PP002 FROSTBITE INJURY FROM AIR-CONDITIONING COOLANT: MORE THAN JUST FIRE AND ICE

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INTRODUCTION

Frostbite injury or cold burns occur due to the acute freezing of tissues when exposed to temperatures below the freezing point of intact skin. Low environmental temperatures are the common etiology. An uncommon etiology however, is contact with occupational cryogenic material like liquid nitrogen or refrigerant / air conditioning coolants. We present a case of cryogenic injury in a patient exposed to air-conditioning coolant.

CASE PRESENTATION

A 64 years old male presented to the emergency department with burn injury of both hands sixteen hours prior to admission. He was a technician cleaning an air-conditioning unit when his hands were hit by a gush of coolant gas. Exposure time was less than ten seconds. He initially experienced numbness of his right hand which quickly blistered and progressively became swollen. On presentation to our emergency department, he was noted to have second degree burns and swelling of the dorsum of his right hand and fingers. Sensory and motor functions were preserved. Distal capillary perfusion was intact. He was administered analgesics and referred to the burn unit for further management.

DISCUSSION

The severity of frostbite injury is dependent on duration and surface area of exposure. Heat injury causes protein denaturation. Cold burns however have 2 distinct mechanisms: direct cellular damage at the time of exposure to the cold; and post-thaw arterial vasoconstriction. Mainstay of acute treatment is rapid rewarming, analgesia and tetanus prophylaxis. Systemic prostaglandin inhibitor, ibuprofen and the topical anti-thromboxane agent, aloe vera are also used to inhibit localized thromboxane production which causes dermal ischaemia. Blister debridement is controversial. Early hyperbaric oxygen treatment has also proven beneficial.

Cold burns are uncommon and therefore inadequately managed by the clinician at presentation. A clinician should develop greater awareness on the pathophysiology of cold burns which will ultimately allow better evaluation, management and positive outcomes.