The Impact of the involvement of a Multidisciplinary Airway Center on the care of Pediatric Burn Patients

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Conclusions: Otolaryngology and Pulmonology evaluations regularly change management in pediatric inpatients with severe burns. Early involvement of these subspecialty groups may expedite and optimize care.

Objectives: Pediatric patients with burn injuries can have lengthy and complicated hospitalizations requiring the involvement of multiple subspecialties. We examine the role of Pediatric Pulmonology and Otolaryngology input in the management of this population, focusing on the role in management, de-escalation of care and discharge planning.

Methods: We performed a retrospective review of children under 16 years (n=45) admitted to a tertiary academic medical center burn unit that received either a Pulmonary or an Otolaryngology consult via a multidisciplinary Pediatric Airway Center.

Results: Of the group, 35.56% of patients had a Pulmonology consultation, 31.11% had an Otolaryngology consultation and 33.33% had a consult both. The most common reason for a Pulmonary consultation was airway evaluation, and airway management and evaluation was the most common reason for an Otolaryngology consultation. Pulmonology consultation changed the management of the patient in 90.32% of the consultations, and an average of 2.79 bronchoscopies were performed in each patient receiving a Pulmonology evaluation. For patients with tracheostomies and aspiration, 88.24% had a change in management based on Pulmonology consultations, with an average of 2.14 procedures per patient being done on those consultations and 64.29% of patients receiving an Otolaryngology consultation as the care of the burn patient, including Pulmonology and Otolaryngology consultations affected care and discharge planning in 66.67% of those studied, and 75.76% of consultations involving the airway.

Introduction:
There is a current trend towards multidisciplinary care in terms of treatment teams, clinics, conferences and centers (1-9). The goals of a multidisciplinary approach are several fold. It allows representatives of different specialties as well as nursing staff, social workers, case managers, and speech language pathologists to discuss patients as a group, enhancing communication between different providers (1-9). Multidisciplinary approaches are used to promote coordination of care, both in the medical management and the surgical management of patients (1-9). At the University of North Carolina at Chapel Hill, an Airway Center was initially created to help coordinate care for children with tracheostomies and tracheomalacia. The multidisciplinary Pediatric Pulmonology and Otolaryngology team provide airway evaluation and management to facilitate coordination of care for pediatric patients with aerodigestive complaints that are triaged by the Pediatric Pulmonology and Otolaryngology teams (6).

Methods:
Approval was obtained from the University of North Carolina at Chapel Hill's Institutional Review Board. The University of North Carolina at Chapel Hill's Burn Center identified pediatric patients who were 16 years in age and while admitted for a burn injury had received either Otolaryngology or Pulmonology consultations from 2006 to June 2017. Their medical records were reviewed retrospectively for details regarding their burn injury, reason for consulting Pulmonology or Otolaryngology, and recommendations of their consultations, procedures performed, as well as level of care and discharge recommendations.

Results:
45 patients were identified who met criteria of being 16 years or under, admitted for a burn injury within the determined 10 year period, and received either a Pulmonary or Otolaryngology consultation (figures 1 and 2). The most common reason for an Otolaryngology consult was for airway evaluation and management, and the most common reason for a Pulmonary consult was airway evaluation and concern for inhalation injury (table 2).

In terms of Pulmonary consults, 77.42% of those patients underwent flexible bronchoscopies with or without bronchoalveolar lavage, with an average of 2.79 bronchoscopies being done per patient and there was a change in management in 90.32% of the cases.

For Otolaryngology consults dealing with airway management, with dysphonia and aspiration excluded, 82.35% had procedures, with an average of 2.14 procedures being done per patient (table 3). Of note, 64.28% of the patients that Otolaryngology was consulted for airway management or tracheostomies had either dysphonia or aspiration and who underwent procedures had a tracheostomy. The Otolaryngology consultation changed in the management of the patient in 84.8% of these cases. In the patients with dysphonia, both underwent flexible bronchoscopy and 16.67% had a tracheostomy in one of the two. The one patient that received an Otolaryngology consult for airway management underwent both a flexible laryngoscopy and direct laryngoscopy, and had their management changed by the Otolaryngology consult.

For these patients who had airway consultations and received either a Pulmonary or Otolaryngology consultation, their disposition, level of care, or discharge planning was affected 75.76%.

Discussion:
• As shown in the results section, Pediatric Pulmonology and Otolaryngology input on children who are admitted for burn injuries can provide useful changes in management and affect disposition, discharge planning and level of care. This is especially critical for children who require Pulmonary and Otolaryngology consultations for airway evaluation and management.

• In this subset of patients, the majority underwent procedures, and of those who underwent procedures, there was a 64% rate of tracheostomy placement.

• The rate of tracheostomy is of particular interest as this group of patients can be quite challenging in terms of discharge planning and long-term airway management. Our Airway Center facilitates a multidisciplinary tracheostomy teaching with a dedicated Nurse Practitioner, as well as discharge planning with the involvement of the Nurse Practitioner and a dedicated social worker. We previously looked at children with tracheostomies for various reasons and found that the involvement of our Airway Center decreased length of stay, improved communication with weekly meetings, and facilitated a consensus driven decannulation protocol and regulated surveillance bronchoscopies (8). This is in agreement with the findings in pediatric burn patients.

• An Airway Center can be a useful adjunct in determining which pediatric burn patients would merit an airway evaluation with or without a tracheostomy, and timing of those interventions. It also plays a role in determining candidacy for decannulation, tracheostomy teaching, organizing tracheostomy supplies and coordination of both inpatient care and outpatient follow up (6). At our institution, enrollment of patients in the Airway Center is based on whether there is a clinical or surgical indication for tracheostomy assessment of the patient’s needs. The goal of the multidisciplinary consultations on the management and discharge of pediatric burn patients with airway complaints, the early involvement of these specialties may expedite and improve care, especially in cases where a multidisciplinary Airway Center is available.

References: