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Rewarming Severe Hypothermia Using Esophageal Temperature Management Device

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Esophageal Temperature Management Device: a Novel Method for Rewarming Hypothermic Patients



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Introduction

External rewarming often fails to correct the temperature of patients with severe hypothermia. Thus, various invasive warming techniques have been developed, including intubation with heated ventilation, heated peritoneal dialysis, thoracic lavage, gastric or colonic lavage, mediastinal irrigation (in arrest), central venous temperature management catheters, and extracorporeal rewarming.

All of the above invasive procedures are associated with various procedural complications, and most of the above vascular interventions are limited to regional centers with the necessary equipment and expertise.

Esophageal temperature management (ETM) devices present a novel option for rewarming. While their use in cooling as part of post-arrest targeted temperature management has been well-described, we are only aware of one published case of using an ETM device to reverse hypothermia, which reported successful rewarming without complication.¹

Objective:

This case report aims to add to the existing literature regarding the feasibility and safety of rewarming a patient using an ETM device.

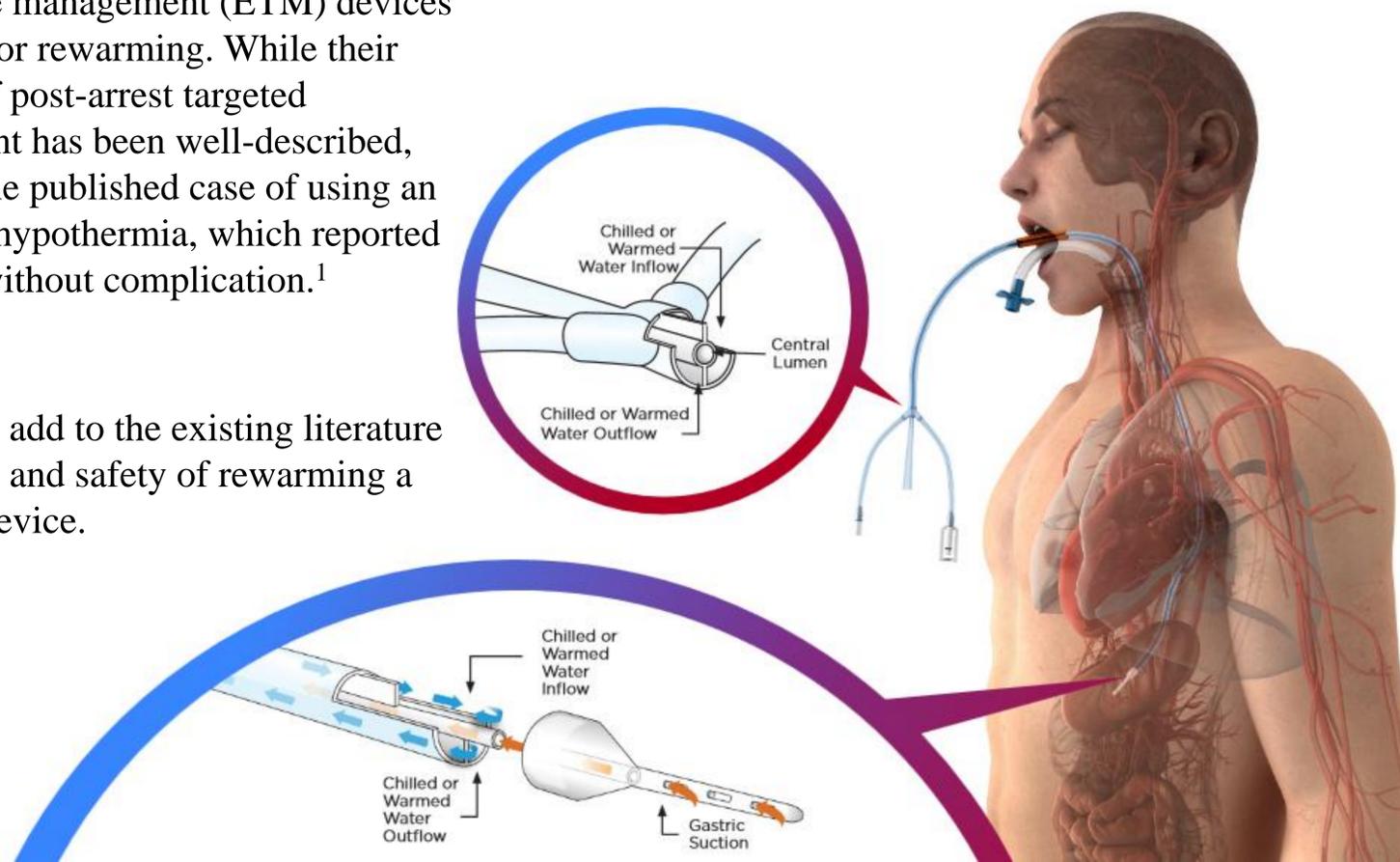
Case Details

A 69-year-old female (157.5 cm, 57.4 kg) was admitted from a nursing home with a minimum recorded temperature of 26.9 °C (rectal).

The patient's hypothermia was complicated by sinus arrest with junctional bradycardia. Initial pulse rates ranged from 27-38 beats per minute. Her presenting blood pressure of 41/26 was confirmed on two consecutive blood pressure cuff measurements. Warmed intravenous fluids and warming blanket only improved the temperature to 28.7 °C (bladder), which was enough to achieve capture of transcutaneous pacing with a paced heart rate of 50 and improvement of blood pressure to 184/80.

At this point, an ETM device was inserted to aid warming, and the patient was successfully rewarmed to 37.2 °C over several hours. With warming, the patient regained normal sinus rhythm and did not require intravenous pacing. Evaluation showed no clear source of hypothermia outside of possible psychiatric medication overdose. Entities specifically ruled out included metabolic derangements, sepsis, adrenal insufficiency, and myxedema coma.

At the end of warming, the patient had several hours of mild fever (max temperature 38.4 °C), which produced no apparent adverse clinical effects. No major adverse effects were observed.



Conclusion

Rewarming from severe hypothermia was possible using an ETM device as the sole invasive rewarming method. There were no major adverse outcomes observed.

References

1. Primožič KK, Svensek F, Markota A, Sinković A. Rewarming After Severe Accidental Hypothermia Using the Esophageal Heat Transfer Device: A Case Report. *Therapeutic hypothermia and temperature management*. 2018;8(1):62-64.