Epiglottitis: An Under-recognized, Life-Threatening Infection

ABSTRACT

Acute Epiglottitis is a potentially life threatening infection of the supraglottic structures, epiglottis and aryepiglottic folds causing fatal airway obstruction. Historically described in adults before the 1960s and after the 1960s in the paediatric group causing more mortality and morbidity until the introduction of the *H. influenza* type B vaccine in 1993. Since then the incidence was described again more in the adult group.[6]

Prompt diagnosis and treatment will save the patients if failed mortality is as high as 80% in children and 20% in adults.[2]

KEYWORDS: Epiglottis, *H Influenza* Type B, Aspergillus, Kliebsiella,Candida, Fibroptic laryngoscopy, Humidified oxygen therapy,orotracheal intubation, naso-tracheal intubation,tracheostomy thumb sign

Epiglottitis is defined as inflammation of the epiglottis, most often due to an infectious etiology. Rapid airway obstruction can result from progressive inflammation and edema of the epiglottis. Mortality rates for epiglottitis range from 7% to 20% in adults and are directly related to the development of airway obstruction. Thus, urgent diagnosis and treatment are essential. Unfortunately, delays in diagnosis are common. It is estimated that epiglottitis is missed by primary care physicians in all but 35% of cases.

Although still debated by some historians, it is believed that George Washington died from a case of acute bacterial epiglottitis. In fact, his is probably the first recorded death from this disorder.

Epiglottitis in adults has been considered a medical rarity. Recent evidence suggests that this disorder is seen in adults regularly, though uncommonly, in

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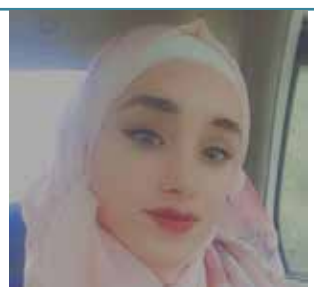

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clinical practice. Most cases are blood culture-negative; *Hemophilus influenzae* is isolated from blood cultures in few cases and *Hemophilus parainfluenzae* in few. Epiglottitis in adults differs from pediatric epiglottitis in the mode of presentation, bacterial cause and clinical course

Organisms

Early descriptions of epiglottitis consisted primarily of case reports in the adult population. Since the 1960s, however, epiglottitis has been described as largely a childhood disease. Then, with the widespread application of the *Haemophilus influenzae* type b vaccination, the incidence of the disease in the pediatric population markedly declined. As a result of this decline, acute epiglottitis is now more common in adults, and not only is it more common in adults; recent reports indicate that the incidence is rising

The current annual incidence of epiglottitis in adults ranges from 1.0 to 3.1 per 100,000 persons per year. The average age at presentation ranges from 42 to 50 years, with the peak incidence occurring from ages 35 to 39 Depending on the study, there is a slight male predominance that ranges from 2:1 to 4:1.

The most common cause of acute epiglottitis is infection. A variety of bacteria have been implicated in the disease. The most common bacteria identified include *H influenzae, beta-hemolytic Streptococcus, Staphylococcus aureus,* and *Streptococcus pneumoniae*. Although viruses are considered by many to be a common cause, only herpes simplex has been positively identified on histologic specimens. Patients with immunosuppressive conditions, such as those with HIV, are at risk for infection from atypical organisms.

Figure 1: *H influenzae* is one organism that is implicated in causing Epiglottitis

Atypical organisms linked to epiglottitis in the immunocompromised population include A*spergillus, Candida,* and *Klebsiella*. In many cases, a causative organism is not isolated.

In addition to infection, there are a number of noninfectious etiologies of epiglottitis. Perhaps most important is the development of epiglottitis from thermal inhalation injury. Recent reports have illustrated the inhalation of crack cocaine as an etiology of noninfectious epiglottitis. Additional noninfectious etiologies include neck trauma and caustic ingestions.

