

CONGENITAL CYTOMEGALOVIRUS INFECTION WITH UNDERLYING NEUROLOGICAL SEQUALAE AND STATUS EPILEPTICUS SIMULATING PROGRESSIVE CYTOMEGALOVIRUS ENCEPHALITIS.

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ABSTRACT

CASE REPORT

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Congenital cytomegalovirus (CMV) infection is a leading cause of sensorineural hearing loss, mental retardation, developmental delay, seizure disorder, and neurological deficits with sequelae. Congenital CMV with central nervous system (CNS) manifestations usually have a permanent neurological disability resulting in an encephalopathy which is non-progressive but some infants with congenital CMV infection may progress or have persistent active brain inflammation resulting in progressive encephalopathy. Here we report a case of two years boy who presented with fever and status epilepticus with underlying CNS sequelae of congenital CMV infection which was a diagnostic challenge because of progressive neurologic symptoms simulating congenital cytomegalovirus progressive encephalitis. He was managed with intravenous fluids, oxygenation, Injection Ceftriaxone, and Acyclovir along with anti-seizure drugs. The child responded well without any new neurological deficit proving it was new-onset meningoencephalitis and not a progressive CMV encephalitis.

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INTRODUCTION:

Cytomegalovirus (CMV) is endemic in most areas of the world. The seroprevalence of CMV varies in different geographical areas

and ranges from 30% to 100%¹. The fetus can be infected by either a newly acquired (primary) maternal infection or a recurrent (reactivated) maternal infection². The

likelihood of fetal infection and the risk of associated damage and sequelae is higher after a primary infection³. Although most congenitally infected infants are asymptomatic at birth however jaundice, petechiae, and hepatosplenomegaly are the most frequently noted clinical triad in the symptomatic infant. Congenital CMV infection is a leading cause of sensorineural hearing loss, mental retardation, developmental delay, seizure disorder, and neurological deficits with sequelae⁴. Acquired CMV infection of the central nervous system (CNS) may affect the brain (i.e. diffuse encephalitis, ventricular-encephalitis, cerebral mass lesion) or the spinal cord (i.e. transverse myelitis, polyradiculomyelitis) and primarily affects immunocompromised children⁵. Congenital CMV with CNS infection usually has permanent neurological disability results in an encephalopathy which is non-progressive. But some infants with congenital CMV infection may progress or have persistent active brain inflammation resulting in progressive encephalopathy indicated by progressive hydrocephalous or encephalomalacia revealed by CT scan⁶. Here we report a case of two years' immunocompetent boy who presented with fever and status epilepticus with underlying CNS sequelae of congenital CMV infection which presented as a diagnostic challenge because of progressive neurologic symptoms simulating congenital cytomegalovirus progressive encephalitis.

Case Report:

Two years male child born of 3rd-degree consanguineous marriage admitted in the pediatric intensive care unit with chief complaints of fever and seizures since 1day. Fever was intermittent, moderate, and associated with chills and rigors. Seizures started as focal involving left leg initially then progressed to generalized with uprolling of eyes and associated with bladder incontinence and excessive salivation and lasted for one and a half hours. The child had one episode of

seizure without fever which was lasted for less than two minutes, a year ago and was treated symptomatically at a local hospital. The elder sibling died at four years of age due to developmental delay with a seizure disorder. Mother was a serologically diagnosed case of CMV infection in the first trimester of pregnancy. On clinical examination, the child had microcephaly, global developmental delay, sensorineural hearing loss, vision, and another cranial nerve examination was normal and motor system revealed increased tone, grade 4/5 power, exaggerated deep tendon reflexes in both upper and lower limbs with extensor plantar reflexes bilaterally and no signs of meningeal irritation. CBC, blood sugar, serum Calcium, electrolytes, and HIV status was normal. His cerebrospinal fluid (CSF) examination showed lymphocytic predominance, no RBC's with raised proteins and normal sugar. Magnetic Resonance Imaging of brain [Figure 1] showed tiny calcification in bilateral frontoparietal white matter and prominence of both lateral ventricles suggestive of CMV infection. EEG [Figure 2] showed focal epileptiform activity over the right temporoparietal region with the phase reversal and without secondary generalization. The child was treated with Injection lorazepam (0.1 mg/kg) and Fosphenytoin (20 mg /kg of phenytoin equivalent) in loading doses followed by Injection Fosphenytoin in maintenance dose along with supportive measures like oxygenation, intravenous fluids, and antipyretic drug acetaminophen. Injection Ceftriaxone (100mg/kg/day) and Injection Acyclovir (20g/kg/day) were also started empirically and continued for total 10 days because of abnormal CSF findings. The child started responding after 48 hours and became fully conscious on the third day of admission. At the time of discharge, there were no new neurological deficits and the child was put on sodium valproate and lamotrigine as anti-seizure drugs and advised regular follow up.

