Irish Medical Journal
Established 1867

Issue: Ir Med J; Vol 114; No. 10; P501

Varicella Zoster Meningoencephalitis

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Abstract

Presentation

Our case features a non-specific presentation of headache with associated vomiting, which progressed to include behavioural and personality changes.

Diagnosis

A lumbar puncture revealed central nervous system infection with Varicella Zoster Virus, indicating viral meningoencephalitis.

Treatment

A two week course of anti-viral therapy was initiated, consisting of Acyclovir 10mg/kg three times daily, and the patient made a full recovery.

Discussion

This case highlights a rare viral cause of meningoencephalitis, as well as the importance of having a high index of suspicion for viral meningitis/encephalitis in 20-40 year olds presenting with headache and nausea, even where the full constellation of meningitic symptoms is not present. Also, it reminds us that encephalitis may not always be accompanied by classic MRI changes.

Introduction

This case highlights a rare viral cause of meningoencephalitis, as well as the importance of having a high index of suspicion for viral meningitis/encephalitis in 20-40 year olds presenting with headache and nausea, even where the full constellation of meningitic symptoms is not present. Also, it reminds us that encephalitis may not always be accompanied by classic MRI changes.

Case Report

A previously healthy young man presented to the Emergency Department with a two day history of headache and vomiting. There was no photophobia, neck stiffness or seizure activity. His vitals were within normal range and physical examination was unremarkable. Past medical history included a discectomy of L5/S1 and chickenpox at the age of six.

Investigations involved routine blood tests including inflammatory markers, which were completely normal, and cerebrospinal fluid (CSF) analysis. CSF was clear and colourless with raised WCC (142-160cmm), raised protein (0.93) and low normal glucose (3.2mmol/L, 56% of serum glucose). CSF was sent to the National Viral Reference Laboratory for viral studies, including Varicella Zoster Virus (VZV). Brain CT scanning demonstrated no abnormality.

At presentation, the patient was isolated and started on Ceftriaxone 2mg twice daily and Acyclovir 10mg/kg three times a day to cover meningoencephalitis. He was feeling much improved the following day and was discharged from hospital. On day five the patient re-presented to the Emergency Department with forgetfulness, blurred vision and severe headache. A collateral history revealed that he had been having episodes of confusion and strange behaviour such as putting ice-cream in the cupboard. The patient's vitals and physical examination were once again normal.

VZV DNA was detected in the CSF by polymerase chain reaction (PCR) on 06/10/2016. A two week course of anti-viral therapy was initiated, consisting of Acyclovir 10mg/kg three times daily, to treat encephalitis. Following consultation with the neurology service, a brain MRI was carried out, with the additional recommendation of an electroencephalogram (EEG) pending the result. This showed no abnormality and an EEG was booked in the nearest available centre.

On day ten the patient developed a pain affecting the chest and posterior aspect of the right shoulder. The pain was deemed to be neuropathic so Amitriptyline 25mg once daily was administered which provided relief. The two week course of Acyclovir was completed and an EEG showed no abnormality. The patient's clinical status improved significantly and he was discharged on the final day of anti-viral therapy. The patient was followed up two months later and was feeling well with no recurrence of symptoms.

Discussion

This is a rare case of meningoencephalitis due to VZV in an immunocompetent adult. Unlike post-herpetic rash, the symptomatic re-occurrence of VZV in the brain is far less common, with VZV encephalitis occurring in only 1-2 per 10,000 cases of VZV[1]. In the majority of these cases VZV meningoencephalitis occurs in immunocompromised individuals, many of whom have HIV[2].

In a patient with new onset of headache and vomiting it is important to first consider dangerous pathologies such as space occupying lesions from blood, oedema or tumour. Headache has a broad differential diagnosis. Although our patient did not display overt red flags of meningitis, infection is another diagnosis that must be out-ruled in new headache.

VZV encephalitis may occur at the time of primary infection or due to re-activation. Other than the immunocompromised, it occurs more commonly in adults over 20, patients with cranial dermatome involvement and patients with disseminated skin disease. Typically, onset is insidious, and there may be no associated zoster rash, fever, or CSF pleocytosis; a brainstem encephalitis associated with Ramsay Hunt syndrome can sometimes feature also[3].

We used the evidence-based British Infection Association guidelines, which cites a consensus meeting examining all published literature to recommend treatment strategies for VZV encephalitis[4]. Whether it occurs in the context of primary infection or reactivation, intravenous acyclovir 10-15mg/kg TDS is the recommended regimen to be started immediately when viral encephalitis is suspected or confirmed[3]. The slightly higher dose is reasonable as VZV is not as sensitive to acyclovir as HSV. There exists no evidence to support standard antimicrobial treatment of viral meningitis. In terms of corticosteroids, there is little evidence showing their efficacy in the management of viral encephalitis[3]. However, if there is a vasculitic component associated with the disease the use of corticosteroids is reasonable.

Interestingly, the incidence of viral meningitis is rising, likely due to increasing detection with PCR[5]. One study examining the incidence of VZV infections of the CNS found a progressive increase in CSF samples requesting VZV testing between 2007 and 2014[6]. Irish data from the Health Protection Surveillance Centre has also recorded a significant increase in VZV encephalitis in 2019 compared with 2009[7].

Declaration of Conflicts of Interest:
There are no conflicts of interest to declare.

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