

USING AN INTRAVASCULAR COOLING DEVICE TO REVERSE REFRACTORY BURN-ASSOCIATED HYPOTHERMIA

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INTRODUCTION: Hypothermia is a common occurrence in burn patients, especially when anaesthetized and mechanically ventilated. Unfortunately, the available therapeutic approaches for burn-associated hypothermia are limited, and extensive surface burns often limit the use of classic external and internal warming techniques. The use of novel intravascular cooling devices in order to warm hypothermic burn patients has not been evaluated.

METHODS: We used an intravascular catheter designed to lower the body temperature (Cool Line, Alsius Corporation, Irvine, CA, USA) in order to achieve the opposite: to warm a hypothermic burn victim. We treated a 28-year-old man who suffered a full-thickness skin burn involving 45% of his body surface area. He was sedated, mechanically ventilated, and admitted to the Intensive Care Unit due to co-existing inhalation burn. During admission he had moderate hypothermia with a rectal temperature of 30.8°C, was hypotensive, had low urine output, and exhibited excessive bradycardia alternating with flairs of atrial fibrillation.

RESULTS: Despite active external re-warming using air-conditioning, a heating blanket, and warm crystalloid infusions, the patient remained hypothermic and in cardiovascular instability. We then employed the endovascular cooling device to combat hypothermia and maintain normothermia. This system circulates temperature-controlled sterile saline through two small balloons mounted on the distal end of the catheter. The patient's blood is gently warmed as it is passed over the balloons. The system had been set to a target temperature of 36.5°C. The catheter-controlled re-warming process took six hours, after which time the patient's core body temperature reached and was maintained at 36.5°C. With normothermia, the patient's cardiac rhythm, urine output, and arterial blood pressure returned to normal.

CONCLUSION: Burn patients are extremely prone to hypothermia associated with hemodynamic instability and impaired perfusion. Intravascular warming can be considered as a possible alternative to classic methods of external or internal re-warming.



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