size of the goitre). Furthermore, the quick confirmation of the sensori-neural hearing loss using auditory evoked responses has a prognostic significance and a role in genetic counselling.

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Neonatal Herpes

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'Herpes' is a Greek word meaning "to creep". Herpes infection was first described by Jean Astruc in 1736, but the occurrence of Herpes infection in the neonatal period was described by Batgnani in 1934 in a neonate with isolated keratoconjunctivitis. Neonatal herpes is by far the most serious infection attributed to herpes virus(2). We believe this to be the first case of Herpes infection in the neonate from India, successfully managed with acylovir.

Case Report

A 21-year-old primigravida delivered a live male baby by Cesarean section (Indication: fetal distress, meconium stained liquor). Birth weight was 3.4 kg. Apgar scores were 9, 10, 10. On examination, the baby had hepatosplenomegaly (liver 5 cm below the costal margin and spleen 4 cm below the costal margin) and developed respiratory distress soon after birth. He was

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shifted to the Special Care Nursery. Investigations revealed bilateral pneumonitis on Chest *X*-ray and blood cultures were sterile. The neonate was started on Injection crystalline penicillin and amikacin. Respiratory distress settled by day 5 and antibiotics were stopped. At day 10, the baby developed a maculopapular rash which started from trunk and later covered the whole body. At this time the maternal history was reviewed and history of genital ulcers during the 3rd trimester which subsided spontaneously after 7 days was elicited. There was no history of similar ulcers in the father. In view of this history and clinical finding of persistent hepatosplenomegaly and rash, the possibility of herpes infection was considered. Blood antibody titres revealed IgM HSV-2 levels of 1 : 45 IU/ml; the rest of the investigations for intrauterine infection were negative. As per recommendation, acyclovir therapy was administered in the dose of 30 mg/kg/day as 8 hourly infusion for 10 days. The child was discharged at day 25. On discharge, the baby was completely asymptomatic but there was persistence of hepatosplenomegaly.

The baby is presently on follow-up and is 1 year old. Liver and spleen both have completely regressed. Serial fundus examinations, ultrasound cranium and EEG done are all within normal limits. The anthropometry and milestones are appropriate for age.

Discussion

Neonatal Herpes is caused by the Herpes virus, a DNA virus, belonging to the family *Herpes viridae. Herpes hominis* is of 2 types (HSV-1) and (HSV-2). Out of these (HSV-2) infection is more common in neonates(1). The incidence reported is 1-6 newborns/1000 deliveries/year(1). Transmission of infection to the neonates occurs primarily by two routes, ascending infection and transplacental infection. Most neonatal infections are the result of virus acquisition during passage through the birth canal(40%). Transplacencal infection is rare and the exact incidence of the same is not known.

Certain factors are said to be associated with increased risk of acquistition of HSV in neonates. These are primary infection in the mother; others being multiple genital lesions in the mother; prematurity, prolonged rupture of membranes and intrauterine instrumentation(1).

Neonatal herpes is usually categorized into three types: (*i*) localized disease confined to eye, skin or mouth, (*ii*) disseminated disease, and (*iii*) central nervous system infection. In disseminated disease, which is the most severe category, the classical presentation is between 9 and 11 days of life(3,4). Prodromal symptom may be present at an earlier age(5). Babies usually demonstrate irritability and respiratory distress, jaundice and seizures, frequently progressing to cardiovascular compromise, coagulopathy and death. Most infants will manifest a vesicular rash on the skin or mucus membranes which serves to distinguish the illness from other causes of neonatal sepsis. The patient described by us had disseminated form of disease.

Encephalitis can occur either in association with disseminated disease or as an isolated manifestation. These usually present later (16-17 days of age) than those with multiorgan involvement. Seizures are usually intractable and non focal unlike acquired HSV infection in older children(5).

Almost half of the patients of neonatal herpes will have signs confined to skin,

mouth or eye(6). Cutaneous disease presents at 10 to 11 days of life. The rash frequently arises in clusters and crops and progresses to cutaneous bullae formation(5). A large proportion of children suffer relapse in the first year of life. Ocular infection too can occur both as an isolated focus of infection or as a precedent of disseminated disease(5). In usually presents at 2 days to 2 wks of life and is associated with central nervous system involvement in 20% of patients. The commonest manifestations are conjunctivitis and keratitis but cataracts and chorioretinitis are rare. Neonatal herpes is best diagnosed by isolating the virus from one of the body site, this may be done by culturing feces, urine or secretions from throat or nasopharynx conjuctiva(5).

Antibody levels are of little diagnostic value. Detection of viral antigens in tissue specimen using HSV specific immunofluorescent nonclonal or polyclonal antibodies is also useful. Various modalities have been used over the years for treatment of Herpes infections which includes topical heparin, topical surfactant and photodynamic inactivation(1). None of these have proved beneficial. The efficacy of antiviral chemotherapy in infants with herpes infection is established unequivocally(4,7). In the absence of therapy, 80% of cases of disseminated disease will result in death(5) in contrast to 15-20% following appropriate therapy, whereas 50% of all cases with localized CNS disease will result in death and most of survivors suffer neurologic impairment(5). Without treatment, 50% infants were normal at follow up in the treated group as compared to only 17% in the untreated group. Recovery from herpes infection in the present case was recorded after treatment.

No difference between the treatment with acylovir and vidarabine has been demonstrated(8). The recommended dose for both of these is 30 mg/kg/day as 8 hourly infusions for 10 to 14 days. No short term toxicity has been observed with either of these drugs(4,7); but vidarabine requires large volumes of fluid to avoid precipitation and therefore has a theoretical risk of cerebral edema to a child with severe encephalitis. Topical IDU has been recommended for cutaneous and ophthalmic lesions.

A very important aspect of management of neonatal herpes is the obstetrical management of these cases, which involves screening of mothers for Herpes. As per recommendations(9,10) all mothers with history of recurrent disease; active genital lesions during early pregnancy or several partners screening cultures. Patients with active clinical infection or virological infection 1 week or less before delivery or if membranes were reptured for less than 4 hours should be subjected to cesarean section. Women who were culture negative and free of disease within a week of delivery, could have a vaginal delivery(9,10).

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Breast Feeding in Difficult Situations

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Breast feeding is crucial for infant survival in developing countries(1). Therefore, it forms an integral part of the well-known child survival package, "the GOBIFF"(2). The economic, immunological and emotional considerations make breast feeding superior to artificial feeding especially in the deprived population. A serious illness in a mother may separate the baby from her, resulting in failure to establish and maintain lactation. Sustained efforts to promote breast feeding need to be made in such cases.

Case Reports

We report 6 cases where lactation and breast feeding were successfully established despite illnesses of serious and prolonged nature in mothers. The *Table* shows the clinical details and outcome in these six cases. Breast feeding was promoted by visits of the doctors and nurses from the neonatal intensive care unit to the ward where the mother was admitted. These visits began as soon as possible after the admission of the baby. During these visits enquiry about mother's health was made and she was apprised of the baby's health. She was also encouraged to express breast milk depending on her health. The milk was taken to the nursery by the grandmother or father of the baby or a student nurse. Depending on the health, either the mother started coming to the nursery or the baby started going to the mother's ward from time to time. All the babies were exclusively breast fed at the time of discharge from the hospital.

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