
بسم الله الرحمن الرحیم

Infectious causes of stridor

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ACUTE STRIDOR

With Fever

- **Bacterial Tracheitis:**
- **Retropharyngeal Abscess**
- **Epiglottitis**
- **Laryngo tracheobronchitis**
- **Diphtheria**

- **Without Fever**
- **Anaphylaxis**
- **Hereditary angioedema**
- **Foreign body aspiration**
- **Inhalation injury and burns**

Viral Laryngotracheobronchitis

Most common cause of infective upper airway obstruction in 6months – 4 years with peak incidence between 18-24 months of age and presenting in fall and winter months.

Mild: Barking cough ,hoarse voice ,inspiratory stridor on exertion

Mod: Inspiratory stridor at rest, tachypnea , thachycardia, use of accessory muscles of respiration, able to drink

Sever: Increasing respiratory distress, mild drooling ,unable to drink, agitation, cyanosis, decrease level of consciousness

ETIOLOGY

Para influenza virus (PIV)type 1(most common cause)

- PIV 2 ,3
- RSV
- Adeno virus
- Rhino virus
- Coronavirus
- Enteroviruses

Westley Croup Severity Score

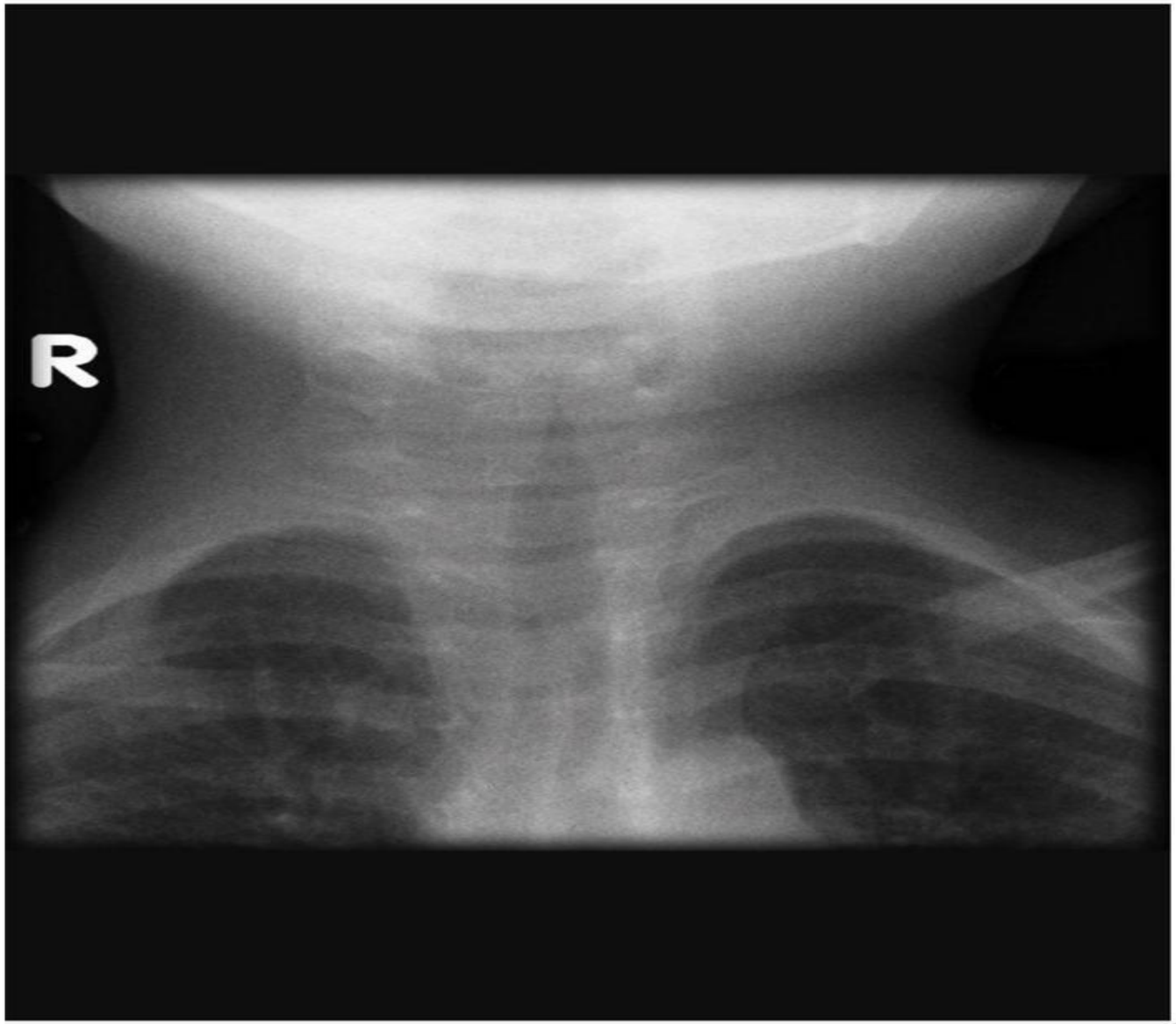
Clinical Feature	Assigned Score
Level of consciousness	Normal, including sleep = 0 Disoriented = 5
Cyanosis	None = 0 With agitation = 4 At rest = 5
Stridor	None = 0 With agitation = 1 At rest = 2
Air entry	Normal = 0 Decreased = 1 Markedly decreased = 2
Retractions	None = 0 Mild = 1 Moderate = 2 Severe = 3

