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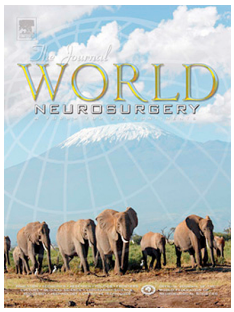

Hypothermia not Supported as a Therapeutic Option for Traumatic Brain Injury in Recent Randomized Trial

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<DOC>News

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<BEGIN ARTICLE>

Traumatic brain injury (TBI) is a leading cause of permanent disability in people younger than 40 years of age.[1,2] An increase in intracranial pressure (ICP) during hospitalization for a TBI has been associated with poor long-term neurologic outcomes.[#] On the basis of encouraging research,[#] hypothermia has been embraced by some centers as an innovative way to treat high ICP. More recent trials, however, have hinted that therapeutic hypothermia might contribute to poor neurologic outcomes.[#,#]

In an attempt to define the role of hypothermia in TBI, the Eurotherm 3235 Trial collaborators conducted a randomized controlled trial, which was published October 7, 2015 in the *New England Journal of Medicine.*[#] The inclusion criteria included patients with closed head injury who sustained an ICP >20 mm Hg for >5 minutes. For the purpose of creating a framework for study analysis, treatments for TBI were divided into stage 1, 2, and 3 therapies (**Table 1**). Eligible patients were randomized to an experimental arm, hypothermia (32°C−35°C) in addition to best management practice, and a control arm that consisted of best management practices alone. Statistical analysis was performed using ordinal logistic regression to compare the Extended Glasgow Outcome Scale scores between the hypothermia and control groups at 6 months. Only 25.7% of patients from the hypothermia group (49/191) had favorable outcomes at 6 months, while 36.5% of patients from the control group (69/189) had favorable outcomes. These results were deemed to be statistically significant by an interim analysis, and the study was stopped prematurely.

The results of this study further cast doubt on the utility of hypothermia as a treatment modality for patients with TBI. Although the results of this study are interesting, several questions are raised. First, are there confounding factors that could explain the difference in both groups? The use of hypothermia was not blinded, so it is possible that study arm patients were somehow treated differently. Despite the seeming balance of patient-related factors in this study, it is possible that hidden confounding factors explain some of the differences in patient outcomes. Another question raised concerns potential mechanisms that could explain the seemingly deleterious effects of hypothermia. Further, it would be useful for the authors to expound on these question in subsequent publications.

The authors are to be congratulated on this sentinel contribution to the literature. Hypothermia deserves further study but for now should be reserved for situations where other measures have failed to control high ICP. The role of neurosurgery in the multidisciplinary management of TBI remains critical. This study helps neurosurgeons further refine their strategies as they manage this challenging population.

References

1. Andrews PJ, Sinclair HL, Rodriguez A, Harris BA, Battison CG, Rhodes JK, et al. Hypothermia for intracranial hypertension after traumatic brain injury. *N Engl J Med.* 2015;373:2403-2412.