Lecture 7

Upper airway obstruction in children

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Upper airway obstruction in children

- Is an anatomic narrowing or occlusion of the airway above the thoracic inlet (nasal cavity,pharynx ,larynx/upper trachea).

which results in a compromised ability to move air(ventilate) .

-is a potentially life-threatening emergency

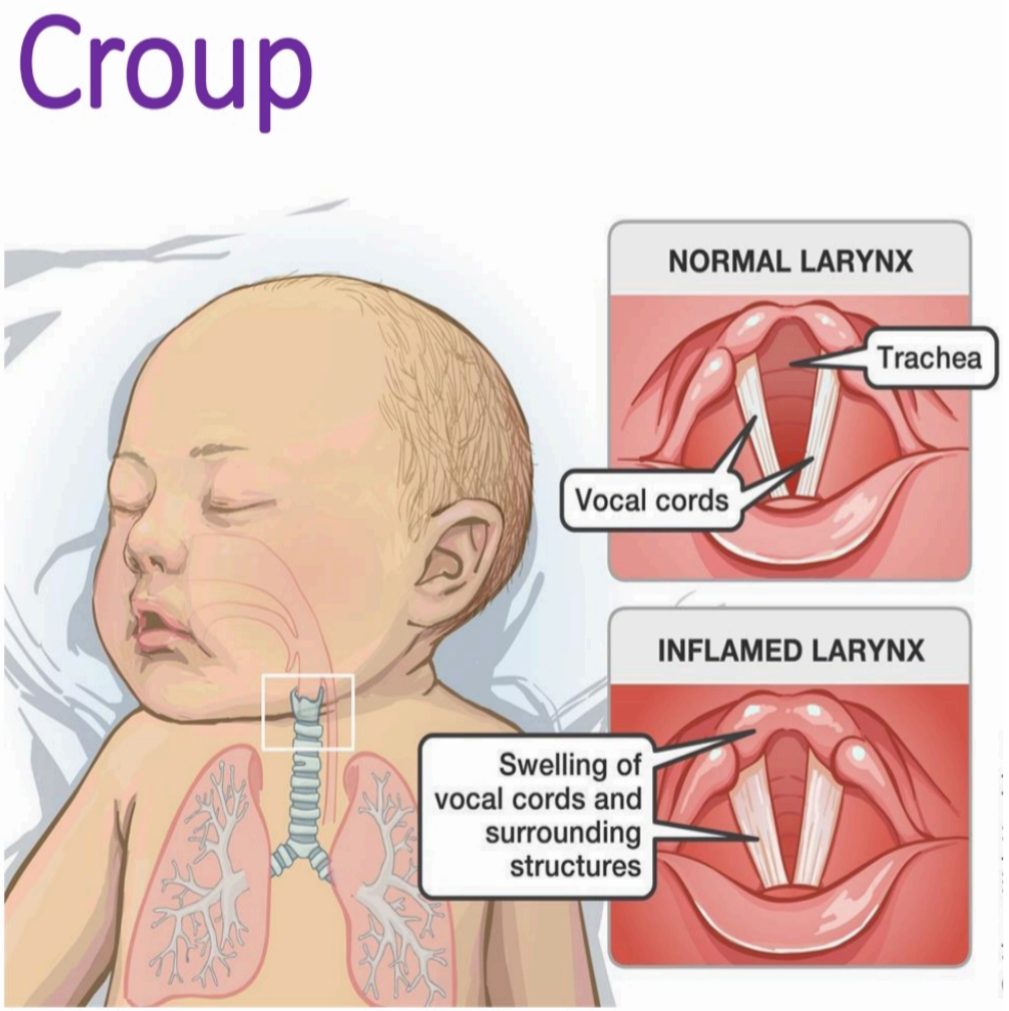
because of the smaller size of a child's airway means even a mild narrowing can lead to significant respiratory distress potentially progressing rapidly to respiratory failure and cardiorespiratory arrest.

Common causes

1] Viral infection (croup)

-This is the most frequent cause

characterized by a" barking "cough due to inflammation of the upper airway.

