

Obstructive Epiglottitis in Adults

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Acute epiglottitis, considered primarily a disease of infancy and early childhood, is seen rarely in adulthood but may be increasing in incidence. Although it may appear more slowly in adults, it is imperative to establish a rapid diagnosis and promptly assure care for this life-threatening disease. Epiglottitis may cause total obstruction of the upper airway, and it often falls to the primary care physician to discriminate this disease from the many self-limiting infections of the upper airway. The diagnosis should be considered if dysphagia and sore throat are not accompanied by hoarseness. Management of the airway is the first priority, but intravenous antibiotic use is justified.

Marked soreness of the throat and unusually painful swallowing with little or no hoarseness are cardinal signs of epiglottitis in an adult. Airway obstruction may follow with drooling and inability to swallow pharyngeal secretions.¹ If the patient becomes aphonic, partial or total airway obstruction is imminent and must be anticipated if the risks of fatal outcome or hypoxic brain damage are to be avoided.² The incidence of epiglottitis in adults is apparently increasing³; 13 to 65 percent of the patients in a number of recent series were adults, the majority being in their 20s and 30s.^{1,2,4} A case of airway obstruction in a previously healthy woman in the third trimester of pregnancy is presented, and options in airway management for acute obstruction and epiglottitis are reviewed.

Case Report

A 27-year-old woman in the third trimester of pregnancy complained of fever, sore throat, and

increasing difficulty in swallowing. Her physician was concerned about her worsening symptoms and visited her at home. He noted that the pharynx was mildly inflamed. There was no hoarseness, dyspnea, cyanosis, or tachypnea, and the lung fields were clear on auscultation. The physician decided that hospital observation was needed and transported her immediately to a hospital. On admission the oral temperature was 99.5°F, pulse was 110 beats/min, and blood pressure while sitting was 120/65 mmHg in the right arm. The oxygen pressure (PO₂) before oxygen therapy was 134 mmHg with 99 percent saturation; carbon dioxide pressure (PO₂), 20 mmHg; carbon dioxide content, 14 mEq/L; pH, 7.42; and the white blood cell count, 17,200/mm³ with 5 percent band forms, 82 percent neutrophils, 5 percent lymphocytes, and 6 percent monocytes. As the patient was being helped into bed for mist tent therapy, there was sudden onset of air hunger, dyspnea, extreme pallor, and total aphonia. The patient was unable to swallow her secretions.

Equipment for intubation was not immediately available, so the physician aspirated the pharynx and provided high-flow oxygen by pharyngeal tube, which gradually relieved the patient. Visualization of the larynx was not attempted. Hydrocortisone sodium succinate was given intravenous-

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ly. High-flow oxygen, followed several hours later by mist tent therapy, proved adequate to prevent hypoxia. The patient was given 1 g of intravenous aqueous crystalline penicillin G every 6 hours, and she rapidly improved during the next 25 hours of intensive care observation. Arterial blood gases and chest radiograph were normal at 22 hours after onset. Supplementary oxygen was required for 48 hours, and the mist tent was employed for 72 hours. Two blood cultures revealed *Hemophilus influenzae*, type B. Alpha-hemolytic streptococci, *Neisseria*, and H parainfluenzae were cultured from the throat, and intravenous ampicillin was substituted at 24 hours. The urine was sterile. The patient was discharged after four days and received oral ampicillin in appropriate dosages for an additional five days. Her pregnancy proceeded uneventfully.

Discussion

Sore throat and pharyngitis are frequent complaints heard by physicians, and it is of critical importance to recognize when they are part of the symptom complex preceding upper airway obstruction that may accompany acute epiglottitis. Cough and hoarseness are infrequent in acute epiglottitis, and signs of flaring, retraction, or respiratory distress are often lacking until airway obstruction reaches a critical point.¹ Hoarseness does not usually occur before aphonia because the anterior adherence of the epithelium to the vocal cords prevents supraglottic edema from extending to them.¹ The patient may be febrile for several days and often has cervical swelling with palpable and unusually tender lymphadenopathy. Rapidly increasing dysphagia is often the most prominent presenting complaint.¹ Despite several descriptions of coexisting cervical cellulitis in the literature,⁵ there was no evidence of that in this patient.

