Persistent symptomatic hypothermia and autonomic dysreflexia in a veteran with chronic cervical tetraplegia

Angela Jacob[1], Cesar Colasante[2], Sushma Sapkota-Pandey[2], Steven Brose[2]

1: The University of Toledo College of Medicine and Life Sciences, Toledo, OH
2: Syracuse Veterans Affairs Medical Center, Syracuse, NY

Background

Poikilothermia, the inability to regulate body temperature, is not an uncommon phenomenon in patients with spinal cord injury, especially those with a cervical injury above the major splanchnic sympathetic outflow located between T5-L2 [1]. The central thermoregulatory center consists of a pathway involving the hypothalamus, brainstem, and spinal cord [2]. Disruption of this pathway, as in spinal cord injury, leads to autonomic dysfunction affecting various aspects of thermoregulation including central temperature control, muscle tone, and compensatory mechanisms such as shivering or sweating.

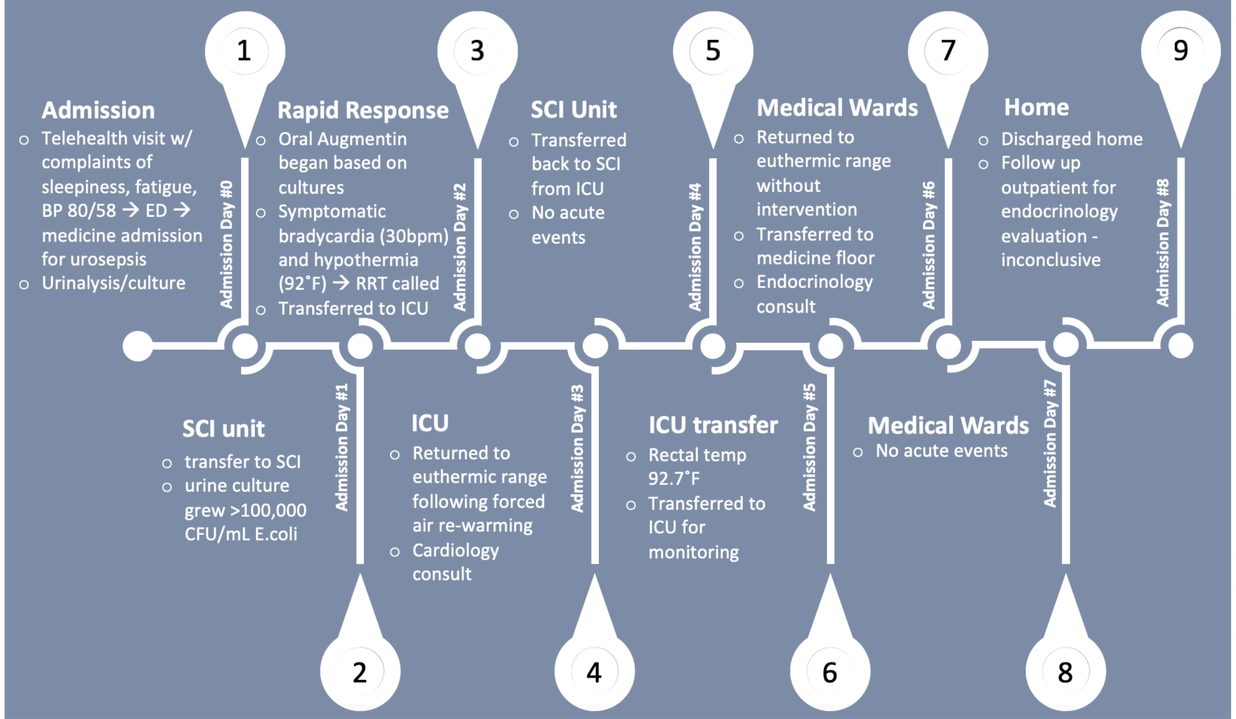
In complete cervical spinal cord injury, there is loss of afferent feedback from peripheral temperature sensors below the level of the injury. This is due to damage to the somatic neurons located in the anterolateral columns, as well as the dorsal columns, which relay ascending pain and temperature sensation. Furthermore, due to damage to somatic motor neurons located in the ventral horn of the spinal cord, there is loss of muscle tone, which ultimately affects compensatory mechanisms, such as shivering [3].

Abstract

Case Diagnosis

This case describes an atypical presentation of hypothermia in a person with complete cervical spinal cord injury admitted to a Veterans Affairs medical center, and the Spinal Cord Injury hub's inpatient ward located at that center. Workup excluded causes of hypothermia other than intrinsic autonomic dysfunction.

Timeline of Events



References

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Case Description

A 69-year-old male veteran with a chronic ISNCSCI C4 A SCI was admitted with urosepsis and treated with antibiotics. On admission day 3, the patient was noted to have persistent hypothermia with a rectal temperature of 92F, despite treatment of sepsis – the patient noted significant generalized discomfort associated with this. He was also significantly hypertensive compared to his baseline blood pressures and had symptomatic bradycardia with substernal chest pressure, consistent with autonomic dysreflexia. External rewarming measures such as increasing ambient room temperature and providing extra layers for the patient were initially unsuccessful in increasing his core temperature and required transfer to MICU for treatment of symptomatic hypothermia and autonomic dysreflexia. Forced-air warming blankets were eventually effective at temperature management, and upon discharge the patient managed his temperature with warming his room and warmer clothing. The autonomic dysreflexia also resolved.

Discussions

While hypothermia is well described to occur in high tetraplegia, it is typically not symptomatic, and not usually associated with concomitant autonomic dysreflexia. Workup consisting of endocrine, infectious, and metabolic causes of hypothermia did not reveal any likely cause for the hypothermia or bradycardia.

Conclusions

This abstract describes an unusual case of hypothermia and concomitant autonomic dysreflexia in a veteran with high tetraplegia recovering from an episode of urosepsis. This abstract may provide the beginnings for further investigation of how frequently the two syndromes are related and may be connected and symptomatic.