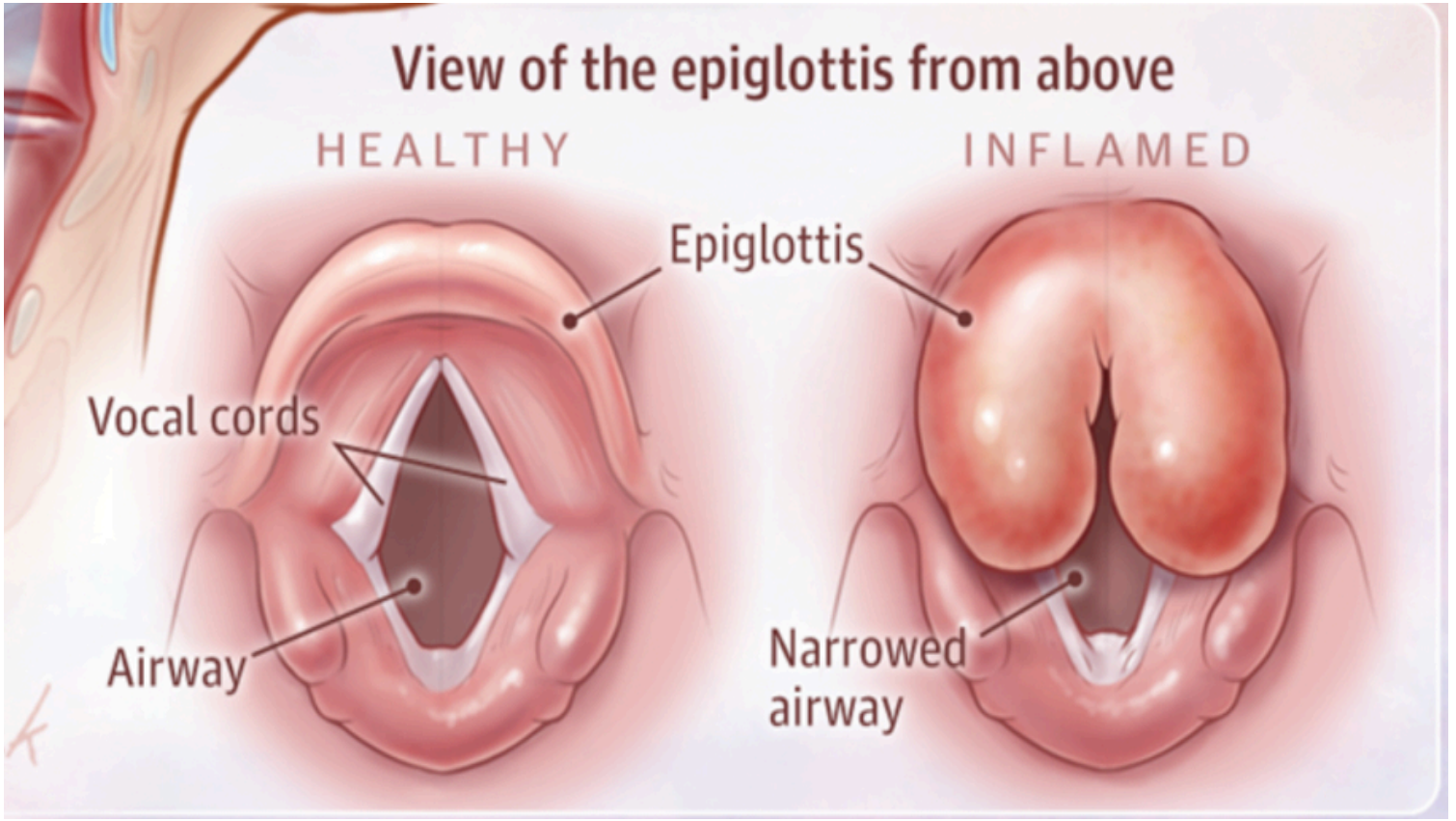


2] Foreign body aspiration

- Choking on an object like a small toy , button ,or food piece is a frequent cause especially in children under 3 years old.

