EUROPEAN RESUSCITATION COUNCIL

ERC Statement on targeted temperature management

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Therapeutic hypothermia following cardiac arrest: recent studies on targeted temperature management

Two randomised controlled trials presented at the American Heart Association Scientific Sessions Meeting in Dallas on 17th November and published in JAMA[1] and the New England Journal of Medicine[2] have challenged current practice in the treatment of patients with return of spontaneous circulation (ROSC) after out-of-hospital cardiac arrest (OHCA).

In the first of these studies, the induction of hypothermia using 2 L of ice-cold normal saline in patients with return of spontaneous circulation (ROSC) after OHCA did not improve survival to hospital discharge compared with those in whom cooling was delayed until arrival at hospital.[1] Prehospital cooling reduced mean core temperature by 1.2 – 1.3°C by hospital arrival and reduced by 1 hour the time to achieve a temperature of less than 34°C compared with those not cooled prehospital. The proportion of patients re-arresting during transfer to hospital and of pulmonary oedema on the first chest radiograph was significantly greater in the prehospital cooled group.

The Targeted Temperature Management (TTM) study randomised patients with ROSC after OHCA to TTM at either 33°C or 36°C.[2] Importantly, there was a strict protocol for prognostication and withdrawal of life sustaining treatment (WLST). There was no difference in all cause mortality, the primary end point, between the two groups.

Two questions about the treatment of patients with ROSC after out-of-hospital cardiac arrest (OHCA) arise from these studies:

1. Should ice-cold intravenous fluid continue to be used for inducing hypothermia prehospital?

2. Should the target temperature be 32-34°C or 36°C for the management of comatose cardiac arrest survivors with ROSC?

The International Liaison Committee on Resuscitation (ILCOR) and the European Resuscitation Council (ERC) plan to publish in the near future advisory statements that will guide clinicians on the use of temperature management in post cardiac arrest patients.

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1. Kim F, Nichol G, Maynard C, et al. Effect of Prehospital Induction of Mild Hypothermia on Survival and Neurological Status Among Adults With Cardiac Arrest: A Randomized Clinical Trial. JAMA 2013.

2. Nielsen N, Wetterslev J, Cronberg T, et al. Targeted Temperature Management at 33 degrees C versus 36 degrees C after Cardiac Arrest. N Engl J Med 2013.