Short Communication | Pediatric Oncology: Open Access | 2021 | Vol.6 No.1

Cancer Science & Pediatrics 2019: Newborns with hypoxic ischemic encephalopathy treated with hypothermia therapy using neonatal laminar flow unit - Jose M. R. Perez - Maternidade Sao Miguel, Casa de Saude de Guarulhos, Brazil.

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Aim: The aim this trial was observational clinical the newborns with diagnosis of Hypoxic Ischemic Encephalopathy treated with hypothermia therapy in use of the Neonatal Laminar flow unit.

Hypoxic-ischemic encephalopathy (HIE) is associated with high rates of morbidity and mortality, and only recently has an effective treatment been developed to mitigate its sequelae. Moderate therapeutic hypothermia (TH) (core temperatures of 33oC–35oC) has been found in several randomized clinical trials to reduce mortality and improve neurodevelopmental outcomes in full-term neonates with moderate or severe HIE. TH can be administered using various techniques, but optimal use dictates meticulous control of targeted core temperature (usually assessed as rectal temperature), and thus servo-controlled devices have an advantage. Treatment is applied for 72 hours, and then gradual rewarming is performed at a slow rate. Rapid rewarming and hyperthermia should be avoided because they may be associated with neuronal damage and reversal of the benefits of TH. Long-term outcomes, at ages 6 to 8 years, correlate well with the benefits observed at 18- to 24-month follow-up. Although better than any alternative therapy currently available, the rates of mortality and morbidity remain high even when using TH. 2015 by the American Academy of Pediatrics. All rights reserved.

Infants with moderate to severe neonatal encephalopathy (NE) benefit significantly from therapeutic hypothermia, with reduced risk of death or disability. However, the need for therapeutic hypothermia for infants with milder NE remains unclear. It has been suggested that these infants should not be offered therapeutic hypothermia as they may not be at risk for adverse neurodevelopmental outcome and that the balance of risk against potential benefit is unknown. Several key questions need to be answered including first, whether one can define NE in the first 6 h after birth to accurately distinguish infants with brain injury who may be at risk for adverse neurodevelopmental consequences. Second, will treatment of infants with mild NE with therapeutic hypothermia improve or even worsen neurological outcomes? Although alternate treatment protocols for mild NE may be feasible, the use of the current approach combined with rigorous avoidance of hyperthermia and initiation of hypothermia as early as possible after birth may promote optimal outcomes. Animal experimental data support the potential for greater benefit for mild HIE compared with moderate to severe HIE. This review will summarize current knowledge of mild NE and the challenges to a trial in this population.

Methods: We involved 53 newborns in this trial, all born in the hospital itself, newborns at up to 35 weeks of gestation, with up to 6 hours of life. Total body cooling was achieved using the neonatal laminar flow unit for 72 hours, with continuous rectal temperature servo control, isolation and humidification. Outcome measures were cerebral palsy, a Bayley II Mental Development Index score <70, hearing loss or blindness. We compared findings with our previously published studies2 and two meta-analyses.

Results: We included 53 newborn infants (73% male) with a birthweight of 3.562± 1548g and gestational age of 38 ±3.4 weeks. We have used to categorize the diagnosis of the Hypoxic Ischemic Encephalopathy, the Siben Neurologic Score 5 associated the Sarnat Score6; the most of the newborns (73%) had Siben's score three points or more to serious HIE confirmed by Sarnat Score and 27% had Siben's score three points or more to moderate HIE confirmed by Sarnat Score. Total body cooling (33–34°C) was achieved in 75 minutes and maintained with servo control. At 18–24 months of age, five of the 38 survivors were diagnosed with cerebral palsy, two was diagnosed with blindness and one with impaired hearing.

Conclusion: The use of the Neonatal laminar flow unit to supply total body hypothermia therapy in newborns with HIE was effective and our results were similar our previously trial and two meta-analyses.

This work is partly presented at 2nd International Conference on Cancer Science & Pediatrics, February on 19-20, 2019 held at Prague, Czech Republic