The most important element of therapy is the rapid clinical recognition of acute epiglottitis by history and by the apprehension of the patient. When epiglottitis is suspected, the patient must be attended constantly during all diagnostic studies by a physician prepared to perform intubation. Indirect laryngoscopy provides visual diagnosis and typically reveals a swollen epiglottis, which may be cherry-red in color but is not infrequently pale.¹ If indirect laryngoscopy is to be attempted,

it is necessary to have available equipment for endotracheal intubation and emergency tracheostomy, since this procedure may precipitate upper airway obstruction. Lateral radiographs of the neck with soft tissue technique provide an excellent view of the level of obstruction. Xeroradiographs, if available, may provide even clearer details of the structure.² Further study should be done in the upright position. This position reduces the tendency for secretions to pool in the retropharynx and the possibility of precipitating airway obstruction.¹ While x-ray examinations may prove helpful, their procurement must not take priority over securing a clear airway in the patient with signs of rapidly progressing obstruction. The airway adjacent to the epiglottis is frequently narrowed, and the valleculae are narrowed or obliterated. If an epiglottic abscess occurs, drainage poses the further risk of septic contamination of the bronchial tree.

The differential diagnosis of upper airway obstruction in a young adult should include infectious mononucleosis, which can cause pharyngeal lymphoid hyperplasia and faucial arch edema.⁶ Other possibilities include retro- and parapharyngeal abscess, lingual and peritonsillar abscess, diphtheria, allergic drug reactions,^{3,5} angioneurotic edema, and aspiration of a foreign body. The above-mentioned diagnostic procedures would be useful in all these situations.

Hemophilus influenzae is the most commonly identified infectious agent in epiglottitis, with as many as 86 percent of cases in one series having positive blood cultures. It is also the most common agent in adulthood. If strains of H influenzae that produce β -lactamase are known to be in the patient's community, or if the patient has a penicillin allergy, then chloramphenicol is a prudent adjunct or alternative antibiotic agent to ampicillin.¹ In this case, immediate (after drawing blood cultures) intravenous administration of ampicillin would have been more appropriate than penicillin. It is interesting to note that chloramphenicol-resistant *Hemophilus* has also been found,⁷ but cases of *Hemophilus* that are resistant to both ampicillin and chloramphenicol are still rare.⁸ Short courses of high-dose steroids are often used, but their use is controversial.^{9,10}

Branefors et al¹¹ described a rare case of *Hemophilus influenzae* septicemia causing fetal demise. The mother had a dysgammaglobulinemia

that resolved after delivery. Even in normal pregnancy, however, there is some depression of cell-mediated immune functions.¹² Reduced immune response may be beneficial in helping to prevent fetal rejection. This was demonstrated by Rocklin and associates,¹³ who noted the absence of serum blocking factors that inhibit lymphocyte responsiveness in patients with repeated abortions. Because of a high white blood cell count and a rapid clinical improvement in this case, the possibility of immunodeficiency was not explored.

Arterial blood gases may be normal or near normal just prior to obstruction; indeed, this patient had probably hyperventilated in her anxiety and produced a respiratory alkalosis. Subsequent blood gas measurements were an important guide to therapy.

Management Options for Acute Airway Obstruction

The availability of equipment, the nature and presence of partial or total obstruction, and the patient's ability to breathe unassisted are the major factors in determining the treatment options.^{3,4,9} Intubation on a prophylactic basis of all patients with acute epiglottitis is strongly suggested by many. Watchfulness and readiness to intubate or tracheostomize are imperative for physicians who elect a conservative management approach.

Orotracheal Intubation

In the cooperative, awake patient who is able to open his mouth and has no mechanical obstruction, laryngoscopy with orotracheal intubation is a rapid procedure posing few hazards.

Denitrogenation and preoxygenation, coupled with the use of succinylcholine and short-acting barbiturates, are the most common choices when semielective intubation is used. This method is usually successful but is highly perilous to the patient if there is failure to establish an airway immediately.¹⁴

Nasotracheal Intubation

When done with a single tube, nasotracheal intubation is unpleasant for the wakeful patient, is blind, and risks transfer of septic materials from the nasopharynx into the pulmonary tree. How-

ever, when performed with a fiberoptic laryngoscope placed through a nasotracheal tube, the procedure permits visualization and establishment of an airway when the laryngoscope is withdrawn.¹⁵ This procedure should not be attempted without some training and experience with this technique.

Tracheostomy

A major trend is to avoid tracheostomy, substituting early intubation.⁹ If tracheostomy is avoided, there is usually a reduction of morbidity and shortening of the hospital stay. Inadvertent pneumothorax, massive hemorrhage, sepsis, subcutaneous and mediastinal emphysema, and late stenosis are often attendant to hastily done tracheostomy. There are many reasons to avoid it, but when expertly done, the immediate control established by tracheostomy in upper airway obstruction in a patient who cannot be intubated has obvious and life-saving virtue.

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