The clinical presentation of epiglottitis in adults is different from that in children. In contrast to chil-

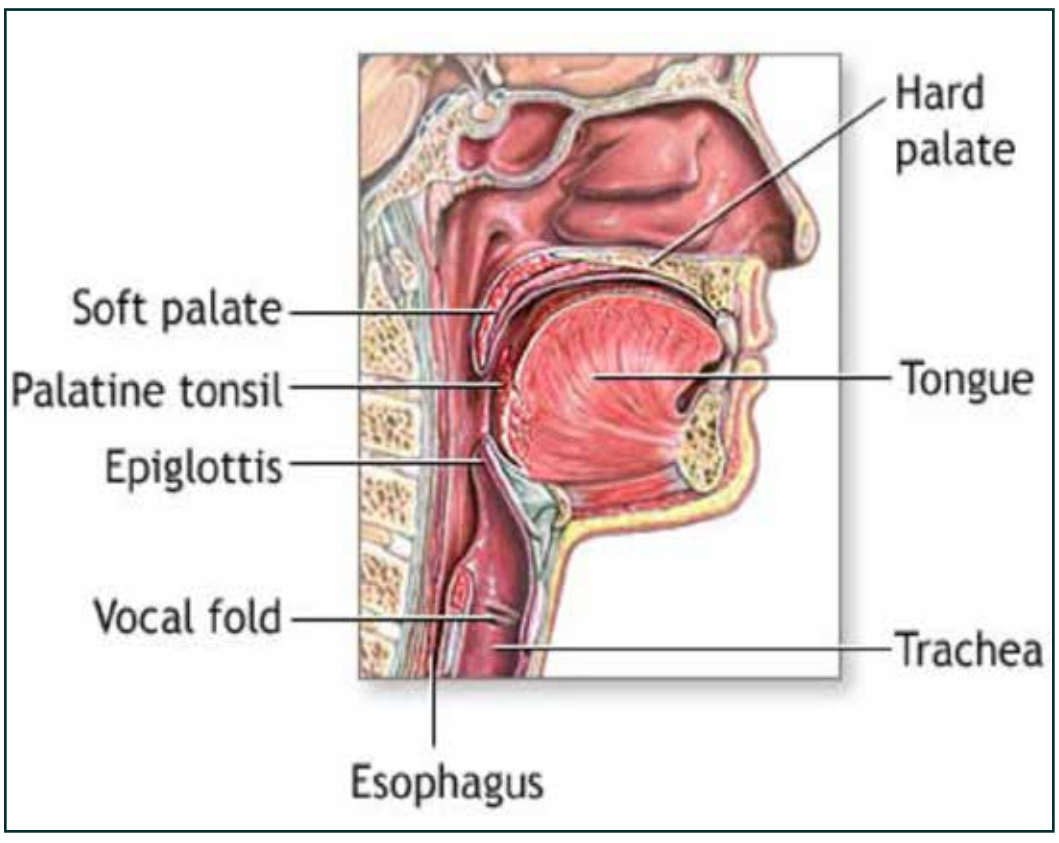
dren, adults are less likely to present with dyspnea, drooling, stridor, or fever. Adults are more likely to report severe sore throat, odynophagia, and hoarseness. In fact, the combination of severe sore throat and odynophagia is present in over 90% of adults with epiglottitis.

Clinical Presentations in Children

Delays in presentation are common. Typically, adults present an average of 2 days after the onset of symptoms. Carefully exam the neck in adults with severe sore throat. Up to 80% of adults with epiglottitis have marked anterior neck tenderness on physical examination. Suspect epiglottitis in any adult with severe sore throat, odynophagia, and tenderness of the larynx.

The gold standard for diagnosis is direct visualization of the epiglottis and surrounding structures. Direct visualization is accomplished through laryngoscopy. In contrast to children, indirect laryngoscopy is considered a safe procedure in adults with suspected epiglottitis. Fiber-optic nasopharyngeal laryngoscopy (NPL) can also be used to visualize the posterior elements of the hypopharynx, including the epiglottis. In children an examination with a tongue depressor as well as fibroptic nasolaryngoscopy should be avoided as sudden stoppage of breathing as well as heart has been reported.[3,4]