Score	Severity	Description	Management
≤ 2	Mild	• Occasional barky cough • No stridor at rest • Mild or no retractions	• Home treatment (antipyretic, fluids, mist) • Outpatient: Single dose PO dexamethasone
3 to 7	Moderate	• Frequent barky cough • Stridor at rest • Mild to moderate retractions • No or little distress or agitation	• Single dose PO dexamethasone • Nebulized epinephrine • Hospitalization not generally needed
8 to 11	Severe	• Frequent barky cough • Stridor at rest • Marked retractions • significant distress and agitation	• Single dose PO/IM/IV dexamethasone • Repeated doses of nebulized epinephrine prn • Inpatient admission usually required • Improved after corticosteroid and nebulized epinephrine
≥ 12	Impending respiratory failure	• Depressed level of consciousness • Stridor at rest • Severe retractions • Poor air entry • Cyanosis or pallor	• Single dose PO/IM/IV dexamethasone • Repeated doses of nebulized epinephrine prn • ICU admission usually required • May require intubation

Severity	دیسترس تنفسی	استریدور دمی	توانایی خوردن و نوشیدن	بیقراری و تحریک پذیری	Air Entry
Mild	ندارد	فقط در فعالیت دارد*	قادر به خوردن و نوشیدن است	ندارد	نرمال
Moderate	تاکی پنه تاکی کاردی رتراکشن خفیف	در حالت استراحت	فقط قادر به نوشیدن مایعات می باشد	بیقراری متناوب	کاهش یافته
Severe	دیسترس تنفسی شدید با یا بدون سیانوز	در حالت استراحت	توانایی بلع و نوشیدن ندارد**	بیقراری مداوم با یا بدون لتارژی	کاهش یافته شدید

*فعالیت در شیرخواران زیر یکسال با شیر خوردن و گریه کردن تعریف می شود

**ممکن است همراه با Drolling باشد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Treatment :

- **Mild** : Out patient management
  - Oral corticosteroid (Dexamethasone 0.15-0.6 mg/kg –max16)

Mod:

- Humidified oxygen
- Oral corticosteroid (Dexamethasone 0.6 mg/kg -max 16)
- Neb epinephrine 0.5 cc/kg/dose max 5cc
- Neb budesonide 2 mg

Sever:

- Oral or IM or IV corticosteroid
- Neb epinephrine
- Neb budesonide

BACTERIAL TRACHEITIS:

