NEONATAL HERPES SIMPLEX ENCEPHALITIS

(Case Report)

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Introduction

Herpes simplex virus (HSV) causes serious disease in neonatal period and early infancy with very high mortality and neurologic sequelae. HSV infection in the neonates may have either a localised, disseminated or encephalitic pattern of presentation. The encephalitic form often remains undiagnosed as 40-60% of neonates with central nervous system infection have no skin lesions at the time of presentation [1]. The outcome of the disease is largely dependent on a prompt diagnosis, which is often difficult to make and early adequate treatment, which is expensive. We are reporting the management of an infant with HSV encephalitis, which to our knowledge has not been reported earlier in this age group in Indian literature.

Case Report

A 3 month female infant was referred to this hospital as a case of pyogenic meningitis. Baby was born to a primigravida mother by Caesarean section. There were no genital lesions in the mother or prolonged rupture of membranes. Baby weighed 2.8 Kg at birth and was normal till 2 1/2 months of age when she developed fever and seizures. There was no history of recent immunization or exposure to patient with herpetic lesions. Baby was initially managed with antibiotics and diazepam. On arrival, baby was found to be obtunded and having multifocal clonic seizures involving mostly left side of the body. Vital parameters were normal. Anterior fontanelle was normal in size and OFC was 37 cms.

No mucocutaneous vesicles were noted. There was generalised hypotonia with decreased power in the left upper limb. Moro's reflex was absent. Fundus was normal. There was no hepatomegaly. Maternal examination did not reveal any genital, oral or breast lesion.

A non-traumatic lumbar puncture revealed 30 lymphocytes/cumm, 20 RBC/cumm and proteins of 180 mg/dl and sugar 70 mg/dl. Culture was sterile for bacteria. HSV-1 IgG antibodies were not positive. CT scan showed multicystic hemorrhagic necrosis in both temporal lobes. EEG showed low voltage activity in the right hemisphere. Serum HSV-1 IgG antibodies titre was 4u/ml, suggesting herpes infection.

The patient was treated with intravenous acyclovir 10mg/kg/dose as infusion over 1 hour, three times a day for 14

days. Child also received phenobarbitone. Clinically seizures ceased and power improved, ultimately becoming equal in all the four limbs. CSF analysis at the end of 3 weeks was normal. CSF and serum HSV-1 IgG titres showed four fold rise, being 4u/ml and 160u/ml respectively.

At follow up ABR was found to be abnormal in both the ears with decreased amplitude of wave 3 and increased latency of wave 5 and increased interpeak latency suggestive of poor conduction in auditory pathway at 10 months of age (Fig 1). Other neurological and development assessment was within normal limits during follow up till one year of age.

Discussion

Herpes simplex disease is caused by two distinct viruses i.e. type 1 and type 2. Herpes simplex virus 1 (HSV1) is predominant cause of encephalitis in children and adults, while HSV2 is the predominant cause in neonates and early infancy as it is almost always acquired from an infected maternal genital tract. Post natal transmission in this age group is rare. Encephalitic form carries high mortality of 50% while 50% of the survivors develop severe neurologic sequelae [1].

CSF is typically xanthochromic, consistent with release of blood into subarachnoid space secondary to necrotising nature of the disease. CSF analysis shows RBCs ranging from 0-500/cumm, moderate pleocytosis (50-200/cumm), elevated protein (60-200mg/dl) and culture is negative for bacteria [2]. This typical picture was present in our case.

The most definitive diagnosis of HSV infection is by recovery of the virus from scraping of vesicle, oropharynx, conjunctivae, urine, stool or CSF. However this requires the specimen to be frozen and shipped in dry ice or transported in Stuart's medium [3]. Facilities for virus isolation are not routinely available in our country. Detection of specific IgM antibodies to HSV is the most rapid and suggested means of establishing the diagnosis [4]. this antibody appears two weeks following the onset of infection and persists for 6-12 months. A four fold rise in the IgG titres is also diagnostic and was present in our case. Newer tech-

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Fig. 1: Abnormal ABR suggestive of poor conduction in auditory pathway

niques for diagnosis of herpes simplex encephalitis include polymerase chain reaction assay of CSF [5].

Brain imaging techniques are characteristic though not pathognomonic of neonatal herpes simplex encephalitis. On computed tomography the temporal lobes are most commonly involved with multicystic haemorrhagic encephalomalacia as was seen in our case. Contrast should be avoided as it may accumulate and cause toxicity [6].

Vidarabin (adenine arabinoside) was introduced earlier for the management of neonatal herpes with significant reduction in mortality [7]. Acyclovir (acycloguanosine) a selective inhibitor of viral replication, has minimal side effects and is currently the favoured drug in the treatment. However studies have shown no significant differences in the final outcome with either drug [8]. The recommended dose of acyclovir is 10 mg/kg/q8h infused over 1 hour while that of vidarabin is 15-30mg/kg/day. Both are given for 10-14 days [1]. Controlled studies have shown that antiviral therapy leads to an impressive reduction in mortality and morbidity. Non administration of therapy or delay in its institution is associated with high mortality and complications such as microcephaly, hydrocephaly,

porencephalic cysts, spasticity, chorioretinitis, blindness, deafness, learning disabilities and seizures [9]. In view of low incidence of side-effects with acyclovir it is recommended that specific therapy be instituted in highly suggestive situation [10]. This recommendation is of particular value to us due to limited diagnostic facilities and high mortality associated with delay in treatment.

Postnatal transmission of HSV is rare but may occur from oral or breast herpetic lesions of the mother or from infected infants and adults including hospital personnel [11].

To conclude, herpes simplex encephalitis should be suspected in any infant with fever and focal neurological signs. A careful CSF analysis and CT scan will virtually prove the diagnosis. Though detection of virus is the most definite proof, treatment should be initiated early if the above clinical and CSF picture is present.

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