Figure 2: Epiglottis and surrounding structures



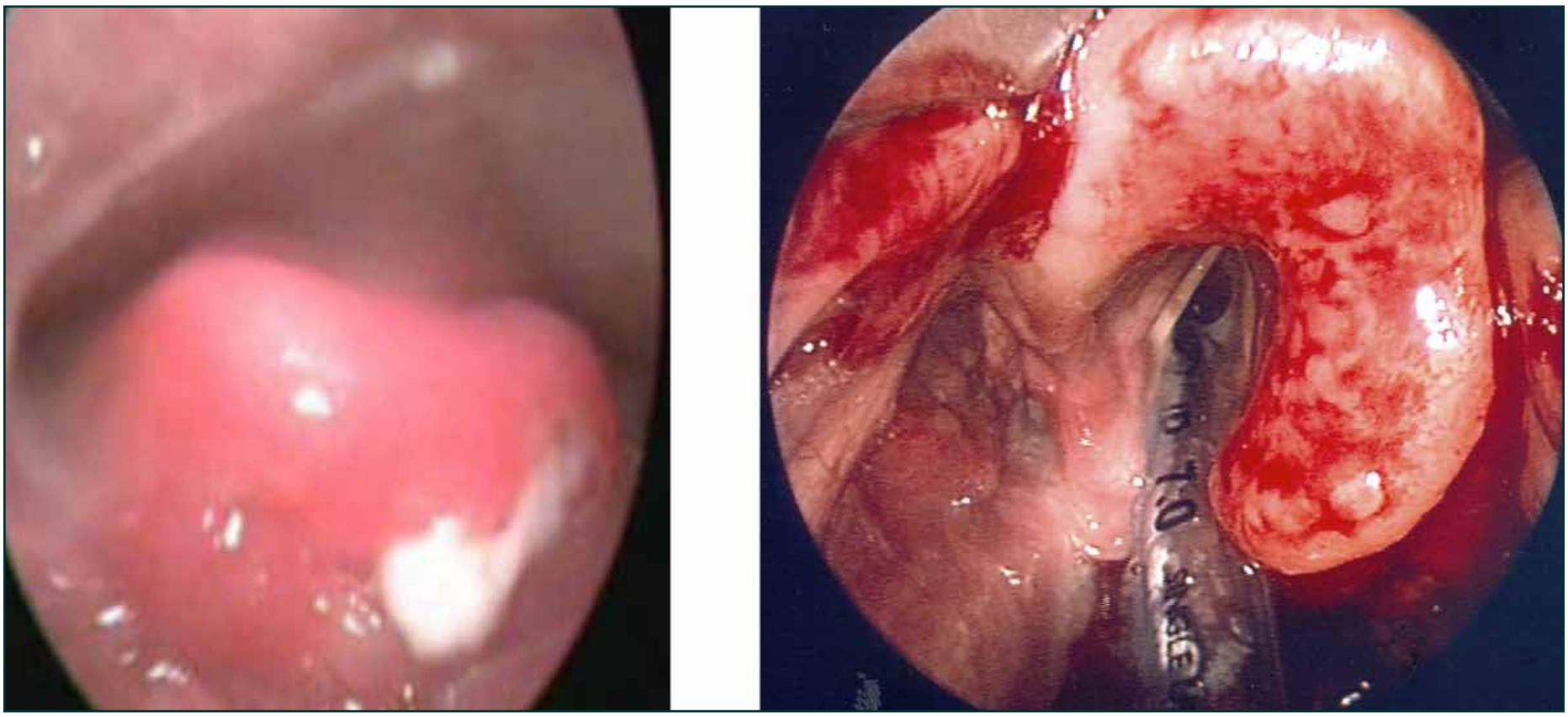
Epiglottitis

It is important to recognize that radiographs are of limited value. Depending on the study, the overall sensitivity of plain films for epiglottitis can be as low as 75%.

The classic radiographic finding is swelling of the epiglottis on lateral soft-tissue neck x-ray, commonly referred to as the “thumb sign”. This sign is absent in 14% to 27% of cases. The vallecula sign is characterized by a decrease in the vallecular air space as the epiglottis swells. With appropriate training, the investigators were able to diagnose epiglottitis with plain films with 98.8% accuracy. Although promising, the initial study involved only a small number of positive plain films, and further study is needed before widespread clinical application.[1]

Arterial blood gas analysis and the white blood cell count are nonspecific and of no diagnostic or prognostic value in epiglottitis.

Figure 3: Fiber-optic nasopharyngeal laryngoscopy is used to visualize the posterior elements of the hypopharynx including the epiglottis



Once the diagnosis is confirmed, treatment centers on airway management and prompt antibiotic administration. Up to one third of patients with epiglottitis eventually require endotracheal intubation.[5] Any patient with respiratory distress should be immediately intubated.

Recognize that intubation is often difficult due to significant swelling of the epiglottis and surrounding structures, and any attempts at blind intubation must be avoided. Up to 15% of patients in whom blind intubation is attempted require emergent tracheotomy.] For patients without respiratory distress, the literature is less clear. A number of retrospective reviews have attempted to identify clinical features that predict airway deterioration.