The most common pathogen is **S. aureus**

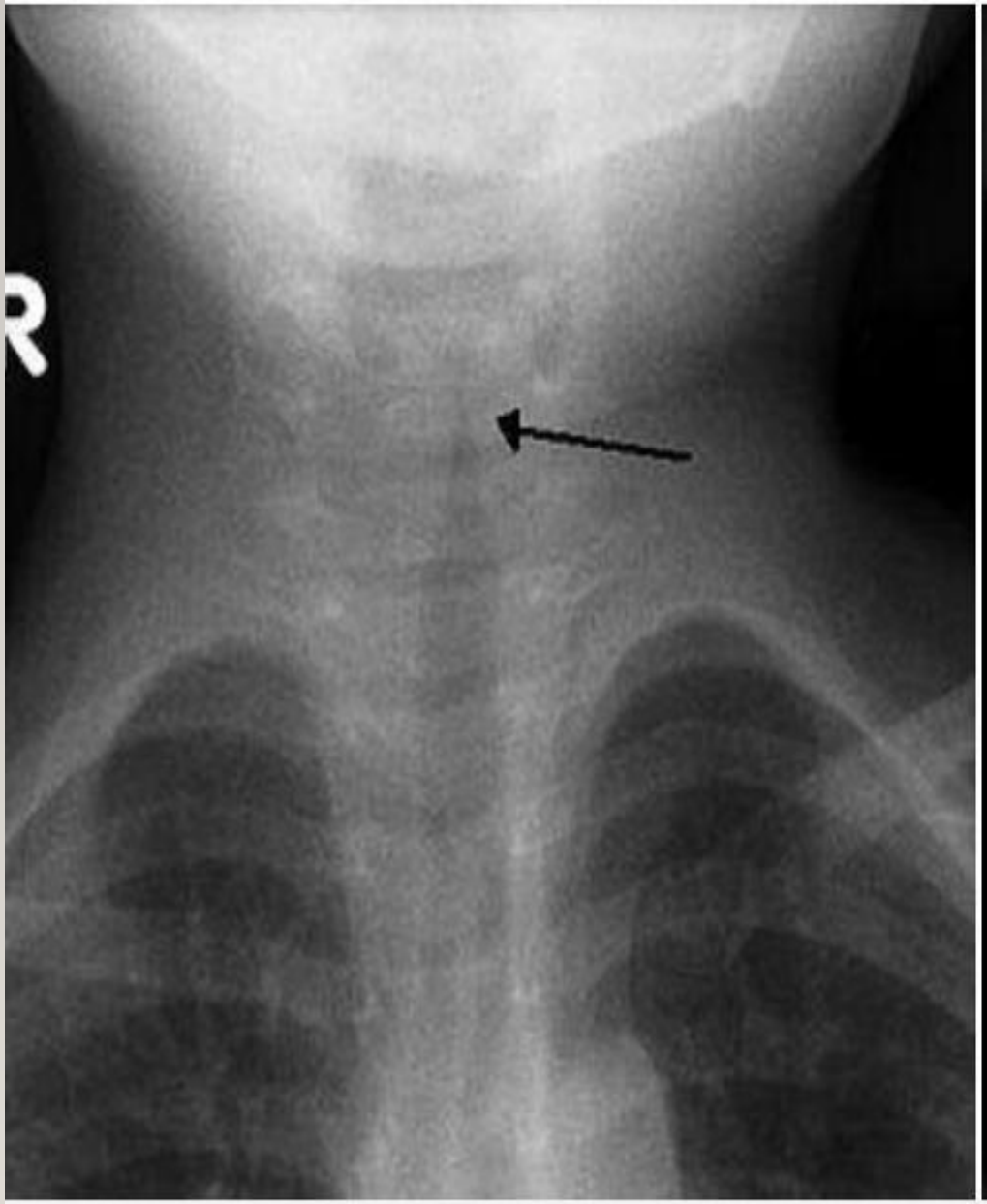
Bacterial tracheitis is considered **secondary to primary viral LTB**

PATHOLOGY: Bacterial tracheitis is characterized by marked **subglottic edema, with ulceration; erythema; pseudomembranous formation on the tracheal surface; and thick, mucopurulent tracheal secretions. The thick exudate and sloughed mucosa frequently obstruct the lumen of the trachea**.

The clinical picture is initially similar to that of viral LTB, **mild fever cough and stridor** for several days.

The patient's condition deteriorates rapidly, with a **high fever** and often a **toxic** appearance, with **respiratory distress** and **airway obstruction**. **choking episodes**, **orthopnea**, **dysphagia**, and **neck pain**, **brassy cough**, **able to lie flat, not drooling**
do not respond to expected therapies (corticosteroids or nebulized epinephrine).

There may be other co infections, particularly pneumonia. Other reported complications include cardiopulmonary arrest, with subsequent hypoxic encephalopathy and seizures, pneumothorax, subglottic stenosis, septicemia, toxic shock syndrome, pulmonary edema, and adult respiratory distress syndrome.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MANAGEMENT

- The white blood cell count shows polymorph nuclear leukocytosis, often with a left shift.

