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Fulminant Epstein Barr Virus Encephalitis

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Epstein Barr virus (EBV) encephalitis is rare in children but can have severe neurological complications and sometimes fatal. It can manifest with varied neurological presentations like meningoencephalitis, brain stem encephalitis, GBS etc. This can appear alone or with clinical picture of infectious mononucleosis. Establishing a diagnosis of EBV encephalitis is difficult and consequently molecular, serological and imaging techniques should be used when investigating a child with encephalitis. To highlight this entity we report two fatal cases of EBV meningoencephalitis presenting with sole neurological manifestations .

Key words: *Encephalitis, Epstein Barr virus.*

EBV virus infection is a common usually benign systemic viral illness in children. In few cases it is associated with variety of CNS manifestations including meningoencephalitis, cerebritis, transverse myelitis, neuropsychiatric syndrome, GBS and cranial nerve palsies.This occurs after usually 1-3 weeks of illness; rarely these can manifest at the onset of illness.

Case 1: A 7-year-old boy was admitted with history of fever, unsteady gait and drowsiness of 2 days duration. He was found to have wide-based gait, nystagmus and increasing drowsiness. Other system examinations was unremarkable. There were no focal neurological deficits, no seizures and no signs of raised intracranial tension or signs of meningeal irritation. Initial routine investigations and basic metabolic screen were normal. CT brain also revealed no abnormality. CSF analysis was done and microscopy and biochemistry was normal. CSF PCR for EBV virus was positive and EBV serology was also positive in blood. Immunological profile was normal. He was treated as meningo-encephalitis with broad-spectrum antibiotics and acyclovir. One day after admission, he was found to have deteriorating level of consciousness with low GCS and required mechanical ventilation. He was not showing any improvement in his neurological status, and he received intravenous immunoglobulin empirically. MRI brain showed abnormal signal intensity in pontine region suggestive of pontine encephalitis. Child had persistent fever, his general condition deteriorated and on 5th day of illness, he developed hypotension which was refractory to fluids, with GI bleeding and DIC with multiorgan failure and succumbed to the illness.

Case 2: An 8-year-old boy was admitted with low grade fever and drowsiness of 2 days duration.There was no history of convulsions or vomiting and there were no signs of raised intracranial tension. Clinical diagnosis of encephalitis was made at the time of admission and other systemic examination was unremarkable. Initial routine investigations and metabolic screen were normal. CT brain was also normal. CSF biochemistry and microscopy were normal. He was started on broad spectrum antibiotics including antiviral drugs along with other supportive treatment. He developed generalised tonic

clonic seizures within few hours of admission to the hospital, which was initially controlled by benzodiazepines, but later progressed to status epilepticus. He was ventilated and started on midazolam infusion. Seizures became more frequent and refractory to maximum dose of benzodiazepines. It was only controlled by inducing barbiturate coma and by thiopentone infusion. On second day, he deteriorated and went into deep coma. CSF virology study revealed EBV DNA PCR positive, and IgM EBV was positive in blood. MRI brain was normal. He continued to have brief seizures requiring multiple anticonvulsants. His general condition didn't improve and remained in deep coma, and also developed diabetes insipidus. Brain perfusion scan showed absent perfusion. On 5th day of admission, he developed bradycardia and hypotension, and could not be revived despite resuscitative measures.

DISCUSSION

Neurological manifestations are rarely seen during EBV infection, usually in less than 1% of the diseased [1,3]. Among these, meningitis and encephalitis constitute the most common type of neurological manifestations. The patients may have varied symptoms like fever, seizure, bizarre behaviour, headache, and metamorphopsia [3]. The presenting signs, included altered consciousness, meningeal signs, bulbar signs cerebellar signs and cranial nerve palsy [2,6]. In our cases the classical features of infectious mononucleosis were obscure and the patients presented only with the neurological manifestations. The first case presented only with unsteady gait with altered sensorium and cerebellar signs, which turned out to be pontine encephalitis whereas the other child presented with refractory seizures which required barbiturate coma to control seizures and progressing to deep coma. The neurological manifestations can occur 1 week to 3 weeks after the onset of infectious mononucleosis but may occur at the outset of the disease. The pathogenesis of these complications is still under debate. Studies suggest that some complications are due to direct viral infection, whereas others are due to autoimmune mechanisms. In contrast to viruses that invade gray matter directly, acute disseminated encephalitis and postinfectious encephalomyelitis associated with Epstein-Barr virus (EBV) and CMV infections are immune-mediated processes that result in multifocal demyelination of perivenous white matter [3]. Neurologic complications are the most common cause of death in infectious mononucleosis, but also can occur in the absence of clinical or laboratory manifestations of infectious mononucleosis. Establishing a diagnosis of Epstein-Barr virus encephalitis can be difficult, and consequently, a combination of serologic and molecular and radiologic techniques should be used when investigating a child with acute encephalitis [7,8].

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