

amongst adolescent children belonging to high, middle and low economic groups in National Capital Territory of Delhi.

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Neurodevelopmental Outcome Following Whole Body Cooling for Perinatal Asphyxia

This follow-up study conducted on children who underwent therapeutic cooling for hypoxic ischemic encephalopathy, showed normal neurodevelopmental outcome with normal milestones and normal developmental quotient in a minimum of 60% of children at 18-24 months of age. This study shows comparable neurodevelopmental outcome in infants who underwent cooling in a resource poor setting, when compared with existing literature.

Key words: *Cooling, Therapeutic hypothermia, Hypoxic ischemic encephalopathy, Neurodevelopmental outcome.*

Meta-analysis of the various cooling trials from developed countries has shown conclusively that therapeutic

hypothermia reduces death and disability following hypoxic ischemic encephalopathy (HIE) and has now become the standard of care in these countries [1]. There have been doubts raised as to whether cooling should be practiced in developing countries like India due to concerns of availability of alternative cheaper equipment and differences in patient population [2,3]. In a previous study, we demonstrated the safety and feasibility of cooling babies with HIE in India using low cost and easily available material [4]. However, in addition to short term safety and outcome, it is important to look at the long term outcome of these babies. The present study was conducted to evaluate the neurodevelopmental outcome of the 20 babies who underwent whole body cooling for HIE in the neonatal period [4]. We were able to evaluate at 18-24 months, 14 of the 19 (73.7%) babies who were discharged alive. A detailed history was taken from all the parents regarding the age of achievement of important milestones. The Griffith Mental Developmental Scales (GMDS) and Vineland Social Maturity Scales (VSMS) were done on 11 children.

One child died at 1 month of age with a respiratory illness. One child had developmental delay. In the remaining 12, parents had no concern about their development or growth and the age of achievement of major milestones were within the normal range. All children had normal anthropometry and head circumference except one child with developmental delay, who had microcephaly. This child had spastic quadriplegia with normal vision and hearing and an episode of fever precipitated seizures. All the other children had normal tone, vision and hearing. The mean developmental quotient (SD) and mean social quotient (SD) for normal children were 98.2 (10.79) and 133.6 (14.9), respectively. The child with developmental delay had a developmental quotient of 35 and social quotient of 42.

This follow-up evaluation showed only 3/15 (20%) to have had an adverse outcome (2 death and 1 disability). If all 5 of the babies who could not be contacted were assumed to have an adverse outcome, a minimum of 12 children (60%) still would have had a normal neurodevelopmental outcome. This is a better outcome than the major cooling trials, where death or disability was seen in 44% to 51% of cooled babies [5,6,7]. All of our cooled babies had either moderate or severe encephalopathy, belying the argument that our cohort was not similar to the western cohorts. However, it is well documented that there is a process of natural selection in developing countries where babies with very severe asphyxia are stillborn or die before reaching the hospital [8]. Thus the better outcome seen in the study may be in part due to the fact that the very sick babies were not cooled. However, meta-analyses of the cooling studies from the west have shown that in babies with severe encephalopathy, cooling did not lead to significant benefit (RR 0.62, 95% CI 0.33-1.18) [9].

This study has established the good outcome at 18-24 month age in cooling babies with HIE in our country. However, the numbers are small and several questions remain unanswered. Before cooling can become the standard of care in India, there is an urgent need to conduct an adequately powered multi-centric RCT to address the questions of patient population difference and cooling in conditions without intensive care monitoring, especially as a study from Africa has shown increased mortality in cooled babies [10].

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