- A lateral neck radiograph may show a hazy tracheal air column, with multiple luminal soft tissue irregularities due to pseudo membrane detachment from the soft tissue, but radiographs should be taken only after the patient is stabilized and safe.

- This must be confirmed by upper airway endoscopy and a positive bacterial culture.

MANAGEMENT

Diagnostic **Rigid endoscopy**, which should be done under general anesthesia, is also therapeutic because it enables removal of secretions and sloughed tissue from the airway lumen; sometimes the procedure must be repeated.

Many patients (especially younger ones) require **Endotracheal intubation** and mechanical ventilation to overcome airway obstruction (reports of 50% to 100% intubation rates) usually for 3 to 7 days.

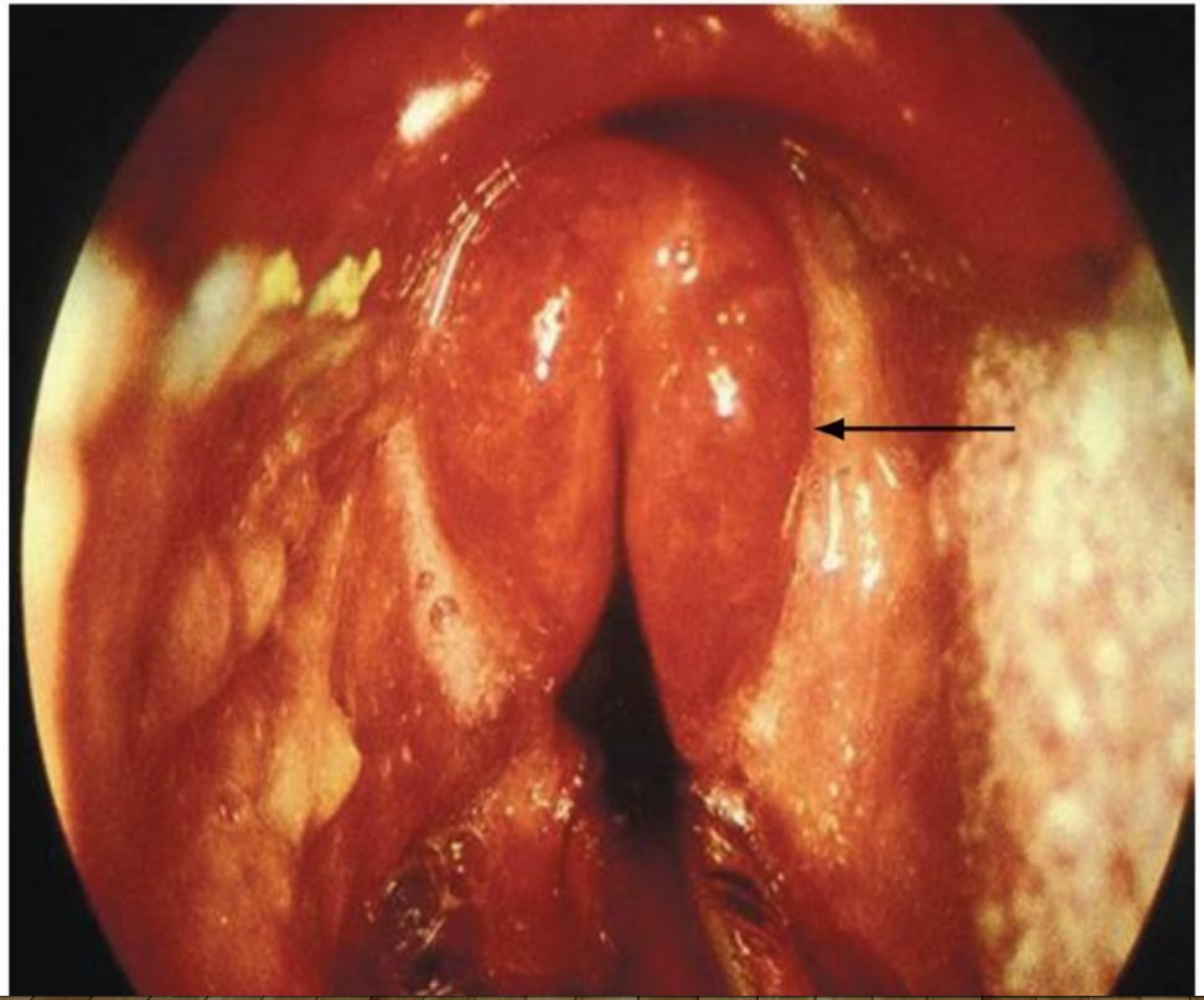
Intravenous broad-spectrum antibiotics are given, and these can be refined once cultures and antibiotic sensitivities are known, usually for 10 to 14 days.

