**Maine Medical Center**

**Department of Emergency Medicine**

**Journal Club Summary Template**

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| **Date: 9/21/17** | **Presenter Name:** Shaila DeLea |

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| **Article Citation:**  Ishoo; et al. Predicting airway risk in angioedema: Staging system based on presentation. Otolaryngology-Head and Neck Surgery. September 1999. |
| **Country:** Boston, Massachusetts, United States |
| **Funding Source(s):** None Stated |

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| **Purpose** |
| **Study Purpose:**  Sought to clarify airway management in angioedema by reviewing cases retrospectively. Goals were to:   1. Determine criteria for the identification of patients at risk form progressive airway compromise 2. Guide the triage of patients into the appropriate treatment setting—outpatient, ward, ICU |

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| **Methods** |
| **Study Design:** retrospective chart review. Performed for all patients in whom angioedema was diagnosed at BMC from 1985-1995. |
| **Outcome(s) *[or Dependent Variable]:***  Demographic, etiologic, therapeutic details, anatomic site of edema, symptoms on presentation, and airway intervention were determined for each episode. |
| **Intervention *[or Independent Variable]:***  **none** |
| **Ethics Review:** None Stated |
| **Research Setting:** Boston Medical Center |
| **Study Subjects:**  All patients who presented between 1985-1995 with angioedema |
| **Inclusion Criteria:**  Did not describe the inclusion criteria other than they included all patients who had been diagnosed with angioedema on presumed chart review during the above decade. Did not describe how they were ultimately diagnosed or how they were determined to have angioedema. |
| **Exclusion Criteria:**  None listed |
| **Study Interventions:**  None |
| **Study Groups:**  Episodes were categorized by treatment setting into 1 of 3 groups:   1. Those treated on an outpatient basis 2. Those admitted to the hospital but not ICU (“ward”) 3. Those admitted to the ICU |
| **Instruments/Measures Used:**  None described |
| **Data Collection:**  Statistical analysis of data was performed to determine relationships of individual case variables and clinical outcome. They did not describe further the statistical analyses that were performed**.** |
| **Data Analysis:**  ***A priori* sample size calculation?** Not Described  **Statistical analyses used:** Not described  **Adjustment for potential confounders?** Not Described |

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| **Results** |
| **Study participants:**  80 patients identified – 40 men, 40 women  Ages 18-86 (mode 36 years old)  These 80 patients accounted for 93 separate hospital visits  - 11 had multiple episodes (14%)  - 25 (31%) had prior episodes  23 (25%) were treated as outpatients  21 (23%) were admitted to floor  49 (53%) were admitted to the ICU  9 required airway intervention (1 trach, 1 cric, 7 intubations) |
| **Brief answers to research questions *[key findings]:***  They determined that **voice change (muffled or sterterous), hoarseness, and stridor** were most predictive of ICU monitoring (table 1). In those requiring airway intervention, voice change and hoarseness appear to be the most predictive.  One of their key questions/findings was correlating symptoms and anatomical location of angioedema and how that may predict airway compromise and necessitate closer airway observation or intervention. Table two outlines the site of edema and the symptoms most often correlating to the anatomic location. Based on this table it appears that the above higher risk symptoms were mostly associated with edema in the larynx, tongue, and soft palate --voice change (90% in laryngeal and 73% and 70% in tongue and soft palate), hoarseness (97% laryngeal, 73% tongue, 78% soft palate), and stridor (21% in laryngeal edema, much lower in all other anatomic sites).  They then took this information and created a staging system categorized by the anatomic location of the swelling. Patients were considered to be stage IV when their angioedema presented in more than one site. It is presumed that they based this scoring system off of the progressively poorer outcomes in those with symptoms that seemed to correlate with anatomic site (or based on known literature that laryngeal, tongue, soft palate swelling portends a poorer outcome, unclear)- they did not go into great detail on how they determined this scoring system.  Using this staging system based on anatomical location of swelling they found that no stage I or II patients required airway intervention and all of them were treated as outpatients or on the floor. Most stage III patients were treated in the ICU and all stage IV patients were treated in the ICU. Two (7%) stage III patients and 7 (24%) stage IV patients required airway intervention.  They thus determined that only facial/lip involvement was low risk, soft palate edema stage II, and tongue followed by laryngeal edema the highest risk. Based on this scoring system, they then created a triage algorithm to help guide management of angioedema based on anatomic site and predicted course (figure 2). |
| **Additional findings:**  In 33% of cases there was no clear etiology identified (figure 1)  Patients using ACEI required ICU monitoring for 47% of their episodes and airway intervention 33% of the time  The anatomic staging was not statistically associated with demographic or etiologic variables.  No patient died of angioedema during the study period. |
| **Limitations:**   * Size—very small sample size * Retrospective case review—not randomized well controlled research study * Did not clearly describe how anatomical location was determined. In their discussion they state that this is easy to do with a complete head and neck exam with indirect laryngoscopy being the optimal means of evaluating the upper airway- this may not always be as easy as purported, and is more based on clinical signs and gestalt. This is both subjective and difficult to perform in the ED. * State that hoarseness, voice change, and stridor are higher risk features which are highly associated with soft palate swelling, however this is considered to be stage II. Don’t understand their reasoning behind this and why they considered tongue swelling to be a more dangerous anatomic location than soft palate swelling if they present with same high risk symptoms. * This study has not been validated. |

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| **Clinical Implications** |
| **Applicable?** Yes  **Feasible?** Yes  **Clinically relevant?** Yes  **Comments:**  This paper provides some clinical data on higher risk features associated with patients requiring airway intervention that reportedly had angioedema and how one might predict airway compromise based on certain clinical features in these patients. I do not feel that the data in this paper will change my clinical practice outside of recognizing that certain clinical features might necessitate airway intervention (hoarseness, voice change, stridor). The bottom line is that anyone that has anything more than facial or lip swelling is a concerning patient from an airway perspective and they certainly warrant close inpatient monitoring. I do not feel that this staging system based on anatomic location of swelling is appropriate to use when triaging patients to inpatient vs outpatient vs ICU treatment as their presenting symptoms and response to interventions is a more appropriate guide to individual management. |
| **Level of evidence generated from this study** |
| **IV: expert committee reports; expert opinion; case study; case report** |