Laboratory Studies

On initial evaluation, pulse oximetry may be useful to determine the extent and severity of the stridor and respiratory compromise. For moderate-to-severe cases, arterial blood gas evaluation may be needed.

Other laboratory evaluations may be performed as dictated by the clinical situation. Generally, no investigations are required for mild stridor.

Imaging Studies

Anteroposterior (AP) and lateral radiographs of the neck and chest are useful for evaluating the airway and lungs. These radiographs may be supplemented by high-kilovoltage, short-exposure endolateral airway radiographs (useful for demonstrating upper airway structures) or inspiratory and expiratory or lateral decubitus radiographs (useful for demonstrating air trapping).

Barium esophagography may be performed if vascular compression, tracheoesophageal fistula, gastroesophageal reflux (GER), or neurologic dysfunction is suspected.

Contrast-enhanced computed tomography (CT) can demonstrate mediastinal masses or aberrant vessels. Magnetic resonance imaging (MRI) may be helpful in delineating lesions of the upper airway and vascular anomalies.

If GER is suspected, a pH probe or barium swallow may be performed to support the diagnosis.

Other Tests

Pulmonary function testing may be helpful in differentiating restrictive and obstructive lung processes and defining whether the obstruction is in the upper or lower airway.

Polysomnography may be required under certain circumstances, especially if the history suggests obstructive sleep apnea.

Procedures

The key to defining stridor of all phases is to evaluate the airway directly. Direct laryngoscopy with bronchoscopy is the criterion standard for making a diagnosis in infants and children with stridor.

If the child's oxygen saturations are stable and neither the findings on lateral neck radiography nor the clinical picture is indicative of acute epiglottitis, the initial procedure for evaluating stridor should be a flexible laryngoscopy performed by an otolaryngologist in the clinic with a topical vasoconstrictor, a topical anesthetic, or both as needed. The status of the larynx can be addressed, with an eye to abnormalities such as laryngomalacia, true vocal cord paresis or paralysis, laryngeal tumors or cysts, or signs and symptoms of GER.

Often, a good evaluation is possible; occasionally, only a glimpse of the subglottis is observed, which may help direct further evaluation, such as a formal direct laryngoscopy and bronchoscopy in the operating room.