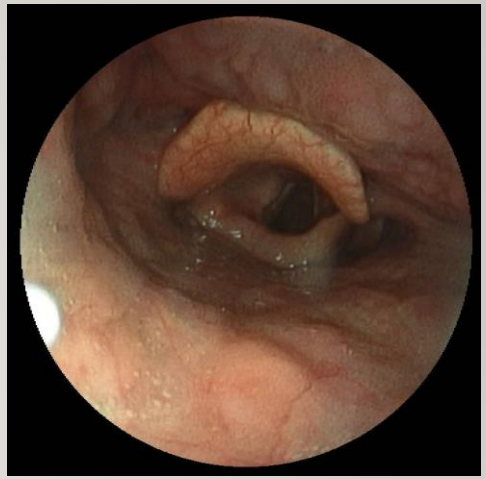
Epiglottitis

- Haemophilus influenza B was responsible for almost all (approximately99%)
- *Streptococcus A*
- *Staphylococcus aureus*

Sign and Symptoms

- **Fever**
- **Severe throat pain**
- **Stridor**
- **Respiratory distress**
- **Tripod position** (sitting upright, with the chin up, mouth open, bracing themselves on their hands) as air hunger develops
- **Drooling** because they cannot swallow their secretions
- **Voice is muffled** due to pain and soft tissue swelling





Avoiding: (May precipitate complete airway obstruction)

- ❑ Physical examination (especially of the throat)
- ❑ Cannulation or venipuncture
- ❑ Emotional upset and crying
- ❑ Radiography

Oxygen should be given, even if the mask is held at distance from the child's face.

The child should be taken to the operating room, anesthetic room, or pediatric intensive care unit, and held by a parent.

- **Laryngoscopy** should then be performed and the diagnosis confirmed, based on the appearance of the epiglottis (erythema and edema of the supraglottis). Endotracheal intubation is then achieved using an orotracheal tube, which is later changed to a nasotracheal tube, because this is less likely to be displaced leading to a potentially disastrous.

- **Tracheostomy** is rarely necessary

- **Intravenous cannulation** and blood sampling can be done.

- The white cell count is increased, and **blood culture** findings are often positive

- **Airway secretions and swabs** from the epiglottic region should be sent for bacterial culture and viral detection.

- **Intravenous antibiotics** are started which must cover HiB and *Streptococcus;* the response is usually rapid. **A third-generation cephalosporin (ceftriaxone or cefotaxime**) is usually for 7 to 10 day.

- The duration of intubation for epiglottitis due to HiB averages **1 to 3** days.

