus were negative. Magnetic resonance imaging (MRI) of the brain showed cerebral cortical atrophy and meningeal enhancement of gadolinium. MRI of the dorsolumbar spine revealed signs of radiculomyelitis of the cauda equine with enlargement of the conus medullaris, an increased signal on T2-weighted images, and contrast enhancement of all nerves of the cauda equina (**Figures 1, 2,** and **3**).

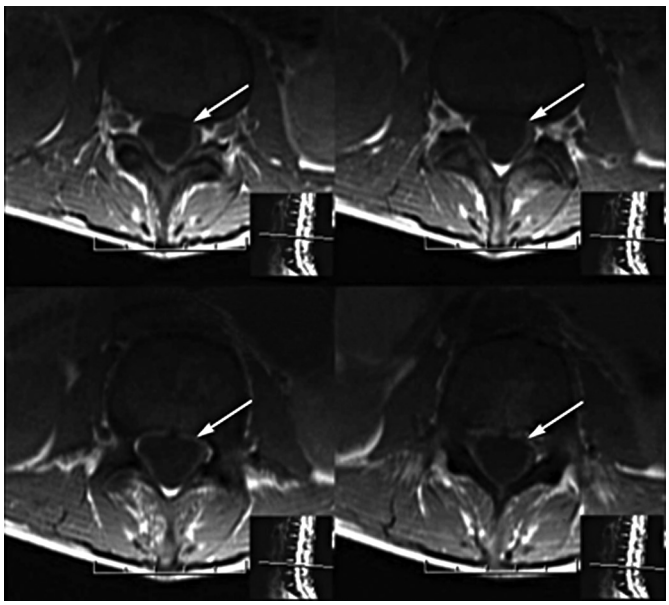

FIGURE 1 - Magnetic resonance imaging of the dorsolumbar spine revealed signs of radiculomyelitis of the cauda equine (arrows).

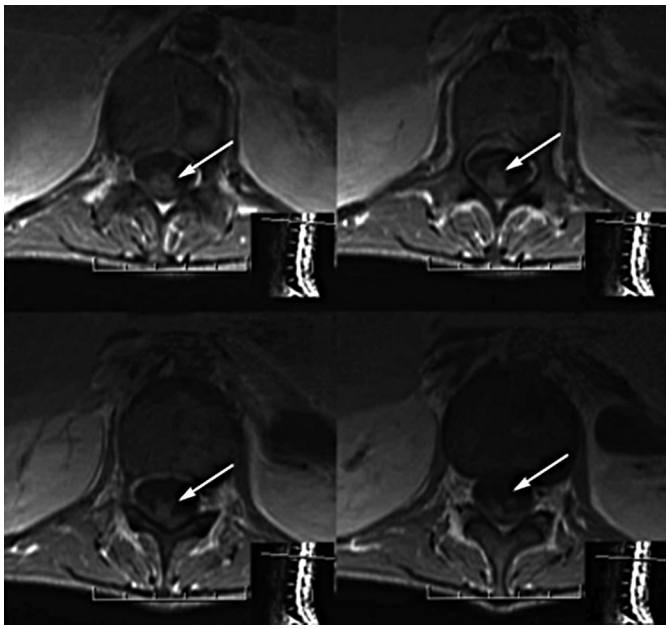

FIGURE 2 - Magnetic resonance imaging of the dorsolumbar spine showing the enlargement of the conus medullaris (arrows).

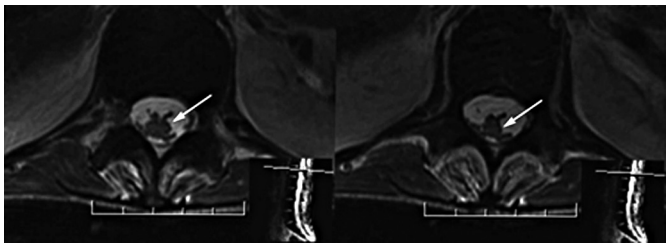

FIGURE 3 - Magnetic resonance imaging of the dorsolumbar spine showed contrast enhancement of all the nerves of the cauda equina (arrows).

The patient started undergoing a specific therapy based on intravenous acyclovir at doses of 10mg/kg every 8h for 21 days, with a mild improvement in clinical and neurological condition. A second CSF examination after 3 weeks of acyclovir therapy showed normal protein level, 2 cells/uL, and normal glucose. A new PCR analysis revealed negative results in detecting DNA of VZV.

DISCUSSION

Neurological complications of varicella and herpes zoster virus are less common. However, the introduction of PCR has increased the knowledge about the clinical spectrum of neurological disorders associated with VZV reactivation[4].

Reactivation of VZV infection of the CNS is more common in patients with AIDS in comparison with immunocompetent individuals and accounts up to 2% of the cases of neurological involvement[5].

Gray et al. reported VZV infection in central nervous system (CNS) in more than 4% of AIDS patients[6]. VZV-associated myelitis is rare and occurs in less than 1/1,000 cases[4,7]. The pathogenic mechanisms of VZV spinal cord compromise include neuronal and glial direct infection, vasculitis, and immune-mediated demyelination[8-9].

The most frequent clinical manifestations include paraparesis, segmental sensory loss, and sphincter involvement as we could see in our patient. Clinical outcomes range from complete recovery to death generally associated with ascending myelitis or super infections. VZV-associated myelitis is related with a high mortality in immunocompromised patients[9]. If VZV-related myelitis is often diagnosed in relationship with maculovesicular exanthema, the detection of VZV DNA in CSF can be possible in the absence of rash[10]. Generally, CNS involvement is simultaneous with cutaneous lesions. However, infectologists should consider that the presence of VZV DNA in CSF should be in accordance with other and simultaneous HIV-related neurological complications[9-10].

CSF findings include mild pleocytosis and elevated protein levels as in our patient. PCR assays are rapid, sensitive, and specific for VZV and constitute the criterion standard for the diagnosis of VZV infections of the CNS[6]. The sensitivity and specificity of CSF PCR for VZV infections exceed 90% in most studies[10]. This case demonstrates the important role of the amplification of VZV DNA from CSF to the diagnosis of neurological complications associated with VZV infection.

In our patient, the association between disseminated maculovesiculous eruption with sincitial virus in the Tzanck's cytodiagnosis and meningoencephalomyeloradiculitis syndrome with detection of VZV DNA by PCR in cerebrospinal CSF fluid confirmed the diagnosis.

Early diagnosis of VZV-related myelitis is very important to improve the prognosis and reduce the neurological sequelae of these patients.

Early treatment with intravenous acyclovir has been widely adopted as standard therapy for VZV infections of CNS. The current recommendation for adults is intravenous acyclovir at dosage of 10mg/kg every 8h for 14 to 21 days[10]. Treatment should be interrupted when negative result of PCR in CSF is obtained. The persistence of VZV DNA in the CSF is associated with a poor outcome and a higher mortality.

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