Acute varicella-zoster virus necrotizing meningoencephalomyelitis with sudden visual loss and paraparesis in an HIV-infected patient

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INTRODUCTION

VZV complications involving the CNS, such as necrotizing meningoencephalomyelitis, are estimated to occur in approximately 2% of patients with AIDS (Kleinschmidt-DeMasters et al., 1998). The prognosis is very poor, with a median survival of only 16 days (McKelvie, 2002). Therefore aggressive empiric antiviral therapy should be commenced as soon as VZV CNS infection is suspected, based upon CNS analysis and the presence of skin blisters.

CASE PRESENTATION

A 55-year-old man was transferred to our hospital with a 7-day history of fever, headache and neck pain. On admission to the previous hospital, a CT-scan and MRI of the brain with gadolinium enhancement were both normal. Three days before admission to our hospital blindness suddenly occurred in the left eye, followed after two days by blindness in the right eye. The previous hospital had treated him with dexamethasone and ceftriaxone. On the day of transfer, an HIV-test result was positive. On admission to our hospital the patient was blind in both eyes and had lumbar pain. On physical examination there was no neck stiffness but Lasègue sign was positive on both sides. There was no motor deficit. Abdominal reflexes were absent while tendon reflexes were normal. Finger-nose test revealed dysmetria on the left side. Sensory examination was normal. Five skin blisters were noted on the right posterior area of his chest. Lumbar puncture revealed mild haemorrhagic and xanthochromic CSF. The opening pressure was 20 cm H₂O, CSF protein concentration was elevated (1096 mg/dL; normal range <40 mg/dL), glucose level was normal (66 mg/dL). RBC count was 750 cells/µl and WBC count was 80 cells/µl
(72 lymphocytes and 8 polymorphs). Blood CD4+ T cell count was 3 cells/µl and HIV RNA level was 24,000 copies/ml. Treatment with 350 mg q12h IV ganciclovir, 400 mg qd IV fluconazole and 6 MU q6h IV benzylpenicillin was administered empirically.

Two days after admission, CMV antigenemia was positive (178 cells/200,000 cells), VZV DNA was detected by PCR in the CSF and skin blisters, while PCR for other herpes virus resulted negative. CSF HIV RNA levels were 1,330 copies/ml. The same day flaccid paresis occurred and MRI scan showed a diffuse meningeal enhancement, with bilateral optic neuritis and chiasm inflammation (Figure 1).

Additionally, MRI scan revealed cervical and thoracic myelitis with hyperintense lesions in T2 weighted images of the anterior, posterior and lateral white matter, with a “sugar-coating” pattern (Figure 2). Therefore, 90 mg/kg q12h IV foscarnet was associated to ganciclovir, along with high doses of steroids and IV immunoglobulin 30g for 3 and 5 days, respectively. Antiviral therapy was administered for 28 days. By day 15, CSF screened negative for VZV DNA. One week after admission, antiretroviral therapy was started with tenofovir, emtricitabine, ritonavir-boosted lopinavir and enfuvirtide; after 10 days of therapy, CMV antigenemia was negative. The patient survived but did not recover any lost visual or neurological function, and he was transferred to a rehabilitation unit.

DISCUSSION

While VZV complications involving the CNS are rare in patients with HIV/AIDS (Kleinschmidt-DeMasters et al., 1998; Gray et al., 1994; Sotrel 1998), the poor prognosis dictates that an aggressive antiviral treatment regimen is required, which is the approach that we utilised in our patient. VZV infections of the CNS have been reported in profoundly immunosuppressed HIV-infected individuals (Kleinschmidt-DeMasters et al., 1998; Gray et al., 1994; Chretien et al., 1993) with four variants recognised: multifocal encephalitis, ventriculitis, focal necrotizing myelitis, and vas-
culopathy leading to cerebral infarction (Gray et al., 1994).

Compartmentalisation of VZV immunity in the CNS may explain the profound CNS changes that sometimes happen in the absence of systemic symptoms, because the immune response is more active in the CNS (Clark et al., 2004). For this reason we also administered steroid and immunoglobulin therapy during antiretroviral therapy, because vasculitis may be associated (Chang et al., 2009). We were able to avoid death in our patient, but permanent neurological defects were irreversible due to necrotizing lesions caused by VZV in the CNS. Necrotizing encephalomylitis is a devastating complication of VZV in AIDS, and it is crucial to recognise this complication as early as possible. The presence of xanthocromic CSF and RBC in the CSF, suggestive of VZV infection, along with associated skin blisters (Chang et al., 2009), requires immediate aggressive empiric antiviral therapy in order to treat this life-threatening condition. AIDS patients with a VZV CNS infection treated with a combination of ganciclovir and foscarnet or ganciclovir alone are reported to have a significantly better final visual acuity than those treated with either acyclovir or foscarnet (Moorthy et al., 1997).

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REFERENCES