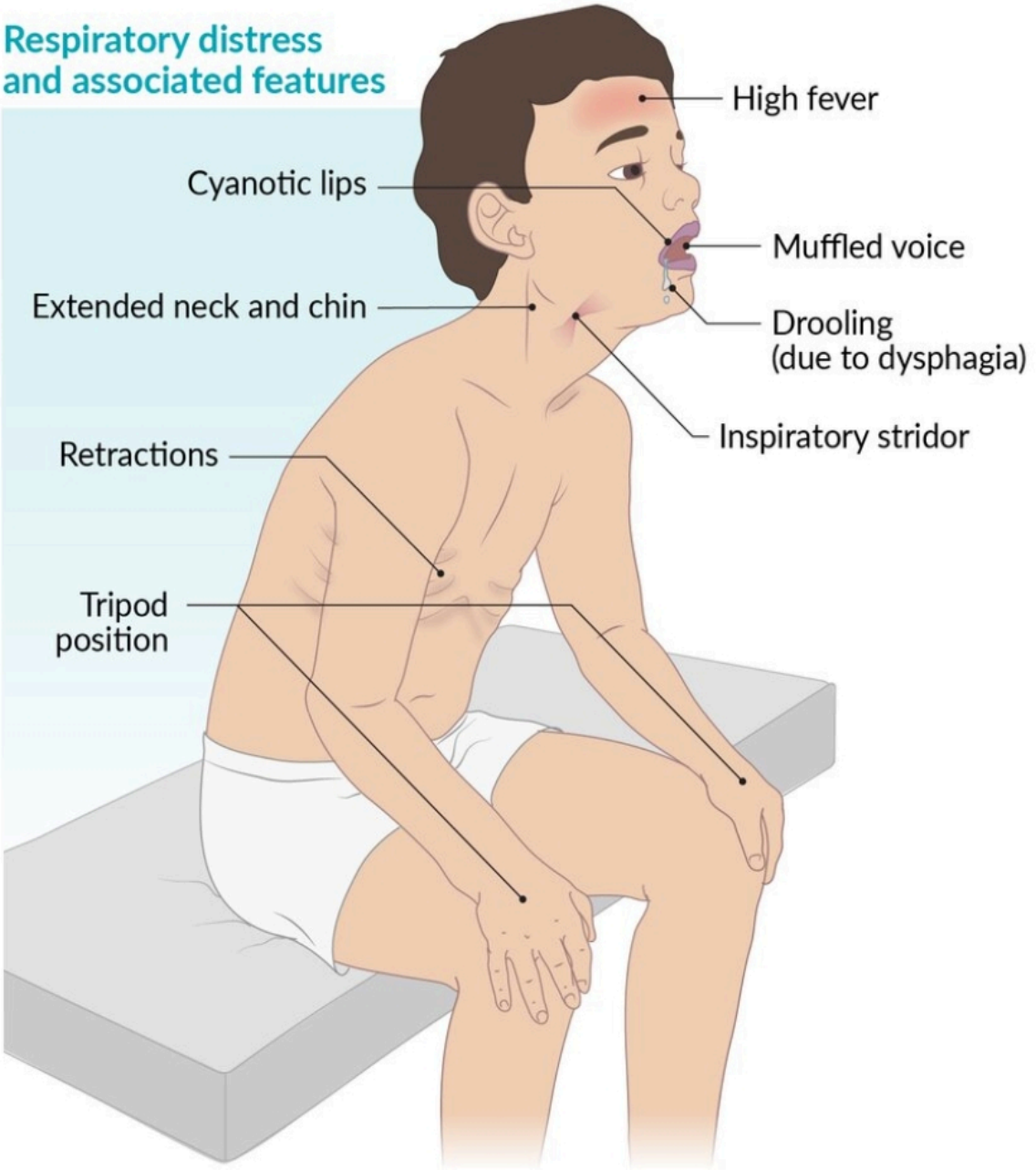
3] Bacterial infection

-such as epiglottitis(swelling of the flap that covers the windpipe)and bacterial tracheitis can cause severe obstruction.

