Stridor/Snoring/OSAS

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Stridor/Stertor

- Noisy breathing = airway obstruction
- ALWAYS THINK WHAT’S CAUSING IT!
Introduction

• Stertor=Snoring
  – Caused by obstruction of airway above the larynx
  – Vibration in tissues of nasopharynx, oropharynx or soft palate
  – Rough, unmusical

• Stridor
  – Due to obstruction in the larynx, trachea or bronchi
Stridor:

- Harsh, high-pitched, crowing noise during inspiration- larynx/ supraglottis obstruction

- Stridor of lower pitch with snoring + excessive secretions- pharynx/ nasopharynx

- Inspiratory+ expiratory stridor with prolonged low-pitched expiration- trachea/ brongi
Grading of Stridor:

- Grade I: Inspiratory stridor
- Grade II: Expiratory stridor
- Grade III: Inspiratory + expiratory stridor with pulsus paradoxsis
- Grade IV: Respiratory arrest
Associated signs and symptoms

- **Dyspnoea**
  - Severity of one reflects severity of the other
  - Signs of respiratory embarrassment
    - Nasal flaring
    - Accessory muscles
    - Cyanosis
    - Indrawing of soft tissues
    - Tracheal tug
  - Beware of signs in neonate and small infant
Associated signs and symptoms (continued)

• Cough
  – Harsh and barking
  – Subglottic inflammation/tracheal compression

• Hoarseness
  – Speech or crying
  – Vocal cord pathology
Associated signs and symptoms (continued)

• Deglutition and respiration
  – Share common pathway: oropharynx
  – Disorders of the one may interfere with the other
  – Stridor/Stertor often increase during feeding
  – Infants often noted to be poor or slow feeders
General features: Stridor

- Always a symptom or a sign; never a diagnosis or a disease
- History and physical examination will indicate problem areas
- Endoscopy will confirm final diagnosis
History and physical examination (continued)

<table>
<thead>
<tr>
<th>Sites of obstruction</th>
<th>Causes of obstruction</th>
</tr>
</thead>
<tbody>
<tr>
<td>Nose/nasopharynx</td>
<td>Nasal polyps</td>
</tr>
<tr>
<td></td>
<td>Grossly deflected nasal septum</td>
</tr>
<tr>
<td></td>
<td>Adenoids</td>
</tr>
<tr>
<td>Oropharynx/velopharynx</td>
<td>Macroglossia (absolute or relative)</td>
</tr>
<tr>
<td></td>
<td>Soft palate Tonsils</td>
</tr>
<tr>
<td>Laryngotrachea</td>
<td>Obstructive lesions (e.g. tumour, cysts)</td>
</tr>
</tbody>
</table>
Special investigations (continued)

- Endoscopy
  - Gold standard
- Evaluate nasal passages, nasopharynx, oropharynx, larynx and trachea
- General anaesthetic if required
- Decide on treatment
Endoscopy
Causes and classification

- Adult
- Children
- Neonatal
Causes: Adult

- Malignancy
  - Nasopharynx, oropharynx, larynx
- Laryngeal trauma
  - Post intubation
- Acute laryngitis
- Supraglottitis/epiglottitis
Causes: Examples (continued)

- Malignancy
  - Usually slow in onset
  - Progressive
  - Associated symptoms
    - Hoarseness
    - Dysphagia/odynophagia
  - Associated signs
    - Neck mass
Causes: Children (continued)

- Laryngotracheobronchitis (Croup)
- Epiglottitis
- Foreign body
- Trauma
  - Post intubation
- Retropharyngeal abscess
- Laryngeal papillomata
## Differentiating features

