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Letter to the Editor

The integration of prehospital standard operating procedures and in-hospital HOPE score for management of hypothermic patients in cardiac arrest



Sir,

We read with great interest the results of the validation study of the Hypothermia Outcome Prediction after ECLS (HOPE) survival probability.¹ The authors assessed the validity of the score compared to the derivation cohort in 122 patients, collected retrospectively in a multicenter study including new patients from the same hospitals (55%) and additional ones (45%). The authors found a good calibration and excellent discrimination with a negative predictive value of 97% with a HOPE score of <0.10 .

The cardiopulmonary resuscitation (CPR) duration was longer than 150 min in more than 25% of patients in the validation and derivation cohort.¹ Despite the aphorism that “no one is dead until warm and dead”, management and triage of such patients in the out-of-hospital setting is challenging for prehospital emergency medicine crews. The European Resuscitation Council (ERC) guidelines for the management of hypothermic cardiac arrest (CA) state that resuscitation of hypothermic CA patients should be withheld out-of-hospital only if the cause of CA is attributable to a lethal injury, fatal illness, prolonged asphyxia, or if the chest is incompressible, otherwise they should receive prolonged CPR and be transported to an extracorporeal life support (ECLS) centre for extracorporeal rewarming.² We have recently reported the case of a patient with hypothermic CA who survived with good neurologic outcome (cerebral performance category 1) despite the longest ever reported duration of mechanical CPR and ECLS (8 h, 42 min).³ This case showed how the implementation of a dedicated standard operating procedure for the management of patients with refractory CA in a remote mountain area⁴ may facilitate on-site treatment and triage, transport decisions, and timely integration of ECLS, despite adverse environmental and logistic conditions. The HOPE score could have been of help for the in-hospital triage not only in the hub ECLS centre, but also in the spoke hospital, where the helicopter crew was forced to land because a direct flight to the hub centre was impossible at nightfall.³ The survival probability of this patient calculated with the HOPE score on arrival in the spoke hospital was $>50\%$, i.e. above the proposed cut-off value of 10%. This could have justified the 83 km patient transfer to the ECLS hub centre in an ambulance car with early activation of the ECLS team.

Serum potassium on arrival at the ECLS hub centre was 4.8 mmol/L.³ The assessment of the HOPE score could have further supported the decision to rewarm the patient in spite of the expected long duration of transport and CPR (i.e. HOPE score 23%).

The integration of the HOPE score assessment into standard operating procedures for the management of hypothermic CA patients in spoke and ECLS hub centres seems to have the capability to improve the patient's outcome.

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Conflict of interests

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