

comparable to servo-controlled equipment in maintaining target temperature, when this study has not directly compared to this intervention with servo-controlled devices.

SHIVASHANKAR DIGGIKAR

Homerton University Hospital, London, UK.

shiv.diggikar@gmail.com

REFERENCES

1. Thomas N, Abiramalatha T, Bhat V, Varanattu M, Rao S, Wazir S, *et al.* Phase changing material for therapeutic hypothermia in neonates with hypoxic ischemic encephalopathy – a multi-centric study. *Indian Pediatr.* 2018;55:201-6.
2. Thayyil S, Shankaran S, Wade A, Cowan FM, Ayer M, Satheesan K, *et al.* Whole-body cooling in neonatal encephalopathy using phase changing material. *Arch Dis Child Fetal Neonatal Ed.* 2013;98:F280-1.
3. Narang M, Kaushik JS, Sharma AK, Faridi MM. Predictors of mortality among the neonates transported to referral centre in Delhi, India. *Indian J Public Health.* 2013;57: 100-10.
4. Rathod D, Adhisivam B, Vishnu Bhat B. Transport of sick neonates to a tertiary care hospital, south India: Condition at arrival and outcome. *Trop Doctor.* 2015;45:96.
5. Azzopardi DV, Strohm B, Edwards AD, Dyet L, Halliday HL, Juszczak E, *et al.* Moderate hypothermia to treat perinatal asphyxial encephalopathy. *N Engl J Med.* 2009;361:1349-58.

AUTHORS' REPLY

We thank the author for his comments related to our study [1]. The ambient temperature in the neonatal intensive care units (NICUs) was not systematically measured in the study. However, all the NICUs were air-conditioned where the ambient temperature is maintained in the range of 24-28°C.

The mean (SD) age of initiation of therapeutic hypothermia (TH) in our study was 2.9 (1.9) hours. We do not have data on the proportion of out born infants included in the study and on the number of infants who could not be cooled due to admission after 6 hours of life. However, most of the study infants were inborn and we included only those outborn babies who reached within 6 hours after birth. It is our experience that in the last few years, more babies with asphyxia are being referred earlier and are reaching us within 6 hours as referring hospitals are becoming aware of the fact that cooling is being offered in our institutions. It is interesting that 76% of infants cooled in the HELIX feasibility trial were out-born infants [2].

Though the protocol recruited only those with

moderate to severe encephalopathy, three babies were noted to have only mild encephalopathy during data analyses. Such trial deviates are also seen in the other major trials on TH, and is well-documented phenomenon in literature [3].

Nineteen (18.4%) infants had severe encephalopathy in our study. The figure of 10% in the discussion is a typographic error. The fluctuation of the temperature during cooling phase (0.39°C) in our study was less when compared to the fluctuations reported by the TOBY (0.5°C) [4] and NICHD (0.45°C) [5] trials using servo-controlled equipment. The good temperature control and few complications seen in this study suggest that cooling is safe and feasible in a NICU setting in India. We agree with the authors that the results of our study cannot be directly compared to those of NICHD and TOBY trials due to the difference in the proportion of infants with severe encephalopathy. However, this should not influence the safety and feasibility of TH, which was the focus of our study.

Though the study was partly funded by the device manufacturer, they had no input in study design, data accrual and analysis, or manuscript preparation.

NIRANJAN THOMAS* AND THANGARAJ ABIRAMALATHA

Department of Neonatology

CMC, Vellore, Tamil Nadu, India

**niranjan@cmcvellore.ac.in*

REFERENCES

1. Thomas N, Abiramalatha T, Bhat V, Varanattu M, Rao S, Wazir S, *et al.* Phase changing material for therapeutic hypothermia in neonates with hypoxic ischemic encephalopathy - A multi-centric study. *Indian Pediatr.* 2018;55:201-5.
2. Oliveira V, Kumutha JR, Narayanan E, Somanna J, Benkappa N, Bandya P, *et al.* Hypothermia for encephalopathy in low-income and middle-income countries: feasibility of whole-body cooling using a low-cost servo-controlled device. *BMJ Paediatr Open.* 2018;2:e000245.
3. Jacobs SE, Morley CJ, Inder TE, Stewart MJ, Smith KR, McNamara PJ, *et al.* Whole-body hypothermia for term and near-term newborns with hypoxic-ischemic encephalopathy: A randomized controlled trial. *Arch Pediatr Adolesc Med.* 2011;165:692.
4. Azzopardi DV, Strohm B, Edwards AD, Dyet L, Halliday HL, Juszczak E, *et al.* Moderate hypothermia to treat perinatal asphyxial encephalopathy. *N Engl J Med.* 2009;361:1349-58.
5. Shankaran S, Laptook AR, McDonald SA, Higgins RD, Tyson JE, Ehrenkranz RA, *et al.* Temperature profile and outcomes of neonates undergoing whole body hypothermia for neonatal hypoxic-ischemic encephalopathy. *Pediatr Crit Care Med.* 2012;13:53-9.