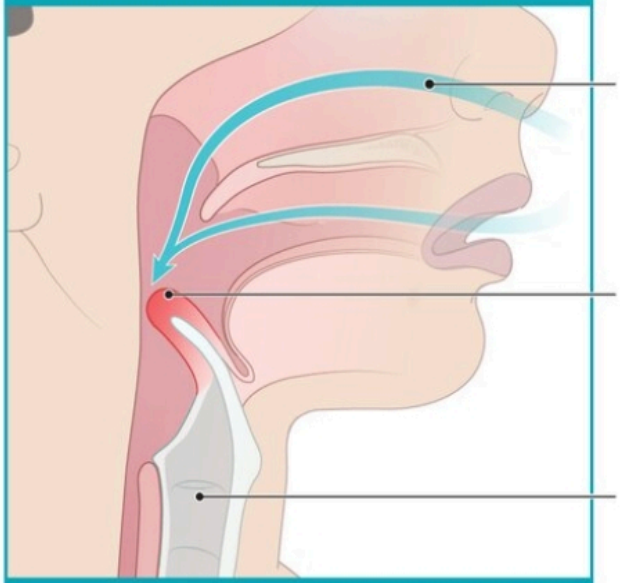


Epiglottitis

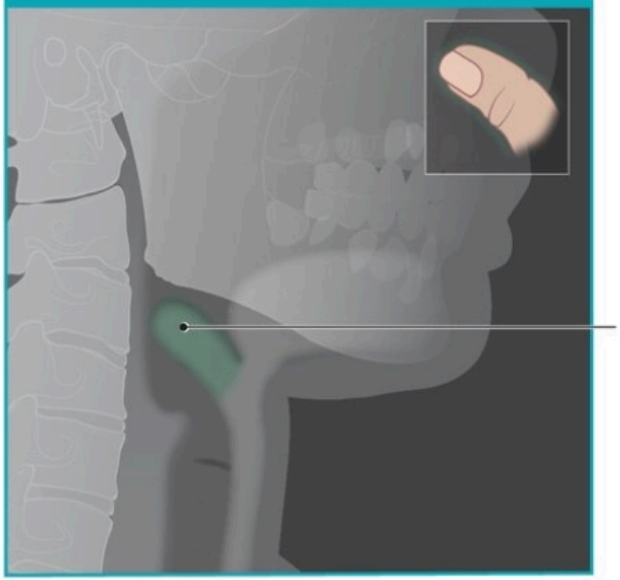
Respiratory distress and associated features



Anatomy



Lateral neck radiograph



4] Allergic reactions (anaphylaxis)

- A severe allergic reaction can cause the throat and airway to swell, obstructing breathing.

5] Other causes

1) Congenital anomalies

- Some children are born with conditions like **laryngomalacia**, which is a floppy larynx that can cause obstruction and may be worsened by acid reflux.

2) Burns

- Breathing in smoke or chemical burns to the airway can lead to swelling and obstruction.

3) Trauma :Injury to the neck or face can cause a direct injury to the airway.

Symptoms and signs of upper airways obstruction

1)Stridor :- a high-pitched ,noisy breathing sound during inhalation.

2) Increased work of breathing:

* (tachypnea) retractions

* (sucking in of skin between ribs or above the collarbone) , nasal flaring , and use of accessory muscles.

3) Changes in voice or a characteristic" barking "cough.

4) Altered behavior:

- Agitation ,anxiety ,confusion ,or lethargy (a late and worrying sign.)

5) Positioning:

-Assuming a" **tripod** " or " **sniffing** "position to maximize airflow.

6) Late/Severe signs:

- Cyanosis(bluish skin color) pallor ,decreased or absent breath sounds and a decreasing respiratory rate.

Management of upper airways obstruction

Investigations

- Children with moderate to severe upper airway obstruction are at high risk of deterioration and complete obstruction if they are upset , sedated or repositioned.

*** Investigations should be deferred until the airway is secure.**

- If IV access is required use appropriate analgesia and distraction techniques to minimise distress.
- Children with croup do not require any investigations.
- X-ray(chest and soft tissue neck)or CT may be helpful in identifying the location and nature of upper airway obstruction

* **securing the airway while minimizing the child's distress.**

1) Immediate Respiratory Support

- Allow the child to remain in a comfortable position(on a parent's lap).

- Administer oxygen to avoid respiratory distress until a definitive airway plan is in place.

2) Medications

1] Corticosteroids

- (**dexamethasone**)are standard for croup to reduce inflammation.

2] Nebulized epinephrine

- (**adrenaline**) can provide temporary relief in severe obstruction by reducing airway swelling.

