ACE- inhibitor induced angioedema requiring an emergency surgical airway

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Abstract

Angiotensin converting enzyme (ACE) inhibitors cause approximately 30% of the cases of angioedema which present to the emergency department; 11% of these patients require ICU admission. We report two patients who required emergency surgical airways secondary to angioedema related to ACE-inhibitors. Clinicians need to remember that these situations can be extremely dangerous and plan airway management carefully in these patients.

Key words: angioedema, tracheostomy, angiotensin converting enzyme inhibitors

Introduction

Angioedema is a well-known adverse effect of angiotensin converting enzyme (ACE)-inhibitor therapy that has been seen in up to 1% of recipients.[1,2] Out of all angioedema-related emergency department (ED) visits each year, approximately 30% of cases are attributed to ACE-inhibitors.[3] Most cases are usually reversible with discontinuation of the drug; treatment in the intensive care unit is required in 11% of patients.[3] We present a case with severe upper airway obstruction requiring cricothyroidotomy followed by tracheostomy to manage the airway and a second case requiring emergency tracheostomy.

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Case Presenttion 1

A 59-year-old African-American woman who had started lisinopril (10mg daily) 10 days prior presented with facial swelling and increasing difficulty in breathing for one day. Her other medications included aspirin (81mg for years), amlodipine, glyburide, insulin, and rosuvastatin. She had no known drug allergies. She spoke in short sentences with a muffled voice associated with drooling and had trouble swallowing. She had swollen lips, tongue, soft palate, and hard palate. She had no urticaria. The ED physicians were unable to visualize the uvula. She was diagnosed with ACE-inhibitor induced angioedema. Despite diphenhydramine, epinephrine, and methylprednisolone, continued respiratory distress led to a nasal intubation attempt by the anesthesiology service. When intubation failed, an emergent cricothyroidotomy was performed. Tracheostomy was completed after she stabilized. She was monitored in the SICU for five days; the angioedema resolved and the

tracheostomy tube was removed.

Case Presenttion 2

A 74-year-old African-American woman on fosinopril (20mg daily) presented to the ED with swelling of the tongue and difficulty in breathing. She was unable to speak full sentences or clear her secretions. Her other medications included cefdinir, hydrochlorothiazide, simvastatin, and folic acid with no known drug allergies. She was diagnosed with ACE-inhibitor induced angioedema unresponsive to diphenhydramine and methylprednisolone. After failed attempts by the anesthesiology service to obtain orotracheal or nasotracheal airway, a tracheostomy was performed with a 6 Fr cuffed tracheostomy tube. Eventually her angioedema resolved, and the patient was transferred to the regular inpatient service for further management and disposition.

Discussion

ACE-inhibitor induced angioedema is a potentially life threatening emergency. The benefit of medical management with epinephrine, antihistamine medications, and steroids is uncertain as the pathophysiological pathways involve increased levels of bradykinin.[4] Recently, results of a trial evaluating treatment with a kallikrein inhibitor (ecallantide) were disappointing.[5] A bradykinin B2 receptor antagonist has been reported effective in several case reports, but more randomized studies are needed.[6,7] The need for a surgical airway in ACE-inhibitor induced angioedema is estimated to be 1%.[3] Frequent assessment and repeated monitoring of the airway are essential since intubation and mechanical ventilation may be required in severe cases. An increased need for intubation/tracheostomy has been reported in hospitalized patients with angioedema due to hypertension drugs.[8] Occasionally, the usual preference for endotracheal intubation is replaced with tracheostomy for better control of the airway.[9] While Mallampati tests have limited accuracy for predicting difficult intubation,[10] some retrospective studies have reported the value of fiberoptic laryngoscopy to predict early airway intervention based on the patient's age and various sites involved in upper respiratory tract and oropharynx.[11,12] Patients with difficult airways may be good candidates for more invasive airway management instead of attempting intubation. Our cases illustrate the need for an emergent cricothyroidotomy and/or tracheostomy rather than repeated efforts with difficult intubations for ACE-inhibitor induced angioedema with respiratory failure and hemodynamic instability. More studies are needed to determine the best candidates for early surgical intervention when a difficult intubation seems likely.

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