Abstract

Accidental hypotermic cardiac arrest on the fringe

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Background
Accidental hypothermic cardiac arrest (AHCA) is a unique resuscitation scenario in which patients can survive with favourable neurologic outcome even after a long period of circulatory arrest and extended cardiopulmonary resuscitation (CPR). It is not clear when CPR in AHCA should be terminated in the field on the basis of futility.

Case Presentation
A 25-year-old male sustained witnessed AHCA during a mountain trek in Norway. CPR was delayed by 64 minutes due to extreme environmental conditions. Once initiated, uninterrupted bystander basic life support (BLS) was maintained for 2 hours and 50 minutes until rescue helicopter arrival. On advanced lifesupport (ALS) assessment, the patient was in asystole with a core temperature of 20.4 °C. Veno-arterial extracorporeal membrane oxygenation (VA-ECMO) was initiated 5 hours and 50 minutes post-cardiac arrest. Organized, but non-sustainable, cardiac activity was registered after 4 hours and 2 minutes of extracorporeal cardiopulmonary resuscitation (ECPR), and normothermia (36 °C) was reached after 7 hours and 54 minutes. Sustainable return of spontaneous circulation (ROSC) was achieved 21 hours and 33 minutes post-cardiac arrest.
The patient survived with preserved cerebral function. On a 10-month follow-up he suffered from lower extremity pain and functional limitation, anxiety and depression.

Conclusions
This case represents one of the longest reported resuscitation durations associated with preserved cerebral function in AHCA. Duration of CPR, including BLS, is a poor marker of futility in profound non-asphyxia AHCA.