A rare case of HSV-2 encephalitis

Un raro caso di encefalite da HSV-2

Asil Oztekin, Ozge Turhan, Derya Mutlu, Dilara Inan, Dilek Colak, Ata Nevzat Yalcin

Department of Infectious Diseases and Clinical Microbiology, Medicine Faculty, Akdeniz University, Antalya, Turkey; Department of Medical Microbiology, Medicine Faculty, Akdeniz University, Antalya, Turkey

INTRODUCTION

Viral infections of the central nervous system (CNS) occur infrequently and most often result in relatively benign, self-limiting diseases. Nevertheless, these infections have great importance because of the potential for significant neurological impairment, if not death [1]. In prospective studies of encephalitis, the aetiology remains unknown for 48-60% of cases, despite extensive testing for agents presently considered likely to cause this disease [2]. Herpes simplex viruses are the most commonly identified cause of acute, sporadic viral encephalitis. Cases are distributed throughout the year, and the age distribution appears to be biphasic, with peaks at 5 to 30 and greater than 50 years of age. If untreated, the mortality rate of HSV encephalitis is greater than 70%. Subtype I virus causes more than 95% of cases of HSV encephalitis [3]. HSV-2 accounts for about 80% of cases in the newborn but after the neonatal period HSV-2 is an uncommon cause of encephalitis, being responsible for less than 10% of whole cases [4, 5]. We report a case of HSV-2 encephalitis that was free of symptomatic genital lesions.

CASE REPORT

A 33-year-old woman was admitted to hospital with a 10-day history of fever, headache, and moderate cognitive deficits. She had given birth with Cesarean four months before, presented herpes labialis 30 days before, and varicella zoster infection 20 days before. At a private health centre ceftriaxone (2 g bid) had been started because of fever. Due to continuing fever, cognitive deficits, headache, and also a history of varicella zoster and herpes labialis, intravenous acyclovir treatment initiated with a suspicion of herpes encephalitis and the patient was sent to the University hospital. On admission she was conscious, oriented, having a frontal headache. She complained of anterograde amnesia, dejavu, hyperosmia and a sense of metallic taste. Fever 38.8°C, pulse 78/minute, arterial blood pressure 110/70 mmHg, and respiratory rate 20/minute. At physical examination there was no sign of meningeal irritation or nuchal rigidity. Lumbar puncture was performed and analysis of cerebrospinal fluid (CSF) revealed the following values: cell count, 160 lymphocyte cell/mm³, glucose level, 57 mg/dl (blood glucose level, 134 mg/dl) and protein level, 76 mg/dl. Laboratory tests showed that the erythrocyte sedimentation rate was 10 mm/h, blood leucocyte count: 160 lymphocyte cell/mm³, glucose level, 57 mg/dl (blood glucose level, 134 mg/dl) and protein level, 76 mg/dl. Laboratory tests showed that the erythrocyte sedimentation rate was 10 mm/h, blood leucocyte count: 7,900/mm³, (50% polymorphonuclear leucocytes), haemoglobin 11.9 g/dl, thrombocyte 241,000/mm³, C-reactive protein: 0.3 mg/dl. Magnetic resonance imaging (MRI) investigation of cranium revealed a left temporal lobe lesion which was consistent with herpes encephalitis (Figure 1). Electroencephalogram (EEG) showed diffuse moderate functional deterioration of cerebral bioelectrical activity. We continued treatment with acyclovir (10 mg/kg tid). Aerobic culture of CSF was sterile. We performed polymerase chain reaction (PCR) at CSF for Herpes simplex virus type I and type II (HSV-I and HSV-II) (Lightcycler HSV-I-II detection kit, Roche Applied Science, Mannheim, Germany), enteroviruses (Enterovirus Consensus
kit, Argene Biosoft, Varilhes, France) and Mycobacterium tuberculosis (Cobus Amplicor Mycobacterium tuberculosis Test, Roche Diagnostics, Mannheim, Germany). The result was positive for HSV I-II and melting curve analysis revealed that this was HSV-II (tm=67.4°). The patient remained on acyclovir. At the seventh day, the patient’s clinical condition improved markedly. Therapy was continued for a total of 21 days, and the patient discharged. She was controlled ten days after discharge. Hyperosmia still continued but other neurological symptoms were resolved.

