New resuscitation guidelines for severely hypothermic patients in cardiac arrest

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The general rule for treatment of patients in cardiac arrest is that once resuscitation measures have begun, they must be continued uninterruptedly until the patient shows signs of life or is pronounced dead. A new study has shown that in the specific case of severely hypothermic victims with a core body temperature below 28°C, resuscitation can be delayed and periodically interrupted for short intervals during transportation in the mountains without jeopardising survival. The study has just been published in the medical journal "Resuscitation" and was conducted by Cumbrian Mountain Rescue doctors, the Glenfield Hospital, Leicester in the UK, EURAC in Italy, the Medical University of Innsbruck in Austria and Stanford University in California, USA.

In remote and mountain areas rescuers are often faced with the predicament that uninterrupted resuscitation is simply not possible during transportation of cardiac arrest patients to the hospital. In these cases cardiopulmonary resuscitation (CPR) may be interrupted at the scene or during evacuation. In recent years, however, there have been some case reports in the Alps of severely hypothermic accident victims in cardiac arrest who have survived without any permanent damage despite several interruptions of chest compressions. Rescue services have been seeking urgent clarification of the circumstances when this may apply, as current recommendations specify uninterrupted resuscitation under all circumstances.

The authors did a literature review that has led to the conclusion that

short interruptions of CPR for the purposes of transportation can be made during resuscitation with severely hypothermic patients. Low body temperature preserves the brain, enabling it to withstand cardiac arrest for considerably longer than at normal body temperature. The researchers looked at data from cardiac and vascular surgery, as deliberately lowering the patient's body temperature during the surgery is a recognised technique. Under this induced deep hypothermia, surgeons are able to briefly stop the heart while performing procedures on the heart or large vessels close to the heart without increasing the risk of permanent brain damage. "We have carried out a comprehensive case analyses in this study and have extended what we know from cardiovascular surgery to severe accidental hypothermia. Based on the results, we propose a structured protocol that will enable rescuers and emergency doctors to interrupt CPR for defined periods of time in severely hypothermic patients so that patients can be moved," explained Dr Les Gordon. In practice, this means that if severely hypothermic cardiac arrest patients with body temperature below 28°C need to be evacuated from difficult terrain and continuous resuscitation is not possible, it is justified to alternate five minutes of CPR with five minutes of transportation and continue this pattern until continuous resuscitation can be started. This facilitates rescue and transportation of the patient to a hospital with extracorporeal life support for rewarming without having to abandon potentially life-saving resuscitation attempts.

The results of the study may be the first step in a paradigm shift in current rescue guidelines. In the course of this year these proposals may be incorporated into the new guidelines issued by the International Commission for Alpine Rescue (ICAR MEDCOM) and the European Resuscitation Council (ERC).

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