



RESEARCH PAPER

The role of serial physical examinations in the management of angioedema involving the head and neck: A prospective observational study[☆]



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Abstract *Objective:* To elucidate the progression of angioedema of the head and neck with routine management and to assess the utility of serial physical exams and fiberoptic laryngoscopy in its management.

Methods: This study was a prospective observational research. From 2013 to 2014, a prospective observational study was conducted at a tertiary referral center. Forty patient were approached, 7 refused, 33 (18–90 years old) were enrolled. Patients presented with angioedema involving the head and neck over a 12 month period were asked to participate in the study. Physical examination and fiberoptic laryngoscopy were performed at presentation and then repeated at least 1 h later.

Results: Thirty-three patients with head and neck angioedema from any cause were enrolled (mean age 58, range 23–89 years). The upper lip was the most commonly involved site (58%). On reevaluation, 82% of patients reported subjective improvement in symptoms. The

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association between subjective improvement and the physical exam, including fiberoptic laryngoscopy findings, was statistically significant ($P < 0.001$).

Conclusion: In stable patients with angioedema of any head and neck subsite, self-reported symptoms are associated with clinical stability or improvement as assessed by physical signs and fiberoptic laryngoscopy. Patients' symptoms may be an appropriate surrogate to monitor clinical status without the need for routine serial physical examinations or fiberoptic laryngoscopy, though further study is needed.

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Introduction

Angioedema (AE) is defined as a self-limited, localized swelling that often occurs in the head and neck. It most commonly affects the face, lips, palate, and tongue, with laryngeal involvement occurring less frequently. It results from increased permeability of the vasculature supplying the subcutaneous, submucosal, and deep dermal tissues. AE can occur in both sporadic and hereditary forms. AE of the head and neck is potentially life-threatening, as it may lead to airway compromise.

Airway management is the single most important aspect of acute therapy, regardless of the etiology of AE.^{1,2} The otolaryngologist is frequently consulted to evaluate the patient and to determine the need for acute airway intervention. Though serial physical examinations, including fiberoptic laryngoscopy, are routinely performed to determine the progression of disease, the utility of this approach has not been adequately studied.

To date, there have been few studies investigating the appropriate management of patients with AE.^{3–10} Most are retrospective reviews that report the authors' clinical experience with AE and subsequently make recommendations regarding best practices. Only one study has prospectively examined angioedema triggered by angiotensin-converting enzyme inhibitors (ACEi), however, the authors did not correlate symptomatology with findings on serial physical examinations.⁴

The goal of this study was to elucidate the progression of angioedema of the head and neck with routine medical management and to assess the utility of serial physical exams, including the use of fiberoptic laryngoscopy.

Materials and methods

After institutional review board approval was obtained, all patients presenting to the Emergency Department (ED) with angioedema involving the head and/or neck between December 2013 and December 2014 were asked to participate in this prospective, observational study. Informed consent was obtained on the day of discharge for all patients in this study, including those discharged from the ED on the day of presentation. Patients who were medically unstable or required emergent intubation were excluded. Patients received standard and similar medical management for angioedema with the use of systemic intravenous H1 and H2 blockers and steroids.

All patients underwent complete head and neck examination and fiberoptic laryngoscopy at presentation by the ED physicians and/or the Otolaryngology physicians. When the Otolaryngology service was consulted, their findings were used for the study. Patients who were admitted for observation and did not require airway intervention underwent a repeat head and neck examination by the Otolaryngology service, including fiberoptic laryngoscopy in most cases, at least 1 h later. On reexamination, patients were asked to report subjective improvement by answering yes or no to the question: "do you feel better?" Also on reexamination, evaluating physicians determined a global clinical assessment as improved, worse, or same.

The patients' demographics, past medical, social and family histories, symptoms and signs at presentation, and at reevaluation, were recorded by ED physicians and/or Otolaryngology physicians on standardized forms specifically made for this study. The following anatomic sites were specifically assessed for involvement on examination: the face, neck, upper lip, lower lip, anterior tongue, floor of mouth, soft palate, base of tongue, supraglottis, and glottis. Each site was recorded as being involved or not involved and then an overall subjective assessment of degree of involvement was recorded as mild, moderate, or severe.

Only 'water bag' edema, typically associated with acute angioedema of the head and neck, was considered positive for site involvement. The criteria for intubation were based on an overall clinical state. Endoscopic findings that were deemed concerning and likely to warrant airway protection were an inability to see the glottic opening secondary to edema or a documented worsening of edema on repeat examination despite medical management.

A univariate analysis of involved anatomic site and the need for intubation, as well as self-reported symptom improvement (feeling better versus not feeling better) and physical examination (improved/same versus worsened) was carried out using Fisher's exact test. Significance was defined a priori as $P < 0.05$. All statistical analysis was performed using SPSS version 19.0 (SPSS, Chicago, IL).

Results

Thirty-three patients with head and neck angioedema (AE) were enrolled. The mean age was 58 years (range 23–89 years). Seventy three percent of patients were female. Ninety one percent were African American. Hypertension was present in 85% of patients. An angiotensin-converting enzyme inhibitor (ACEi) was identified as the etiology of the

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