Blast Injury Outcomes

Laryngotracheal and Esophageal Trauma Outcomes from Military Operations in Afghanistan, Iraq, and Syria, 2001–2018

Laryngotracheal and esophageal trauma present military providers with especially difficult life-threatening challenges. The airway is often unstable and vascular control is a concern; immediate action is paramount. However, there is no agreement on treatment algorithms for such injuries. Thus, researchers at the Naval Health Research Center (NHRC) and Naval Medical Center (San Diego, CA) investigated the types of laryngotracheal, esophageal, and soft tissue injuries of the neck in a deployed combat setting and described related mortality and length of hospitalization outcomes.

A total of 254 Service members who sustained laryngotracheal and esophageal injuries while deployed were identified from NHRC's Expeditionary Medical Encounter Database (EMED). Physician review of EMED clinical records identified cases of post-injury laryngotracheal and esophageal procedures performed immediately after injury and documented subsequent injury management. The Military Health System Data Repository was queried for immediate post-injury acute care hospitalization and intensive care unit days. Descriptive data were collected on patient demographics, mechanism of injury, mortality, and theater of operation.

In an initial cohort review of 111 injured patients (109 battle injuries), battle injuries occurred through blast injuries or gunshot wounds. Approximately 53.2 percent of cases were penetrating neck traumas while 46.8 percent were inhalation injuries.

Of the penetrating neck trauma, 59 percent were dead on arrival. For airway management of non-fatal penetrating injuries, most patients (n = 21) were intubated orotracheally, of which 62 percent concluded the need for surgical intervention including vascular intervention, airway reapproximation, and pharyngoesophageal reapproximation. The few patients that were not intubated received an emergency cricothyroidotomy, endotracheal tube placement or an awake tracheostomy. A majority of inhalation injuries underwent bronchoscopy with an average initial bronchoscopy injury score of 2.2, indicating moderate injury. The burn surface area averaged around 38 percent including an average of two percent facial burns.

Review of the immediate post-injury period for the cohort revealed that acute care hospital length averaged 49.5 days while intensive care unit stay averaged 23.9 days.

These findings provide preliminary insight into the assortment of neck trauma treated among Service members and the sophistication and range of procedures needed to preserve life following injury.

This effort was supported with funding from the U.S. Navy Bureau of Medicine and Surgery's Wounded, Ill, and Injured Program.