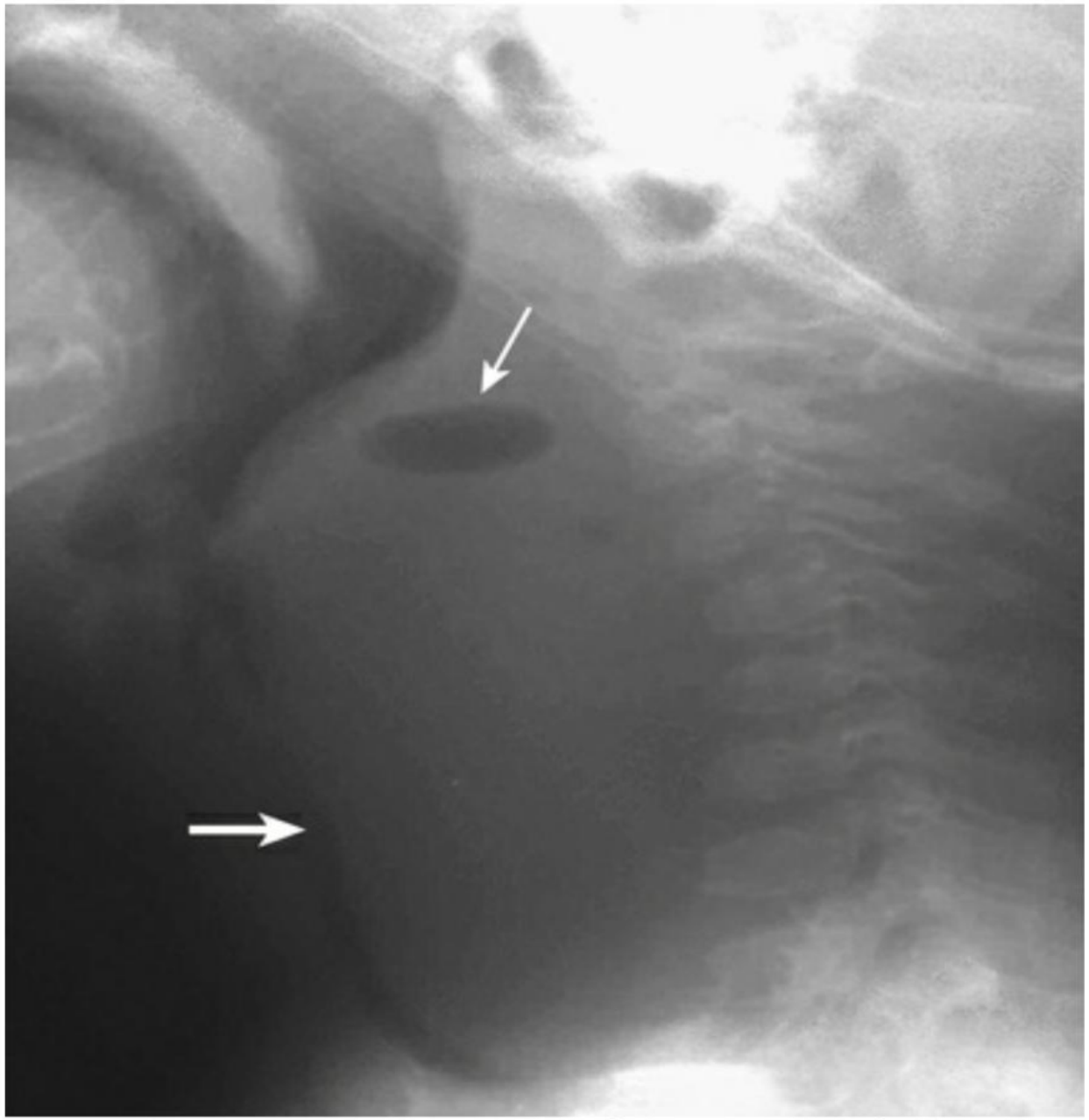
Retropharyngeal Abscess

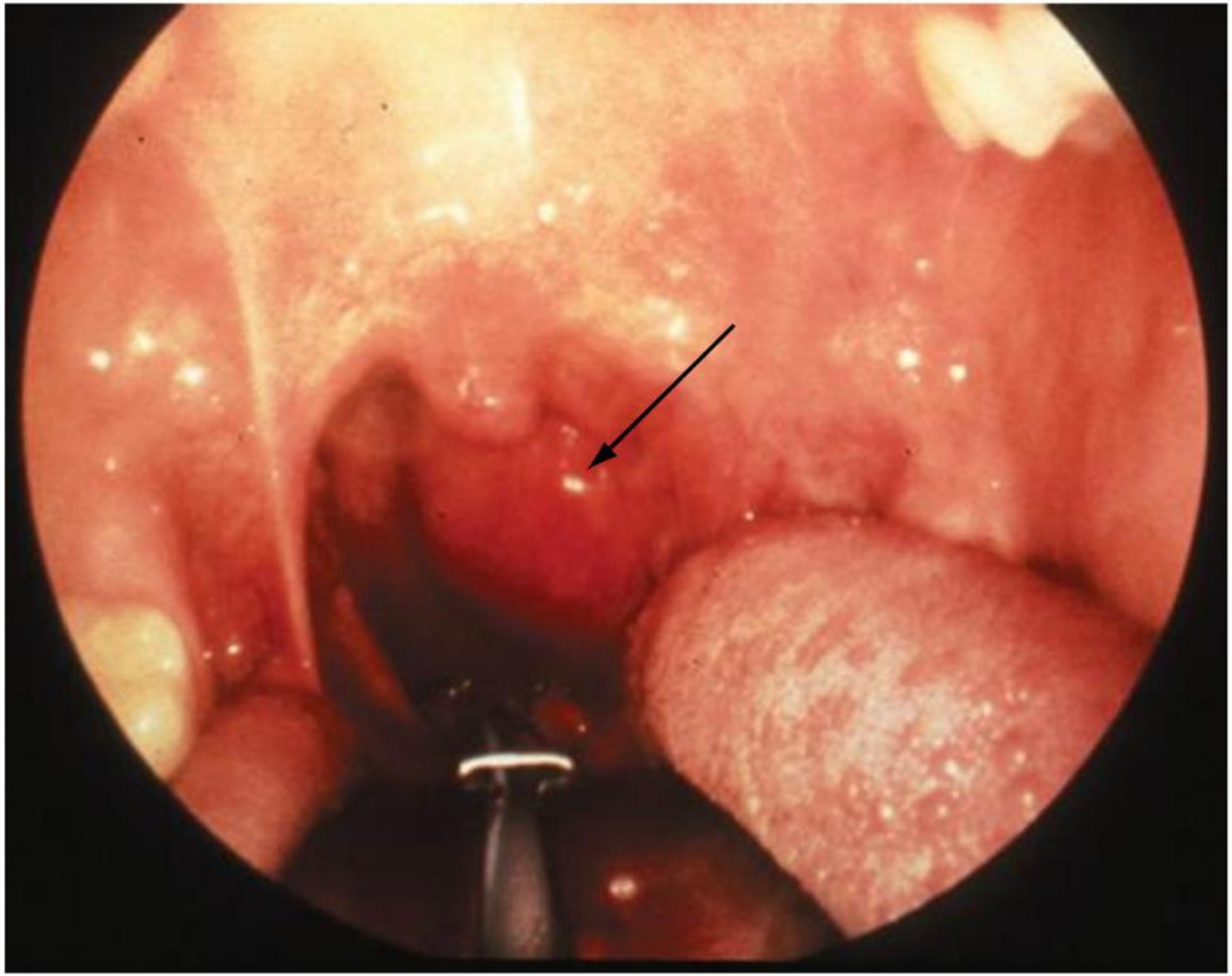
The majority of cases occur in children younger than 6 years.

ETIOLOGY

- Retropharyngeal abscesses generally result from lymphatic spread of infection, although Direct spread from adjacent areas
- Penetrating pharyngeal trauma
- Foreign bodies
- Complication of adenoidectomy and adenotonsillectomy .

Infection is usually due to mixed flora, including *S. aureus* (methicillin-sensitive and resistant), various streptococcal species (in particular group A betahemolytic *streptococcus*), HiB, and anaerobes. tuberculosis (cervical Pott's disease).





Children then have **high fever, sore throat, dysphagia, poor feeding, neck pain, and stiffness. Limitation of neck extension** and **torticollis** are more common than limited neck flexion .Although the occurrence of neck signs with fever may suggest meningitis.

Further deterioration may lead to extrathoracic airway compromise, with drooling ,stridor, and respiratory distress.

Sometimes a retropharyngeal mass is visible in the mouth, seen as an **asymmetrical bulge of the posterior pharyngeal wall** (marked lymphadenopathy or parapharyngeal abscess) is visible and palpable.

Once the child is stable and safe, a lateral neck radiograph with the neck in full extension may confirm the diagnosis.

Widened prevertebral soft-tissue shadow and air-fluid levels in the retropharyngeal space.

contrast-enhanced computed tomography scan is useful because it differentiates a fully developed abscess from cellulitis and delineates the full extent of the abscess.

Management involves:

- Surgical drainage of the abscess
- Intravenous antibiotics alone, although surgery must be considered early if there is a compromised airway
- Percutaneous CT-guided aspiration has also been described

Diphtheria

Extremely rare, may present at any age
History of inadequate immunization
Recent travel
Low grade fever
Dysphagia
Inspiratory stridor
Neck pain
swelling
Voids hoarseness
Greyish adherent membranous
Pharyngitis

Nasal and pharyngeal swab cultures

Antibiotics- Ceftriaxone

Administer diphtheria anti- toxin

Treat contacts with erythromycin

+/- Immunization