

Free literature review
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haca study definitely
suggests an ef...

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Cardiac arrests, in patients after a hospital stay are common, with an estimated yearly incidence of 36 to 128 per 100 000 patients in developed countries. (WHO, 2001) This is associated with a high mortality rate with a many patients having poor neurologic outcomes. (Mayer, 2002)

In view of this, The Hypothermia after Cardiac Arrest (HACA) study was conducted in five European countries with an objective of determining whether mild hypothermia increases the rate of neurologic recovery in patients who have suffered a cardiac arrest. The study included 275 patients out of 3551 patients assessed for eligibility. It was a blinded, multicentre, randomised controlled trial in patients who were resuscitated following a witnessed ventricular fibrillation. The study had clinically meaningful and well-defined endpoints; primary outcome being favourable neurologic outcome in six months, and secondary endpoints being overall mortality at six months and the rate of complications during first week after cardiac arrest. Neurologic outcomes were assessed using the Glasgow-Pittsburgh Cerebral Performance Category (CPC) scale. (HACA study, 2002)

Randomisation was carried out appropriately. The treating physicians were not blinded, but the physicians responsible for assessing the neurologic outcomes were unaware of the treatment assignments. Both the groups were similar at baseline and authors have appropriately reported the endpoints that were measured. (HACA study, 2002)

Of the 275 patients enrolled, 137 patients were randomly assigned to hypothermia group and 138 patients were assigned to normothermia group. Patients randomly assigned to hypothermia group were cooled to a target temperature of 32oC to 34oC which was measured in the bladder.

Hypothermia induction was done using cooling mattresses which deliver cold air on entire body. Ice pack application was also done to achieve required cooling. The achieved temperature was maintained for 24 hours which was followed by passive rewarming. Sedation followed by paralysis (if required) was induced to prevent shivering. (HACA study, 2002)

Upon completion of the study period, 75 patients (55%) in the hypothermia group had a favourable neurologic outcome as compared to 54 patients (39%) in the normothermia group ($p= 0. 009$). Mortality at the end of treatment was 41% in the hypothermia group as compared to 55% in the normothermia group ($p= 0. 02$). The results were satisfactory and in favour of the studied therapeutic intervention. (HACA study, 2002)

As with any other study, there are certain drawbacks of this study too.

Though it was considered to be a large study, it enrolled only 8% of the initially screened patients for study eligibility. Therefore, there is a question mark over generalising treatment with mild hypothermia to all patients with cardiac arrest. It also excluded patients with cardiac arrests of noncardiac etiology like respiratory failures. Secondly, a major limitation of the study was that the treating physicians could not be blinded, but the outcomes were assessed without knowledge of the treatment assignments. (HACA study, 2002)

Generally, cooling should be initiated as early as possible after return of spontaneous circulation (ROSC), but this study had an interquartile range of 4 to 16 hours in the interval between ROSC and attainment of core temperature. The study also does appropriately answer the required length of treatment to achieve the desired outcomes. The study reported 3% more

complications as compared to normothermia group, but the authors have reported it to be statistically insignificant. The authors have made a mention of the complications during the first one week of cardiac arrest in both the groups, but have mentioned that the benefit of hypothermia exceeded its possible adverse events. The incidence of pneumonia was particularly high in the hypothermia group (37% in hypothermia group vs. 29% in normothermia group). However, based on the given data, it does not appear to be harmful. (HACA study, 2002)

References:

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- Mayer, SA., (2002), “ Hypothermia for neuroprotection after cardiac arrest.” Current Neurology and Neuroscience Reports, 2. pp. 525-526.
- Hypothermia after Cardiac Arrest Study Group. 2002. Mild therapeutic hypothermia to improve the neurologic outcome after cardiac arrest. New England Journal of Medicine. 346 (8). pp 549-556.