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ACTA PÆDIATRICA NURTURING THE CHILD WILEY

COMMENTARY

EBNEO commentary: Association between seizures during rewarming after hypothermia therapy for neonatal hypoxic-ischemic encephalopathy and abnormal neurodevelopmental outcomes

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1 | MANUSCRIPT CITATION

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2 | COMMENTARY

Neonatal hypoxemic ischemic encephalopathy (HIE) contributes to neonatal mortality and neurodevelopmental disability in infants born at term or near term.[1] Studies have shown induced hypothermia decreases the incidence of mortality and moderate-to-severe neurodevelopmental disability in neonates with HIE at 18–24 months of age.[2,3] Inducing hypothermia for 72 h is currently the standard treatment for infants with moderate-to-severe neonatal HIE.[4] The current SMART study includes a cohort of 120 of the 364 infants enrolled in the Optimizing Cooling trial: 66 patients received 72 h (standard care) and 54 received 120 h of therapeutic hypothermia.

Of these 120 infants, 28 (23%) had electrographic seizures during rewarming and that 19/28 (68%) infants had seizures before or during maintenance of hypothermia therapy. It appears that of these 28 infants, 13 infants had seizures during 12 h prior to rewarming and during rewarming, and 15 infants had seizures during rewarming phase that were not previously documented. Perhaps importantly, the authors did not report whether neurodevelopmental outcomes differed between those that presented with seizures during rewarming were different from those that had seizures prior to rewarming and during rewarming. It is possible that the outcomes of those that had seizures both prior to and during rewarming would differ from those with seizures during rewarming alone.

The authors did not state whether treating electrographic seizures and clinical seizures during rewarming were associated with any differences in the injury seen on the magnetic resonance imaging scans and abnormal neurodevelopment. This information could help us to understand whether these seizures exacerbated the injuries or merely reflected severe injuries in particular infants. This information would have an impact on how aggressively seizures during the rewarming period should be treated.

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aEEG can be a good screening tool for diagnosing seizures in neonates, sensitivity and specificity improves with a raw trace. aEEG recordings could miss shorter seizures due to time compression, focal seizures are often unnoticed due to the limited number of electrodes, and EEG artefacts occur frequently despite the filtering process. Using aEEG for treatment decision could lead to wrong diagnosis and overtreatment, which could be harmful to the developing brain. The American Clinical Neurophysiology Society and the International League Against Epilepsy guidelines recommend using conventional EEGs as the gold standard method for diagnosing neonatal seizures. However, aEEG use has clinical value in NICU but does not replace the standard conventional EEGs and the latter should have been carried out to confirm seizures during the rewarming phase, as the main aim of the SMART study was to monitor seizure activity. It is important to use conventional EEGs during maintenance period of hypothermia therapy and during the rewarming phase. This provides critical information for healthcare staff and parents, as it accurately records seizure activity and can be used to correlate these findings with neurodevelopmental outcomes.

The strengths of the study include the prospective study design, standardised protocols and neurodevelopmental follow-up at 18–22 months of age. This study emphasises the importance of monitoring for electrographic seizures in infants during rewarming phase of hypothermia treatment and importance of thorough neurodevelopmental follow-up.

URL LINK: https://ebneo.org/ebneo-review-seizures-during-rewarming-after-hypothermia-for-hie-and-nd-outcomes/

CONFLICT OF INTEREST

There is no conflict of interest to disclose.

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