Unfortunately, there is no particular sign or combination of signs that has been shown to consistently identify patients who will require airway support. For patients who are being observed, always have

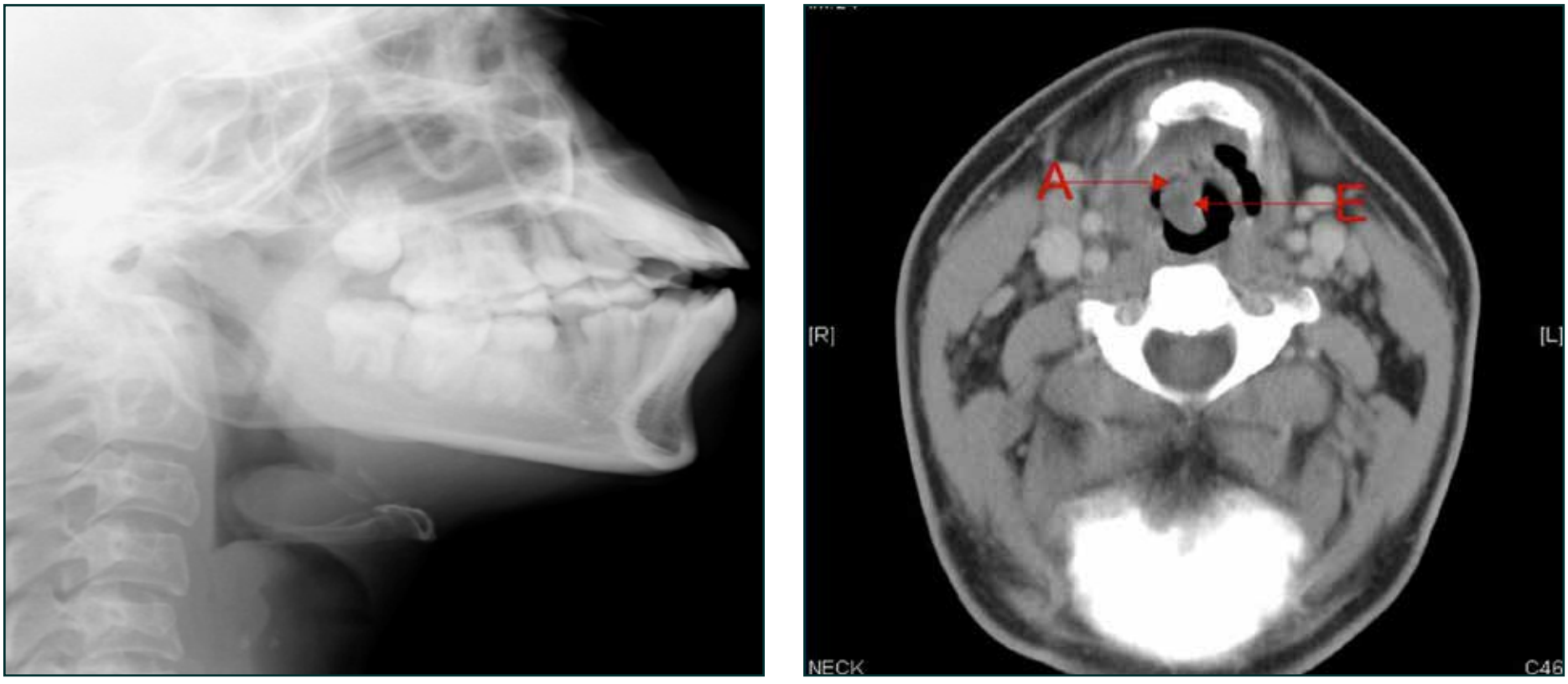
SUMMARY OF KEY POINTS

Epiglottits is an acute emergency in ENT practice as mortality is high in children at about 80% and 20% in adults.

Before the 1960s epiglottitis was not seen in the paediatric group.

Since the invention of *H. influenza* type B vaccine the numbers in the paediatric group has declined though in adults it remains the same as there are other bacteria and fungus involved in immune compromised patients .

Figure 4: Radiographs showing swelling of the epiglottis



equipment for intubation and cricothyroidotomy available at the bedside. Few series prophylactic tracheostomy in children showed immediate improvement though long term morbidity is reported.[5]

The majority of adults with epiglottitis will respond to medical management with antibiotics and close observation. Current recommendations are that patients receive a second- or third-generation cephalosporin with activity against *H influenzae*. At present, there are no controlled trials that demonstrate the benefit of aerosolized racemic epinephrine, corticosteroids, or humidified air. Given the potential for airway compromise, all patients with epiglottitis require admission to an intensive care unit (ICU).

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CLINICAL PEARLS

Acute epiglottitis is potentially life threatening both in children and adults. Prompt diagnosis with clinical examination complimented with radiographic investigation depending on the severity of cases and early treatment could save the patient,