3] Antibiotics

- are necessary for bacterial infections like epiglottitis ,bacterial tracheitis and abscesses. ,

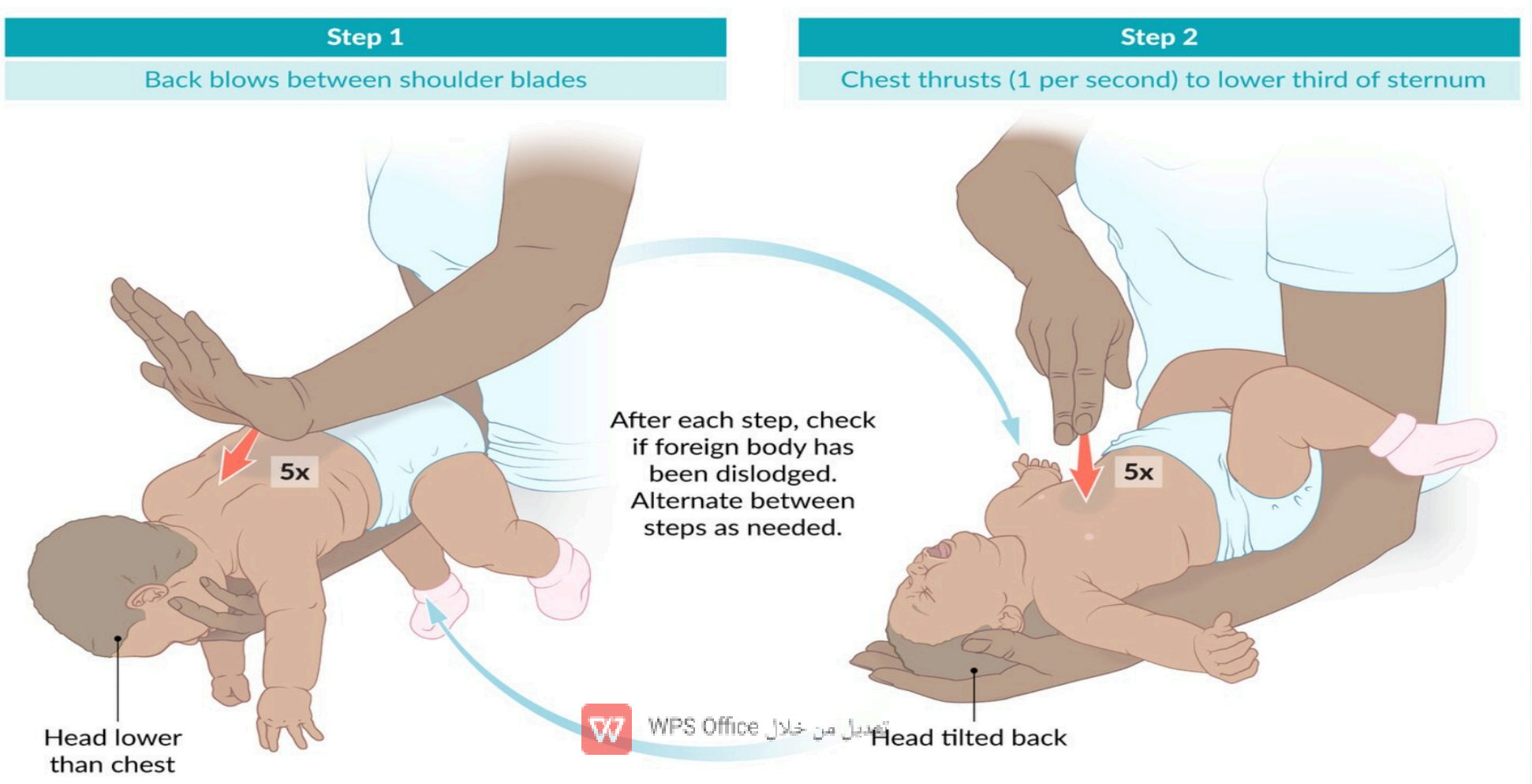
4] Antihistamines and intramuscular epinephrine

- are used for anaphylaxis.

3) Airway Interventions

1] Foreign Body Removal :If a foreign body is the cause ,specific maneuvers(back slaps/chest thrusts for infants ,abdominal thrusts for older children) may be used if there is a complete obstruction.

* **Rigid bronchoscopy in a controlled setting is the procedure of choice.**



2] Intubation/Tracheostomy:

- In cases of **severe or rapidly progressing respiratory obstruction** like(epiglottitis ,respiratory failure)emergency endotracheal intubation or tracheostomy may be required.

3] Treatment of Underlying Cause

-Definitive treatment depends on the specific diagnosis

-May involve intravenous antibiotics ,surgical drainage of an abscess , or long-term management for congenital conditions.