L2 (Upper Airway Obstruction in Children)

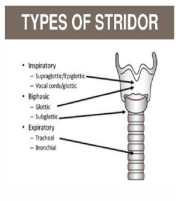
Stridor: Is a high-pitched breath sound (noisy) resulting from turbulent air flow in the upper airway (due to partial obstruction of the upper airway).

Stridor in children is classified to acute and chronic (chronic if it lasts more than 6 Weeks)

• It also has 3 types according to the level of the partial obstruction:
1. Inspiratory: the most common in children: usually appears during inspiration, usually happens due to supraglottic or epiglottic obstructions, or if there is a lesion at the vocal cord level.

2. Expiratory: appears during expiration, the partial obstruction will be at the level of the trachea or even lower, at the level of the bronchi.

3. Biphasic: the stridor happens during both inspiration and expiration, the partial obstruction will be at the level of glottis or sub-glottis.



Causes of Stridor in Children

1. Acute Stridor

➢ *Infectious Causes:*

- Croup: most common cause of acute stridor.
- Tracheitis
- Epiglottitis
- Retropharyngeal Abscess

➢ *Foreign Body Aspiration:*

- It is considered acute, because children with foreign bodies aspiration come with acute symptoms without any infectious suggestive diagnosis.

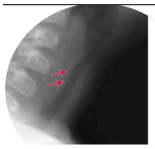
2. Chronic Stridor

- Laryngomalacia (رخاوة الحنجرة): most common cause of chronic stridor
- Vocal cord palsy

➢ Case 1: A 2-year-old boy presents to the emergency department with a 2-day history of a barking cough, inspiratory stridor, and low-grade fever. **Symptoms worsen at night**, leading to difficulty breathing. On examination, he has hoarseness of voice, mild respiratory distress, and a barking cough.

Symptoms and signs	Diagnostic tool	Diagnosis	Management	Some notes
Starts with minor respiratory symptom: non-specific cough, rhinorrhea and low grade fever. Acute onset of inspiratory stridor, Barking cough, Hoarseness of voice and resp.distress. Symptoms are usually mild to moderate (worse at night and on day two).	1. Clinical (mainly) 2. AP-CXR: **Steeple sign**  narrowing in the trachea, reflecting an edema, wide soft tissue swellin	Croup (caused by parainfluenza virus)	1. ABC approach: Check Airway, Breathing, and Circulation. 2. Administer systemic corticosteroids (Dexamethasone 0.3 mg/kg) and nebulized adrenaline. 3. Observation for 4 hours post-adrenaline administration to determine discharge or admission. 4. ICU referral in severe cases	**- Croup is the most common cause of acute stridor in children.** - Part of the respiratory system is likely to be affected by CROUP is **Larynx and upper trachea** (In croup, the larynx is swollen, and the upper part of the trachea may be inflamed and swollen also). - Avoid distressing a child with a croup as this may exacerbate symptoms.

- Case 2: A 4-year-old girl presents with acute onset stridor, high-grade fever, and significant respiratory distress. There is a history of a **recent upper respiratory tract infection**. The child appears unwell, with increased tracheal secretions and a barking cough.

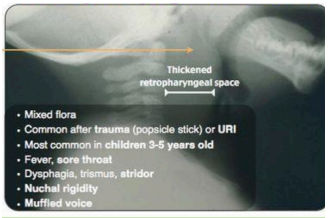
Symptoms and signs	Diagnostic tool	Diagnosis	Management
high-grade fever, increase secretions from the trachea they look usually sick, barking cough in addition to the stridor. Significant respiratory distress.	1. Clinical diagnosis **(mainly).** 2. Bronchoscopy: edema, swelling, and there is a lot of secretion sitting there. 3. Direct Laryngoscopy. 4. Lateral neck X-ray: Shows swollen mucosa and narrowed trachea. ▪ The white rim line, pointed by the red arrows, should be straight but here there's a pump that reflects a swollen mucosa of the trachea. ▪ Also, the black tube (trachea) is narrowed indicates an inflammation or edema of the mucosa which reflects an infection. So, in addition to the clinical situation with findings in the chest in the chest x-ray, this can confirm your diagnosis of tracheitis. 	Bacterial Tracheitis (causative agent most likely to be staph.aureus and may streptococcal species).	1. ABC stabilization. 2. Antibiotics: IV vancomycin and ceftriaxone (Rocephin) may be appropriate empirically or any 2nd,3rd generation of cephalosporine should be enough (wide spectrum).

