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An Adult Case of Acute Epiglottitis with Cardiopulmonary Arrest due to an Upper Airway Obstruction

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Abstract：We herein report a case of cardiopulmonary arrest caused by an acute, epiglottitis－associated upper airway obstruction in an adult who could not be resuscitated, despite the fact that emergency surgical airway control was performed. The patient was a 34－year－old male who complained of aggravated dyspnea about 12 hours after the onset of pharyngeal pain. An ambulance was called and cardiopulmonary arrest occurred immediately after the patient was brought into the ambulance. When the larynx was exposed immediately after arrival at our hospital, a walnut-sized soft tissue mass was noted, and the glottis could not be directly visualized. Oral endotracheal intubation was considered difficult, and a surgical cricothyroidotomy was therefore immediately performed for airway control. Resuscitation was continued, but the patient could not be resuscitated. After death was confirmed, a swollen epiglottis was observed by bronchoscopy. Although emergency airway control, including the surgical approach, is prioritized in the treatment of serious cases, no useful method is yet available for use by prehospital care personnel. It is therefore important to educate the general public of the necessity to visit medical institutions before such an aggravation occurs.

Key words：**Acute epiglottitis, Upper airway obstruction, Cardiopulmonary arrest, Cricothyroidotomy**

Introduction

Acute epiglottitis is an emergency that occurs with a rapid swelling of the epiglottis, and severe cases may result in death from suffocation due to upper airway obstruction within a short period of time. The proportion of cases requiring airway control approaches 15－20%,[1)-3)] and the mortality rate has been reported to range from 1.2－3.2%.[2)3)] Acute epiglottitis has previously been considered to occur in children in Europe and America, but a higher incidence has recently been reported in adults.[4)] We herein report a case of cardiopulmonary arrest due to upper airway obstruction caused by acute epiglottitis in an adult. Emergency surgical airway control was performed, but the patient could not be resuscitated.

Case report

The patient was a previously healthy 34-year-old male. The patient had experienced pharyngeal pain since the morning, but had left it untreated. The pharyngeal pain did not abate, and dyspnea appeared about 12 hours after the onset of symptoms. The patient tried to drive a car to an emergency outpatient clinic by himself, but could not drive because of severe dyspnea, and an accompanying friend called an ambulance. When the ambulance arrived, the patient was able to ride in the ambulance, but could not speak because of severe cyanosis. The patient collapsed, exhibiting universal signs of choking, immediately after lying supine on the stretcher, and fell in cardiopulmonary arrest (CPA). Cardiopulmonary resuscitation (CPR) was initiated immediately, and his sponta-

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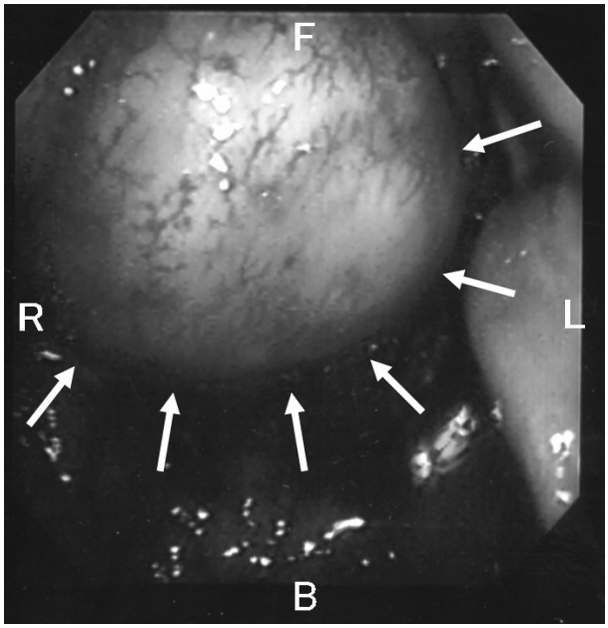

Fig. 1. Bronchoscopic findings : Retrograde view from a cricothyroidotomy.
F : front
B : back
R : right
L : left
Arrows : the swollen epiglottis

neous circulation returned. However, asystole occurred following pulseless electrical activity(PEA), and the patient was brought to our institution. Although ventilation through the bag-valve mask applied in the ambulance was not smooth, an abnormality in the upper airway was suspected based on the past medical history. Therefore, no advanced airway device, such as a combitube, was inserted, and CPR was continued. Upon arrival at our institution, the patient was in CPA, and asystole was noted on electrocardiographic monitoring. Secondary ABCD survey was immediately initiated, and the larynx was visualized. A round, walnut-sized, soft tissue mass was noted in the pharyngeal region, and the glottis could not be directly visualized. Oral endotracheal intubation was considered difficult, and surgical cricothyroidotomy was performed immediately for airway control. CPR was continued, but the patient could not be resuscitated. After death was confirmed, the laryngeal region was observed by bronchoscopy, and the cause of the upper airway obstruction was determined to be a markedly swollen epiglottis (Fig. 1). After consent was obtained

Fig. 2. Cervical CT images :
Top : The larynx was obstructed by the swollen epiglottis (arrows : epiglottis)
Bottom : The glottis was also slightly edematous, but the lumen remained intact.

from the family, cervical CT was performed after confirmation of death. The glottis was not swollen, thus suggesting that the airway had been obstructed by the swollen epiglottis ; as noted on bronchoscopy (Fig. 2).

Discussion

Acute epiglottitis in adults often lacks any pharyngeal findings because lesions are localized to the epiglottis, and flare and swelling are not noted, despite the fact that patients report severe pharyngeal pain and pain on swallowing.[5] Difficulty in swallowing, tenderness in the anterior neck, and muffled voice are characteristic symptoms.[6] Unlike children with a narrow airway, the symptoms of upper airway obstruction, such as dyspnea and inspiratory stridor, occur less frequently as initial symptoms.[7] However, among the cases of upper airway obstruction, the cases treated by airway

control within 8 hours after the onset account for the highest proportion[8]; thus indicating that symptoms progress rapidly in severe cases. Since supine positioning can aggravate airway obstruction in patients with a swollen epiglottis, patients attempt to position themselves in a sitting or face down position, which is considered to be a characteristic of acute epiglottitis.[6] In this patient, cardiopulmonary arrest occurred immediately after lying supine in the ambulance, thus suggesting that the posture change under hypoxic conditions caused a complete obstruction of the larynx by the epiglottis, and thereafter induced cardiopulmonary arrest. Under this circumstance, even if a paramedic applies an advanced airway device, such as a laryngeal mask airway or an esophageal－tracheal combitube, effective ventilation likely could not have been obtained. Since regulations prohibit the application of emergency surgical airway control in prehospital care, the successful resuscitation of this patient is thus considered to be very difficult.

The first choice of treatment for acute epiglottitis is emergency airway control, including surgical procedures, and similar views have been previously described in many reports.[6][7][9][10] However, at this time, no effective airway control procedure is available for prehospital care personnel. In the ambulance, the paramedics can only follow the normal procedures for dyspnea and select an appropriate hospital in consideration of acute epiglottitis, based on the presence of pharyngeal pain and swallowing pain, when determining the previous medical history is possible. It might be safer for prehospital care personnel to keep the patient on a position where the patient can breath comfortably. To avoid an unfortunate outcome, such as that seen in the present case, it is therefore important to educate the general public to visit a medical institution as soon as possible when dyspnea develops after the occurrence of pharyngeal pain.

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