

Rapid electrical and hemodynamic stabilization during cardiac arrest via trans-nasal cooling in a patient with prehospital cardiac arrest: A case report

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Recent experimental investigations in a porcine model of cardiac arrest have demonstrated rapid electrical and hemodynamic stabilization via trans-nasal cooling initiated intra-arrest. Here we report on the first use of trans-nasal cooling in a patient prior to achieving stable return of spontaneous circulation (ROSC). The subject suffered out-of-hospital cardiac arrest caused by myocardial infarction. He was admitted to our hospital from our physician-staffed medical service after 30 minutes of prehospital resuscitation attempts consisting of unsuccessful biphasic electric shocks to defibrillate a presenting rhythm of VF and subsequent medical treatment of amiodarone and thrombolysis with tenecteplase. He achieved adequate hemodynamic stabilization and was transported to our ICU. During transport, and upon arrival in our facility, the ECG demonstrated multiple runs of tachycardia, ventricular arrhythmias, and ventricular fibrillation. We immediately started isochronal CPR and trans-nasal cooling with the RhinoChill device (BeneChill, San Diego CA). Shortly after beginning cooling, a stable sinus rhythm was established and additional defibrillation shocks were unnecessary. Approximately 80 minutes following initiation of CPR and conducting advanced life support procedures in the pre-hospital setting, hemodynamic stabilization was finally achieved after induction of hypothermia via trans-nasal cooling.