

# Acute Epiglottitis in a Diabetic Adult Patient

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Acute epiglottitis (AE) is a potentially life-threatening infection of the supraglottic structures, which can lead to sudden, fatal airway obstruction,<sup>[1]</sup> may require urgent tracheal intubation or tracheotomy. However, there are no putative predictors for urgent airway intervention in AE, and the timing to establish an artificial airway for adult AE patients remains controversial.<sup>[1,2]</sup> Adult patients with diabetes mellitus might bear higher risk of airway compromise and patients who required airway support tend to have higher admission serum glucose level.<sup>[2]</sup> We report a case of AE in an adult with diabetes mellitus, who developed sudden airway obstruction, and resulting in sudden cardiac arrest after failed tracheal intubation.

A 58-year-old man with a previous medical history of type 2 diabetes walked into the emergency department with a chief complaint of sore throat for 5 h. He denied other symptoms. In the physical examination, the patient was calm and presented no stridor or signs of upper airway obstruction. His vital signs were within normal ranges. There were no swellings around the neck. An indirect laryngoscopy showed a grossly edematous epiglottitis, and a diagnosis of AE was made by an ear, nose, and throat (ENT) physician. The bedside chest X-ray revealed no abnormal findings, and electrocardiogram (ECG) was normal. Laboratory data showed leukocyte count of  $15.3 \times 10^9/L$ , C-reactive protein of 4.0 mg/L, and blood glucose of 13.17 mmol/L.

Under stable condition, the patient was treated with oxygen, intravenous ceftazidime, and methylprednisolone and was not immediately intubated. Two hours later, he developed progressively severe inspiratory stridor with sweating. His level of consciousness was reduced. His respiratory rate was 40/min, pulse oximetry ( $SpO_2$ ) was 92% on 10 L oxygen, and heart rate was 135 beats/min. He was oxygenated with a bag-mask and high-flow oxygen. We performed emergency endotracheal intubation by video laryngoscopy without using muscle relaxants immediately after intravenous injection of propofol 0.5 mg/kg and fentanyl 1  $\mu$ g/kg, and called upon the ENT team to prepare tracheotomy.

We had tried two attempts for endotracheal intubation, but both attempts failed. The video laryngoscopy showed a grossly edematous epiglottitis. The vocal cords and interarytenoid notch could not be visualized.

Bag-mask ventilation had been provided between intubation attempts, but the patient's  $SpO_2$  was difficult to maintain above 90%. Subsequently, emergency percutaneous tracheotomy was performed by the ENT team. The tracheotomy was completed in 8 min. Unfortunately, the patient experienced sudden cardiac arrest during tracheotomy. Cardiopulmonary resuscitation (CPR) was started immediately. The cardiac arrest was reverted to sinus rhythm (heart rate >120 beats/min) after 14 min of CPR, but the patient failed to regain consciousness. For the whole procedure, the patient was continuously monitored with ECG, noninvasive blood pressure, and  $SpO_2$ . Then, the patient was transferred to the Intensive Care Unit (ICU) for further treatment. The patient's condition gradually improved over the next few days. However, the patient continued to be comatose with a Glasgow Coma Scale score of 6. On the 9<sup>th</sup> day of ICU stay, the patient was transferred to a tertiary care hospital for hyperbaric oxygen therapy.

Since the introduction of vaccination against *Haemophilus influenzae* type b, the incidence of AE in children has declined significantly. In contrast, the incidence of AE has been increasing.<sup>[1,3-5]</sup> AE is thus becoming a much more common disease of adults. Bizaki *et al.*<sup>[3]</sup> had identified concomitant diseases (e.g., diabetes, respiratory problems, and compromised immune system, etc.) and other local

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infections that compromised the regional supraglottic immunity might increase the risk for acute supraglottitis.

The majority of patients with AE presented with sore throat as their major complaint,<sup>[1,3]</sup> without signs or symptoms of upper airway obstruction such as respiratory distress, drooling, and stridor. Fever may or may not be present. These cases would be misdiagnosed as common upper respiratory tract infection if laryngoscopic examinations were not performed.<sup>[1]</sup> Once diagnosed, these patients should be hospitalized and closely monitored because AE in the adult may progress rapidly to complete airway obstruction. Therefore, we suggest that emergency physicians should keep vigilant about recognizing patients presenting with sore throat, especially in those with diabetes and seek early help from ENT specialists to avoid overlooking AE.

Airway management is one of the most important and controversial aspects in the treatment of adult AE. The controversy exists as to the criteria and timing to establish artificial airway for the adult patients with AE. So far, there is a general agreement in the literature that patients with signs and symptoms (including dyspnea, stridor, drooling, respiratory distress, and hypoxia) of severe airway obstruction require an immediate definitive airway, either as an endotracheal tube or a tracheotomy.<sup>[2-4]</sup> Patients with milder symptoms or without respiratory symptoms should be closely monitored and treated with antibiotics and steroids in an intensive care setting,<sup>[2-4]</sup> especially for patients with multiple comorbidities such as diabetes mellitus, because rapid complete airway obstruction is a possibility. Numerous studies on adult epiglottitis revealed that diabetes mellitus was the major comorbid condition in AE patients and an independent risk factor for severe epiglottitis.<sup>[1,2,5]</sup> The patients with diabetes mellitus had a higher risk of airway compromise and relatively higher 2-day mortality.<sup>[2,5]</sup> If these patients further present with signs of impending airway obstruction, then a prompt airway intervention might be inevitable.<sup>[2]</sup> Moreover, selective airway intervention is recommended for patients without severe symptoms but with airway obstruction of more than 50%.<sup>[4]</sup> As in our case, for the patients with AE who need airway intervention, we should consider the possibility of a difficult airway and try our best to make a careful airway intervention plan and an alternative plan.

Therefore, we suggest that diabetes mellitus may be used as a predictor of the airway intervention for AE, the role of diabetes mellitus may be worthy of further attention. Identifying the risk factors associated with the need for urgent airway intervention is essential for clinical treatment decision-making to reduce the risk of death.<sup>[5]</sup>

This case serves to remind us that adult patients presenting with an acute sore throat should be suspected of having AE and should have an indirect laryngoscopy, especially in those with diabetes. AE in adult patients with diabetes may progress rapidly into total airway obstruction, the airway management should be planned, and subsequent backup plans should be included.

### Declaration of patient consent

The authors certify that they have obtained all appropriate patient consent forms. In the form the patient(s) has/have given his/her/their consent for his/her/their images and other clinical information to be reported in the journal. The patients understand that their names and initials will not be published and due efforts will be made to conceal their identity, but anonymity cannot be guaranteed.

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### Conflicts of interest

There are no conflicts of interest.

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