- Case 3: A 3-year-old child presents with drooling, severe respiratory distress, and a high-pitched stridor. Parents report a sudden onset of symptoms, including refusal to eat and a hyperextended neck posture.

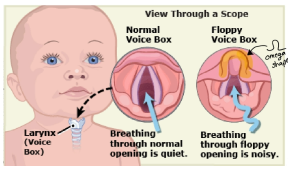
Symptoms and signs	Diagnostic tool	Diagnosis	Management
Drooling (because of difficulty of swallowing of the saliva),hyperextended neck (the child comes with characteristic posturing with a sniffing position leaning forward and trying to hyperextend the neck to keep the airway open), sick appearance, **absence of barking cough** and High-grade fever. Severe respiratory distress	1. Clinical diagnosis. 2. Lateral neck X-ray: **Thumb sign** indicating a swollen epiglottis.	Epiglottitis: (caused by Hemophilus influenza).	1. Avoid irritating the child (do not attempt throat examination in the clinic). 2. Ensure emergency ENT and anesthesiology support. 3. Secure the airway in an operating room using a

			fiberoptic scope or tracheostomy. 4. Administer broad-spectrum IV antibiotics (e.g., Ceftriaxone).

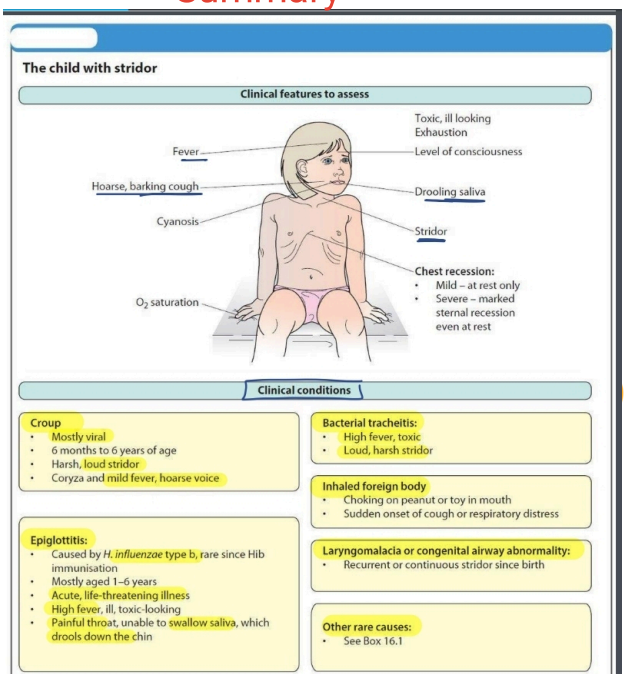
➢ Case 4: A 2-year-old child presents with a high fever, neck pain, drooling, and difficulty swallowing. Examination reveals deviation of the uvula and a bulging posterior pharyngeal wall.

Symptoms and signs	Diagnostic tool	Diagnosis	Management	Some notes
High grade fever, drooling, **bulging throat with uvula deviation** and stridor with neck stiffness.	Lateral neck X-ray: Soft tissue swelling. 	Retropharyngeal Abscess (Bacteria that commonly contribute to these infections include Group A Streptococcus pyogenes, Staph.aureus, Fusobacterium, Haemophilus species).	1. ABC stabilization. 2. Start broad-spectrum IV antibiotics. 3. Consult ENT for immediate surgical drainage to relieve their upper airway obstruction.	- Retropharyngeal abscesses are uncommon but life-threatening. - Commonly found in children under the age of five. - Without proper treatment, it can lead to upper obstruction and asphyxiation.

➢ Case 5: A 2-month-old infant presents with a history of noisy breathing and inspiratory stridor. The mother reports worsening symptoms during feeding or crying but notes improvement when the child is sleeping prone.

Symptoms and signs	Diagnostic tool	Diagnosis	Some notes
High-pitched inspiratory stridor **appears within first 6-8 weeks of life and peaking at 6–9 months.** Positional variation (improved in prone position). Exacerbated by activity (feed, exertion), supine position, and during viral illnesses. Diminishes by rest, prone position and sleeping. Rarely produces cyanosis.	1. Clinical. 2. Laryngoscopy: **Omega-shaped epiglottis.** 	Laryngomalacia	Laryngomalacia is the Most Common cause of chronic stridor. Around a year and a half (19 months) stridor starts to improve. Until it disappears totally at 2 years.

Summary



Done By: Mays Qashou