

Management of Inhalational Burns in Scald Burns: Case Report

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Abstract

Inhalation injury causes a heterogeneous cascade of insults that increase morbidity and mortality among the burn population. Despite major advancements in burn care over the last several decades, there remains a significant burden of disease attributable to inhalation injury. For this reason, an effort has been devoted to finding new therapeutic approaches to improve outcomes for patients who sustain inhalation injuries. Scald burns of the face and neck are associated with laryngeal edema difficulty in respiration. We share our experience with scald burns with inhalation injury.

Keywords: Management; Inhalational; Burns.

INTRODUCTION

Inhalation thermal injury is a composite of multiple insults including supraglottic thermal injury, subglottic airway and alveolar poisoning, and systemic poisoning from absorbed small molecule toxins. It causes an increase in mortality as the airway becomes compromised. Severe burns to the lower face and neck may be associated with upper airway and laryngeal edema that cause airway obstruction. Inhalation of super heated air or steam in a confined space may also cause

significant upper airway edema. We came across a patient with similar laryngeal edema with facial scald burns and we are reporting our experience.

MATERIALS AND METHODS

The patient was admitted to a tertiary burns care center through out April to May 2021. The patient is a 60 yrs. male without any comorbidities with alleged h/o accidental scald burns sustained when hot water kept for bathing on stove fell on him and sustained 2nd degree superficial burns over the face, neck, chest and both upper arms causing 40% body surface area of burns, the patient was taken to the local hospital and was referred to our center. At admission the patient was hemodynamically stable and was treated with fluid resuscitation with park land formula, patient started developing facial and neck edema since admission. On post-admission day 2, the Patient facial and neck edema decreased and the patient was afebrile but started developing difficulty in breathing and talking. The patient's condition deteriorated with a fall in saturation.

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The patient was intubated and ventilated but succumbed to his injury.

DISCUSSION

Assessing and protecting the airway in a thermally injured patient is paramount. Clinicians are advised to have a high clinical suspicion for the development of airway obstruction and a low threshold for intubation in burns patients. Clinical signs such as stridor, dysphonia, drooling, and blistering of the oropharyngeal mucosa are suggestive of impending airway obstruction. Crucially, the development of airway edema following thermal injury may be delayed in onset. The timing and severity of airway edema are difficult to predict accurately. Airway obstruction occurs when edema develops in the epiglottis and supraglottic airway.¹ Indeed, some papers call this phenomenon 'thermal epiglottitis'² Maximal edema usually occurs between 8 and 36 h after the initial insult, and lasts for up to 4 days.^{1,3} It is often seen following aggressive fluid resuscitation, more so in the context of patients who have also sustained concurrent cutaneous burns¹. In confirmed upper

airway burns, patients should be nursed in a semi-upright position to improve venous and lymphatic drainage, thus reducing airway edema.⁴ Endotracheal intubation is indicated if airway compromise occurs. In the infective epiglottitis literature, prophylactic intubation in children is recommended if there is any sign of airway compromise.⁵ Accordingly, 12 of the 13 reported pediatric cases of thermal epiglottitis were indeed intubated. Tracheostomy is only indicated if the patient cannot be intubated due to swelling, or when prolonged mechanical ventilation is anticipated.⁶ Prophylactic tracheostomy has been advocated in inhalation burns in a recent study.

CONCLUSION

Scald burns over the face and neck can cause laryngeal edema which can be delayed in onset. In this patient with scald burns over the face and neck, the patient developed laryngeal edema and succumbed to his injuries. The role of prophylactic tracheostomy for burns involving the face and neck needs to be thought about. However, this needs large scale randomized control trials for application in clinical practice.

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Fig. 1: Scald Burns Involving the Face and Neck