CLINICAL STUDY OF PERINATAL ASPHYXIA IN TERM NEONATES WITH SPECIAL REFERENCE TO THE ROLE OF MAGNESIUM SULPHATE THERAPY

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Perinatal asphyxia refers to impairment in the normal exchange of respiratory gases during parturition, and the ensuing adverse effect on the fetus. The condition is determined by a complex interaction of maternal, placental, uterine and fetal factors extending through pregnancy to delivery. Failure to initiate and sustain breathing immediately after delivery has been associated with hypoxic-ischemic injury to the central nervous system (CNS) and the clinical manifestations of this injury have been termed as Hypoxic Ischemic Encephalopathy (HIE). HIE is of concern in an asphyxiated neonate because it can lead to serious long-term neuro-motor sequelae among survivors. So the way in which an asphyxiated baby is managed at birth determines the immediate morbidity and quality of life among survivors. Hence, the study was undertaken with following objectives: 1. To study the etiology, clinical features and immediate outcome of term neonates with perinatal asphyxia. 2. To study the outcome at discharge of term asphyxiated neonates treated with magnesium sulphate as compared to placebo.

METHODS The randomized case control study was done from June 2011 to May 2012 in 120 asphyxiated term neonates (60 cases and 60 controls). Cases received 3 doses of 250 mg/kg magnesium sulphate infusion and controls received 3 doses of 1 ml/kg normal saline 24 hours apart. Both groups received supportive care according to the NICU protocol. Statistical analysis was through SPSS for windows (version 16.0). P value < 0.05 was taken as statistically significant.

RESULTS The most frequently associated etiological factor in perinatal asphyxia was found to be meconium stained amniotic fluid in the present study. Mild, moderate and severe hypoxic-ischemic encephalopathy was present in 40%, 56.7% and 3.3% cases and 45%, 53.3% and 1.7% controls respectively. Post-intervention mean serum magnesium level of cases was in neuroprotective range of more than 1.2 mmol/L. During hospital stay, cases achieved seizure control earlier than controls (36.5 hours vs 55 hours p=0.026). More cases achieved seizure control in less than 2 days (92% vs 70% p=0.048) and with single antiepileptic drug (96% vs 74% p=0.029). Cases recovered early from abnormal neurological findings (3.36 vs 4.96 days p=0.0001) and more cases recovered within 4 days (84% vs 53% p=0.0006). Cases recovered from acute kidney injury early (3.16 vs 4.27 days p=0.046). At discharge, fewer cases with moderate and severe encephalopathy had abnormal neuroimaging (20% vs 37.5% p=0.112). Fewer cases had neurological abnormalities (8.6% vs 31.25% p=0.019) and more cases established early breast feeding (91.4% vs 65.6% p=0.009).

INTERPRETATION AND CONCLUSIONS Magnesium therapy causes early recovery and favorable neurological outcome at discharge for asphyxiated term neonates.