Saurabh Saigal
Jai Prakash Sharma

**Comment on Debaty et al.:
Impact of intra-arrest
therapeutic hypothermia
in outcomes of prehospital
cardiac arrest: a randomized
controlled trial**

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Dear Editor,

We read the recent article by Debaty et al. [1] with great interest. The methodology used in this trial is of high quality, but the participants were a non-selected study population, of which 80 % were patients with a non-shockable rhythm and, therefore, barely 20 % had a shockable rhythm. This is in contrast to earlier hypothermia trials which included patients with a shockable rhythm, such as ventricular fibrillation (VF) or ventricular tachycardia (VT), as well as a recent, large multicenter observational study by Vaahersalo et al. [2] involving Finnish adults, of whom the majority had shockable rhythms.

The 2010 American Heart Association guidelines for post-cardiac arrest care recommend that patients who have experienced out-of-hospital cardiac arrest (OHCA) caused by VF/VT should receive therapeutic hypothermia (Class I) and that therapeutic hypothermia “may be considered” after in-hospital cardiac arrest (IHCA) and OHCA caused by non-shockable rhythms (Class IIb) [3].

Based on the excellent clinical results obtained with therapeutic hypothermia in patients with shockable rhythms, therapeutic hypothermia has been widely advocated in such cases [4]. There are at yet no large randomized controlled trials evaluating the clinical impact of hypothermia in patients who have been resuscitated from a non-shockable OHCA [4]. Thus, the use of therapeutic hypothermia in OHCA patients with a non-shockable rhythm is still under debate. Cardiac arrest with non-shockable rhythm, such as asystole, is known to have a poor prognosis in comparison to a common arrhythmia in cardiac arrest, such as VF/VT. Including the former patients in a study refutes the benefit of therapeutic hypothermia, if any.

Neuron-specific enolase (NSE) is a marker of neurological injury, with higher levels associated with poor prognosis. In a recent study by Calderon et al. [5], NSE values of >49.5 ng/mL at 48 h and >10.59 ng/mL at 72 h predicted mortality. In the study by Debaty et al. [1], the patients had median NSE levels of 96.7 µg/ml in the intra-arrest therapeutic hypothermia group (IATH) at 24 h, which can be considered as quite high levels. These high levels indicate that neurological injury in this patient population was already extensive and that therapeutic hypothermia would be of no use. Debaty et al. [1] report the survival rate at 1 month to be 7 % in the IATH group versus 5 % in hospital cooling group, which is quite low compared to that reported in previous hypothermia trials. Thus, we suggest that the results of this study cannot be generalized as the results of this trial pertain to a specific patient population which already has a poor prognosis.

Conflicts of interest None.

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S. Saigal (✉)
Department of Trauma and Emergency
Medicine, AIIMS, Bhopal, India
e-mail:
saurabh.criticalcare@aiimsbhopal.edu.in
Tel.: +91-755-2902740

J. P. Sharma
Department of Anaesthesia, AIIMS,
Bhopal, India