DISCUSSION

HSV-1 and HSV-2 generally produce different neurological syndromes. Herpetic meningoencephalitis is usually due to HSV-1. HSV-2 generally induces self-limiting aseptic meningitis like illness in immunocompetent adults, although it can also cause recurrent meningitis. Clinical signs of meningitis have been found in patients with genital herpetic lesions. In the latter condition, women were more frequently involved than men. Pre-existing genital lesions were present in 85% of reported cases of HSV-2 meningitis [6]. In our case genital lesions were absent.

Although the prognosis of herpes simplex encephalitis has been dramatically improved by the availability of specific antiviral therapy, sequelae in surviving patients may include severe neurological deficits, seizures, and/or neuropsychological dysfunctions that greatly impair quality of life. Therefore the identification of early factors that are predictive of outcome might contribute to better management of disease. Patient age and level of consciousness at onset of therapy have been identified as major determinants of prognosis [7].

The well established and universally accepted treatment for HSV encephalitis occurring except during the newborn period (normally caused by HSV-1) is intravenous acyclovir for 10 to 14 days [3]. To prevent relapse and sequelae, a higher dosage and longer duration of acyclovir treatment (14-21 days) is more appropriate [8]. Therefore we preferred 21-day treatment for our patient. Mononuclear pleocytosis and mildly elevated protein level are common findings of analysis of CSF samples, although several CSF samples were acellular or pleocytic, with polymorphonuclear predominance at the onset of the disease. However no correlation was found between CSF abnormalities and outcome, as reported elsewhere. Neuroimaging studies reveal temporal lobe involvement in most cases. However, less typical lesions, such as occipital or parietal lobe involvement, were observed in 11% of patients [7]. We also found one report with normal MRI in medline [9].

EEG is almost abnormal. Focal accentuation, periodic lateralized epileptiform discharges (PLEDs) and electrographic seizures are typical.

Figure 1 - MRI view of the patient. There is a left temporal lobe lesion which was consistent with herpes encephalitis.
in patients with HSE. MRI is superior to computerized tomography and can detect typical lesions earlier [10].

PCR is the gold standard for the diagnosis of HSE [11, 12]. It has provided a rapid, reliable and non-invasive test with a sensitivity of 95% and a specificity approaching 100%. HSV DNA is readily detected during the first week of the disease, even when the patient is on antiviral therapy [10]. We also found a negative PCR result in HSV encephalitis cases in the literature [13]. In our patient HSV-2 PCR was positive and this test had been performed at the tenth day of disease and the second day of acyclovir treatment.

Godet et al. recently reported a case of HSE following Cesarean section [6]. To our knowledge our case is the second report of HSE after Cesarean section, although there is one case of postpartum HSV-2 [14]. The route by which HSV-2 infects the meninges is controversial. In our case, as neurological symptoms occurred four months after Cesarean, it was most probably due to neurological dissemination.

Undoubtedly, many women who become pregnant are subject to social and emotional pregnancy stress and some will continue to experience problems through gestation. These are principal risk factors for postnatal depression and puerperal psychosis. Postnatal depression is a significant and serious illness with a reported incidence of approximately 14% while a further 30% of women experience adjustment disorder and anxiety following childbirth [15]. Anglan et al. developed a murine model of HSV encephalitis to define the relationship between psychological stress and development of HSE [16]. In our case, interestingly she had herpes labialis 30 days before and zona zoster 20 days before. We believe that postpartum stress might be a predisposing factor in our case.

Key words: Herpes simplex viruses, viral encephalitis, cesarean section

REFERENCES


SUMMARY

Herpes simplex viruses (HSV), and especially HSV-1, are the most common cause of acute, sporadic viral encephalitis. HSV-2 is an uncommon cause of encephalitis. We report a rare case of HSV-2 encephalitis that was free of genital lesions. In terms of the patient’s case history, she had a Cesarean section four months before, herpes labialis 30 days before, varicella zoster 20 days before. We discuss the possibility that postpartum stress may be one of the factors in this case.

RIASSUNTO

I virus dell’Herpes simplex, e in special modo HSV-1, sono la causa più comune di encefalite virale, acuta sporadica. HSV-2 rappresenta un agente eziologico inusuale.


