Subacute Sclerosing Panencephalitis in Pregnancy

Vidya S Nagar¹, Ravindra Sawarkar², Dayanad Dhekne³, Mayur Hedau³, Rahul Kadu²

Abstract
Subacute sclerosing panencephalitis (SSPE) is a rare delayed complication of measles virus infection in infancy. We present here 7 month pregnant lady who had SSPE. She delivered low birth-weight baby prematurely which died on 3rd day of delivery. Patient died due to sepsis one month after admission.

Introduction
Subacute sclerosing panencephalitis (also known as Dawson disease) (SSPE) is a progressive neurological disorder of children and young adults that affects the central nervous system. It is a slow, but persistent, viral infection caused by defective measles virus. SSPE has been reported from all parts of the world. There is a higher incidence among males than females (male/female: 3/1). Most youngsters with SSPE have a history of measles infection at an early age, usually younger than 2 years, followed by a latent period of 6 to 8 years before neurological symptoms begin. The initial symptoms of SSPE are subtle and include mild mental deterioration (such as memory loss) and changes in behavior (such as irritability) followed by myoclonic jerks. Seizures may also occur. Some people may become blind. There is progressive deterioration to a comatose state, and then to a persistent vegetative state. During pregnancy natural immunosuppression occurs, which may lead to activation of dormant infection with measles virus mutant.

Case Report
A 21 year old female with 7 month gestation was brought with complaints of abnormal jerky movements of right side of body since 15 days and altered sensorium and fever. Patient was brought to Sir JJ Hospital for further management. On examination patient was not oriented to time, place and person. There was no neck stiffness. No obvious neurological abnormality detected other than myoclonic jerk of right side of body.

Cerebrospinal fluid (CSF) analysis was normal ruling out infection. Anti-nuclear antibody and anti-dsDNA antibody titre were negative. 2D echocardiography was normal.

Electroencephalogram was repeated which showed frequent generalised superimposable high amplitude spike and wave-like discharges (delta-like giant waves) recurring at an interval of 4-6 seconds (Figure 1). In presence of myoclonic jerks these findings were suggestive of subacute sclerosing panencephalitis.

CSF IgG measles antibody titre and total IgG index were measured. CSF IgG measles titre was 1:2. Serum IgG measles titre was >1:256. CSF/serum quotiant reference was 1.89. (The CSF/ serum quotiant reference more than 1.5 is indicative of pathogen specific antibody production in CNS.) CSF total IgG was also raised. Ophthalmological examination did not reveal chorioretinitis.

Patient was started on isoprinosine. All other available treatment was either nonaffordable or could not be given due to gravid status. She was started on clonazepam for control of myoclonus. Physiotherapy was given to prevent spasticity and contracture.

Patient delivered a premature and low birth-weight baby after 15 days of admission. Baby died at the age of 3 days. MRI brain with contrast and spectroscopy was done, result of which further supported the diagnosis (Figures 2 and 3). Patient died after one month of admission due to sepsis related to lower respiratory and urinary tract infection.

Discussion
Subacute sclerosing panencephalitis developed during pregnancy presents in an acute and fulminant course culminating in a vegetative state within weeks. It is suggested that the relative older age of disease presentation and the unusually rapid neurologic deterioration were partially due to immunologic and hormonal alterations of pregnancy.

Diagnosis
Raised titre of serum antimeasles antibody titre more than 1:256 and raised antimeasles antibody titre in CSF more than 1:4 clinch the diagnosis. CSF analysis also shows raised gammaglobulin fraction along with oligoclonal band which can be adsorbed by measles virus. CSF/serum quotient reference for antimeasles antibody more than 1.5 signifies antibody production in CNS.

EEG classically shows periodic complexes consisting of bilaterally symmetrical, synchronous, high voltage (200-500 mv) burst of polyphasic, stereotyped delta waves repeating at regular interval of 4-10 sec. The typical EEG pattern is seen in myoclonic phase and is virtually diagnostic.

MRI with Gadolinium contrast uptake in the brain was suggestive of subacute sclerosing panencephalitis.

References
1. Associate Professor, 2. Resident, 3. Assistant Professor, Dept. of Medicine, Grant Medical College and Sir J.J. Group of Hospitals, Mumbai, Maharashtra
Received: 30.04.2014; Revised: 01.07.2014; Accepted: 15.07.2014
Fig. 1: EEG showing high amplitude spike every 4-6 seconds

Fig. 2: MR spectroscopy in SSPE

enhancement may show patchy asymmetric regions of white matter involvement typically in the temporal and parietal lobes. Gradually more extensive white matter involvement develops with additional involvement of the corpus callosum and basal ganglia. Eventually a generalised encephalomalacia develops and parenchymal loss may be seen in later stages.4

MR Spectroscopy may demonstrate decreased NAA from neuronal loss, increases in choline from demyelination, increase myo-inositol : from active gliosis and elevated lactate from macrophagic infiltration.4

Histopathological findings on brain biopsy shows widespread degeneration of neuron and disorganisation of cortical structure. Two types of inclusion bodies can be found. Cowdry A is a homogenous, eosinophilic present diffusely in neurons and oligodendroglia. It is seen in patient with fulminant disease. Cowdry B are small multiple present predominantly in brain stem. These inclusion bodies contain viral antigens. Neurofibrillary tangles can be seen in neuron and oligodendrocyte.

Viral genome can be isolated with polymerase chain reaction or in situ hybridisation method. Viral antigens can be detected by immunohistochemistry.

Table 1 gives Dyken’s diagnostic criteria of SSPE. In our case four out of five criteria were met. Probable diagnosis of SSPE was made according to criteria.

Table 1: Dyken’s Diagnostic criteria of SSPE5

1. Clinical- Progressive, subacute mental deterioration with typical signs like myoclonus
2. EEG- Periodic, stereotyped, high voltage discharges
3. Cerebrospinal fluid- Raised gammaglobulin or oligoclonal pattern
4. Measles antibodies- Raised titre in serum (>1:256) and/or cerebrospinal fluid (1:4)
5. Brain biopsy- Suggestive of panencephalitis

Definitive: Criteria 5 with three more criteria; Probable: Three of the five criteria

References