

organisms to drain into the lateral pharyngeal space, which contains the carotid artery and internal jugular vein. Septic thrombophlebitis of the internal jugular vein can result, with associated pain, dysphagia, and neck swelling and stiffness. Sepsis usually occurs 3–10 days after the onset of sore throat and is often coupled with metastatic infection to the lung and other distant sites. Occasionally, the infection can extend along the carotid sheath and into the posterior mediastinum, resulting in mediastinitis, or it can erode into the carotid artery, with the early sign of repeated small bleeds into the mouth. The mortality rate from these invasive infections can be as high as 50%. Treatment consists of IV antibiotics (clindamycin or ampicillin/sulbactam) and surgical drainage of any purulent collections. The concomitant use of anticoagulants to prevent embolization remains controversial and is sometimes advised, with careful consideration of both the risks and the benefits.

INFECTIONS OF THE LARYNX AND EPIGLOTTITIS

LARYNGITIS

Laryngitis is defined as any inflammatory process involving the larynx and can be caused by a variety of infectious and noninfectious processes. The vast majority of laryngitis cases seen in clinical practice in developed countries are acute. Acute laryngitis is a common syndrome caused predominantly by the same viruses responsible for many other URIs. In fact, most cases of acute laryngitis occur in the setting of a viral URI.

Etiology Nearly all major respiratory viruses have been implicated in acute viral laryngitis, including rhinovirus, influenza virus, parainfluenza virus, adenovirus, coxsackievirus, coronavirus, and RSV. Acute laryngitis can also be associated with acute bacterial respiratory infections such as those caused by group A *Streptococcus* or *C. diphtheriae* (although diphtheria has been virtually eliminated in the United States). Another bacterial pathogen thought to play a role (albeit unclear) in the pathogenesis of acute laryngitis is *M. catarrhalis*, which has been recovered from nasopharyngeal culture in a significant percentage of cases.



Chronic laryngitis of infectious etiology is much less common in developed than in developing countries. Laryngitis due to *Mycobacterium tuberculosis* is often difficult to distinguish from laryngeal cancer, in part because of the frequent absence of signs, symptoms, and radiographic findings typical of pulmonary disease. *Histoplasma* and *Blastomyces* may cause laryngitis, often as a complication of systemic infection. *Candida* species can cause laryngitis as well, often in association with thrush or esophagitis and particularly in immunosuppressed patients. Rare cases of chronic laryngitis are due to *Coccidioides* and *Cryptococcus*.

Clinical Manifestations Laryngitis is characterized by hoarseness and also can be associated with reduced vocal pitch or aphonia. As acute laryngitis is caused predominantly by respiratory viruses, these symptoms usually occur in association with other symptoms and signs of URI, including rhinorrhea, nasal congestion, cough, and sore throat. Direct laryngoscopy often reveals diffuse laryngeal erythema and edema, along with vascular engorgement of the vocal folds. In addition, chronic disease (e.g., tuberculous laryngitis) often includes mucosal nodules and ulcerations visible on laryngoscopy; these lesions are sometimes mistaken for laryngeal cancer.

TREATMENT LARYNGITIS

Acute laryngitis is usually treated with humidification and voice rest alone. Antibiotics are not recommended except when group A *Streptococcus* is cultured, in which case penicillin is the drug of choice. The choice of therapy for chronic laryngitis depends on the pathogen, whose identification usually requires biopsy with culture. Patients with laryngeal tuberculosis are highly contagious because of the large number of organisms that are easily aerosolized. These patients should be managed in the same way as patients with active pulmonary disease.

CROUP

The term *croup* actually denotes a group of diseases collectively referred to as “croup syndrome,” all of which are acute and predominantly viral respiratory illnesses characterized by marked swelling of the subglottic region of the larynx. Croup primarily affects children <6 years old. For a detailed discussion of this entity, the reader should consult a textbook of pediatric medicine.

EPIGLOTTITIS

Acute epiglottitis (supraglottitis) is an acute, rapidly progressive form of cellulitis of the epiglottis and adjacent structures that can result in complete—and potentially fatal—airway obstruction in both children and adults. Before the widespread use of *H. influenzae* type b (Hib) vaccine, this entity was much more common among children, with a peak incidence at ~3.5 years of age. In some countries, mass vaccination against Hib has reduced the annual incidence of acute epiglottitis in children by >90%; in contrast, the annual incidence in adults has changed little since the introduction of Hib vaccine. Because of the danger of airway obstruction, acute epiglottitis constitutes a medical emergency, particularly in children, and prompt diagnosis and airway protection are of the utmost importance.

Etiology After the introduction of the Hib vaccine in the mid-1980s, disease incidence among children in the United States declined dramatically. Nevertheless, lack of vaccination or vaccine failure has meant that many pediatric cases seen today are still due to Hib. In adults and (more recently) in children, a variety of other bacterial pathogens have been associated with epiglottitis, the most common being group A *Streptococcus*. Other pathogens—seen less frequently—include *S. pneumoniae*, *Haemophilus parainfluenzae*, and *S. aureus* (including MRSA). Viruses have not been established as causes of acute epiglottitis.

Clinical Manifestations and Diagnosis Epiglottitis typically presents more acutely in young children than in adolescents or adults. On presentation, most children have had symptoms for <24 h, including high fever, severe sore throat, tachycardia, systemic toxicity, and (in many cases) drooling while sitting forward. Symptoms and signs of respiratory obstruction also may be present and may progress rapidly. The somewhat milder illness in adolescents and adults often follows 1–2 days of severe sore throat and is commonly accompanied by dyspnea, drooling, and stridor. Physical examination of patients with acute epiglottitis may reveal moderate or severe respiratory distress, with inspiratory stridor and retractions of the chest wall. These findings *diminish* as the disease progresses and the patient tires. Conversely, oropharyngeal examination reveals infection that is much less severe than would be predicted from the symptoms—a finding that should alert the clinician to a cause of symptoms and obstruction that lies beyond the tonsils. The diagnosis often is made on clinical grounds, although direct fiberoptic laryngoscopy is frequently performed in a controlled environment (e.g., an operating room) to visualize and culture the typical edematous “cherry-red” epiglottitis and facilitate placement of an endotracheal tube. Direct visualization in an examination room (i.e., with a tongue blade and indirect laryngoscopy) is not recommended because of the risk of immediate laryngospasm and complete airway obstruction. Lateral neck radiographs and laboratory tests can assist in the diagnosis but may delay the critical securing of the airway and cause the patient to be moved or repositioned more than is necessary, thereby increasing the risk of further airway compromise. Neck radiographs typically reveal an enlarged edematous epiglottitis (the “thumbprint sign,” Fig. 44-3), usually with a dilated hypopharynx and normal subglottic structures. Laboratory tests characteristically document mild to moderate leukocytosis with a predominance of neutrophils. Blood cultures are positive in a significant proportion of cases.

TREATMENT EPIGLOTTITIS

Security of the airway is always of primary concern in acute epiglottitis, even if the diagnosis is only suspected. Mere observation for signs of impending airway obstruction is not routinely recommended,