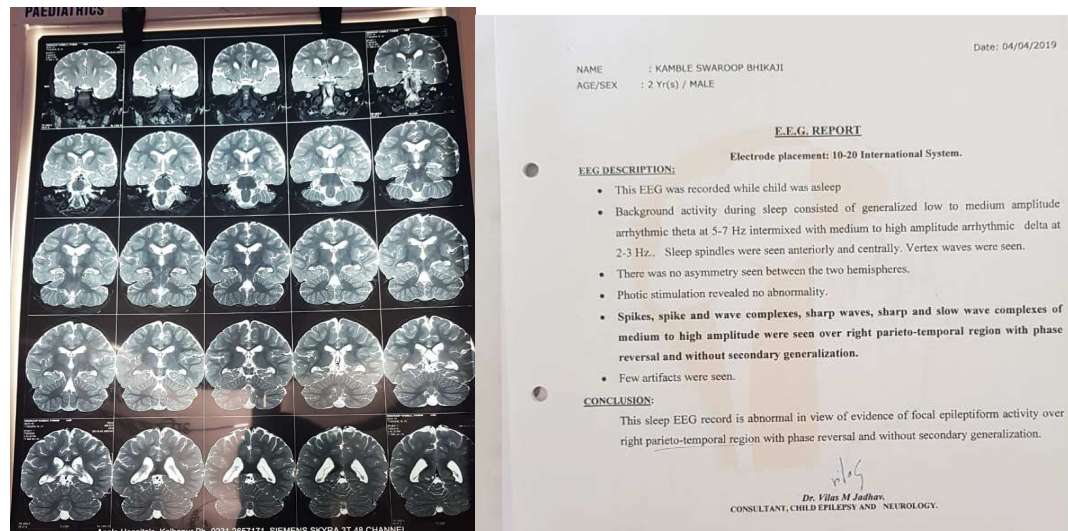


Figure 1 and 2 shows an MRI brain and EEG

DISCUSSION:

CMV is the largest member of the virus family Herpesviridae and is a ubiquitous virus that infects almost all the humans at some time in their lives. The virus was first isolated by three different groups of investigators; Rowe and colleagues, Weller and colleagues, and Smith simultaneously in 1956.⁷ Congenital CMV infection results from transplacental transmission of the virus during the maternal viremia⁸. Although CMV affects most cell types it has a special affinity for epithelial cells, ependymal cells lining the ventricles, the organ of Corti, and the neurons of the eighth cranial nerve⁹. In CNS symptomatic infants CT scan and MRI may show periventricular calcifications, ventriculomegaly and cerebral atrophy.¹⁰

In our child who was immunocompetent and presented with fever and status epilepticus with underlying congenital CMV infection with neurological sequelae was a great challenge for the diagnosis and management as there were multiple differential diagnoses. The first closest differential diagnosis was either febrile status epilepticus with new-onset meningoencephalitis because of abnormal CSF findings or secondly, it could be progressive congenital CMV encephalitis as Bray *et al*⁶

observed that congenital CMV infection may be progressive due to underlying persistent brain inflammation. Even Curless R G *et al*¹¹ reported a rare case of progressive cytomegalovirus encephalopathy following congenital infection in an infant with acquired immunodeficiency syndrome. So, we decided to start injection Ceftriaxone and Acyclovir considering acute new-onset meningoencephalitis. The guidelines for the use of anti CMV drug ganciclovir are not clear. Also, we were not able to do CSF CMV antibodies test which is a diagnostic test for CMV encephalitis but still, it lacks specificity¹². The response to the treatment favors the diagnosis of new-onset meningoencephalitis. But, the child needs also to be observed in the future for progressive CNS damage for the possibility of progressive CMV encephalitis, presumably result from ongoing viral replication.¹³

CONCLUSION:

Most congenital CMV infection with CNS manifestations is a non-progressive disease but still should be monitored neurologically for progressive encephalitis.

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