ICU
MANAGEMENT & PRACTICE

Speed of Cooling After Cardiac Arrest: Sub-study from TTM-2 Trial

Out-of-hospital cardiac arrest (OHCA) typically has a poor prognosis. Less than 50% of patients admitted to ICU survive to hospital discharge. Animal models suggest that therapeutic hypothermia is neuroprotective and decreases neuronal injury.

Targeted temperature management (TTM 33–36 °C) is part of international guidelines when managing post-OHCA patients. Evidence suggests that better neurological recovery and mortality benefit in TTM 33 °C post-OHCA from ventricular arrhythmia. However, this has not been replicated in the investigation comparing TTM 33 °C to TTM 36 °C or the duration of cooling (24 or 48 h). Findings from the TTM2 trial showed that at six months follow-up, TTM 33 °C had no significant survival or functional outcome benefit when compared to normothermia. Nevertheless, TTM is commonly used after cardiac arrest. However, the time to target temperature is still unclear, and there is significant variation in clinical practice.

In a post-hoc analysis of the TTM-2 trial, researchers hypothesised that the effects of a temperature of 33 °C compared to normothermia would differ based on average time to hypothermia. They also hypothesised that patients who achieve hypothermia fastest would have more favourable outcomes.

The analysis included 1592 patients after OHCA. Patients were randomised to targeted hypothermia at 33 °C. This was followed by controlled re-warming or normothermia with early treatment of fever. Study researchers also calculated the average temperature at 4 hours after the return of spontaneous circulation (ROSC). The primary outcome of the study was death from any cause at six months. The secondary outcome was poor functional outcome at six months.

The findings of the analysis do not show any evidence of heterogeneity of intervention effect based on the average time to target temperature on mortality. 49% of the patients allocated to hypothermia at the fastest sites died compared to 46% in the normothermia group. Poor functional outcome was reported in 51% of the patients in the hypothermia group and 51% of patients in the normothermia group.

These findings suggest that using a hospital's average time to hypothermia did not significantly alter the effect of TTM of 33 °C compared to normothermia and early treatment of fever.

Source: Critical Care
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