<table>
<thead>
<tr>
<th></th>
<th>Acute epiglottitis</th>
<th>Acute laryngotracheobronchitis</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>site</strong></td>
<td>Mainly above vocal cords</td>
<td>Mainly below vocal cords</td>
</tr>
<tr>
<td><strong>organism</strong></td>
<td>Bacterial</td>
<td>Viral</td>
</tr>
<tr>
<td><strong>incidence</strong></td>
<td>rare</td>
<td>40 × as common</td>
</tr>
<tr>
<td><strong>age</strong></td>
<td>Commonest 2-6 years</td>
<td>Commonest 6 months - 3 years</td>
</tr>
<tr>
<td><strong>progress</strong></td>
<td>dangerously rapid</td>
<td>usually less rapid</td>
</tr>
<tr>
<td><strong>position</strong></td>
<td>must sit up</td>
<td>can lie on back</td>
</tr>
<tr>
<td><strong>cough</strong></td>
<td>none, or sharp</td>
<td>croupy, like a seal</td>
</tr>
<tr>
<td><strong>stridor</strong></td>
<td>inspiratory</td>
<td>biphasic</td>
</tr>
<tr>
<td><strong>colour</strong></td>
<td>ashen pale, or grey</td>
<td>may be cyanotic</td>
</tr>
<tr>
<td><strong>breathing</strong></td>
<td>slow, keeps still</td>
<td>rapid, struggles for breath</td>
</tr>
<tr>
<td><strong>blood count</strong></td>
<td>leucocytosis</td>
<td>normal or raised white cell count, lymphocytes predominant</td>
</tr>
<tr>
<td><strong>X-ray</strong></td>
<td>thumb-like shadow of epiglottitis</td>
<td>finger-like shadow of epiglottitis</td>
</tr>
<tr>
<td><strong>recurrence</strong></td>
<td>rare</td>
<td>quite frequent</td>
</tr>
<tr>
<td><strong>behaviour</strong></td>
<td>keeps very still and concentrates on breathing</td>
<td>tends to be restless</td>
</tr>
</tbody>
</table>
Causes: Examples

- Laryngotracheobronchitis (Croup)
  - Viral infection
  - 6 months - 3 years
  - Pyrexia, barking cough
  - Stridor: Grade I-IV

- Treatment
  - Hospitalisation
  - Oxygen and adrenaline nebulisation
  - Intubation in severe cases
Epiglotitis
Causes: Examples (continued)

• Epiglottitis
  – Haemophilus influenza Group B
  – 3 years - 7 years
  – Pyrexia, severe sore throat
  – Stridor
  – Dribbling, breathing with raised chin, open mouth
  – Cherry red epiglottitis
Causes: Examples (continued)

- **Treatment**
  - **Emergency**
    - IVI antibiotics
  - **Needs intubation**
    - Small tube
    - Extubation within 48 hours
Foreign body
Prolonged intubation
Causes: Children (continued)
Causes: Children (continued)
Causes: Neonatal

- Laryngomalacia
- Congenital tumors, cysts
- Webs
- Subglottic stenosis
- Vocal cord paralysis
Laryngomalacia
Causes: Examples (continued)

- **Laryngomalacia**
  - Weak supraglottic framework
  - Self-limiting; resolves at 3 years
- **Subglottic stenosis**
  - Congenital or acquired
  - Beware after intubation
  - May need tracheostomy
Stenosis
Laryngeal web
Obstructive sleep apnoea syndrome (OSAS)

• Definitions
  – Apnoea
    • Cessation of airflow at nostrils for 10 seconds or longer
  – Apnoea index
    • Number of apnoeas per hour of sleep
  – Hypopnoea
    • Reduction in airflow associated with desaturation
  – Sleep apnoea syndrome
    • 5 or more apnoeic episodes during a hour sleep
Risk factors of OSAS

• Obesity
• Male + age
• Anatomical facial abN –nasal obstruction
  - adenotonsillar hypertrophy
  - macroglossia
  - micrognathia/retrognathia
• Family history
• Sedatives + alcohol
• Smoking
Clinical features

- Sleep fragmentation
- Daytime fatigue
- Morning headache
- Daytime somnolence
- MVA
- Poor job performance
- Depression + family discord
Complications of obstructive sleep apnoea

- Systemic hypertension
- Pulmonary hypertension
- Cor pulmonale
- Coronary artery disease
- Cardiac arrythmia
- Cerebrovascular accidents
- Polycythemia
- Increased mortality
**Special investigations**

- Sleep studies / polysomnography
- Lateral X-ray neck
- CXR, ECG
- Nasal endoscopy
- Elective intubation
Special investigations (continued)
Treatment (OSAS)

• Medical Rx:
  – Dietary modification
  – Nasopharyngeal airway
  – CPAP (continuous positive airway pressure)

• Surgical Rx:
  – Adenotonsillectomy
  – UPPP
  – Tracheostomy
Summary

• Stridor is abnormal and should be investigated
• Stridor is an emergency!!!
• Laryngeal evaluation has to be performed in all patients with stridor
• Snoring for longer than 6 months in a child is abnormal