CASE FIVE

Short case number: 3_23_05
Category: Children and Young People
Discipline: Paediatrics Surgery
Setting: Urban_Emergency department
Topic: Infant with Stridor_Laryngomalacia

CASE

You are the intern in the emergency department when Brian and Sharon Wright bring in their 5 week old daughter Emily Jane.
They are concerned about Emily's noisy breathing, she seems to 'whistle and rattle' sometimes, it is worse when she lies flat.
She has never stopped breathing and it does not seem to be causing her any problems with feeding.

You observe that Emily is alert, pink and in no distress. She has mild stridor on inspiration, but there are no other signs of respiratory distress.

QUESTIONS

1. What are they key components of your history and examination of Emily?
2. Briefly outline the causes of stridor infants.
3. You arrange for Emily to be reviewed in the ENT clinic the following day. On follow-up with the ENT registrar you learn that Emily was diagnosed with a condition called laryngomalacia. Briefly outline the pathophysiology and natural history of this condition.

Resources

- South M, Isaacs D editors. Practical Paediatrics. 7th edition. Edinburgh: Churchill Livingstone; 2012.

Red flags in Hx?
Apnoeic episodes lasting more than 10s?
Blue lips?
Increased WoB (Intercostal recession, head bobbing etc)

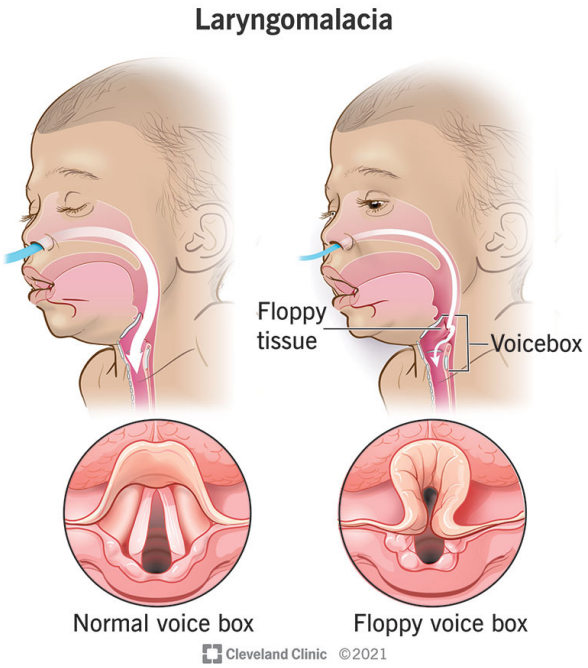
Causes of stridor infants (5)
Foreign Body
Anaphylaxis
Croup
Vocal Cord Paralysis
Laryngomalacia
Burn (inhaled smoke)
Epiglottitis

Pathophysiology and natural history of Laryngomalacia
Congenital softening of laryngeal tissues above vocal cords

Floppy larynx folds down into trachea and causes stridor

Symptoms:
- Noisy Breathing (stridor)
- Difficulty feeding & subsequent poor weight gain
- Aspiration of food into lungs
- Cyanosis & Apneas
- Reflux

Mostly self resolving by 18 months & child will feed, breath &b develop normaly
- Give PPI if reflux
- Surgery if severe and threatens airway



ANSWERS

Question 1.
What are they key components of your history and examination of Emily?

General

- Pregnancy complications
- Birth complications
- Immunisations
- Family history of congenital heart disease or other
- Allergies
- Growth centiles
- Developmental 6 month check
- PMHx : wheezing episodes, bronchiolitis etc

Specific

- Feeding details (breast or bottle/ attachment etc)
- Sleep
- Breathing difficulties
    - Stridor (intermittent, with feeding, with activity etc)
    - Wheeze
    - Increase work of breathing
- Cyanosis (permanent or intermittent – eg with bathing, crying, feeding)

Examination

- General observation and behaviour
- Measurements
- Specific examination
    - Vital signs
    - Resp system
    - Cardiovascular system
    - Genitalia
    - Head and neck (fontanelle, soft palate, ENT, eyes)
    - hydration status

<u>Respiratory system</u>
The pattern of respiration in young infants often has a large abdominal component. The chest wall is compliant so that conditions that cause reduced lung compliance or airway obstruction will more readily be manifest by indrawing of the soft tissues of the chest wall, and in more serious disease the rib cage itself may be drawn in during inspiration. The breath sounds in infants are more readily heard because of the thin chest wall and they often sound harsher on auscultation than in older children and adults. These normal differences in auscultation findings are even more pronounced in the upper parts of the right lung, sometimes leading inexperienced examiners to suspect pathology in this area in young children when in fact the breath sounds are normal for this age.

Question 2
Briefly outline the causes of stridor infants

Stridor is a prominent, audible manifestation of upper airway obstruction caused by turbulent airflow through a narrowed airway, usually the larynx or sometimes the trachea. It is most often inspiratory, sometimes expiratory and occasionally both. It suggests upper airway disease.

Differentials include:

- Laryngomalacia
- Congenital and acquired subglottic stenosis
- Vocal cord paralysis
- Laryngeal web, laryngeal atresia and laryngeal cleft are uncommon anomalies
- Acute inflammatory airway obstruction
    - *Oropharynx.* Acute bacterial or viral infection with obstructive hypertrophy of the tonsils and adenoids; infectious mononucleosis causing obstructive enlargement of the tonsils and adenoids; peritonsillar abscess; retropharyngeal or para-pharyngeal abscess and Ludwig's angina
    - *Larynx and trachea.* Acute laryngotracheobronchitis or croup; spasmodic croup; bacterial tra-cheitis; acute supraglottitis or epiglottitis (with a frighteningly rapid onset) and diphtheria. Some cases (especially patients with acute supraglottitis, epiglottitis or diphtheria) have critical, life-threatening airway obstruction, a situation that requires immediate recognition and transfer to a paediatric hospital for relief of airway obstruction, if necessary by endotracheal intubation or tracheotomy, and intensive care management
- Multiple respiratory papillomas
- Ingested and inhaled foreign bodies

Question 3
You arrange for Emily to be reviewed in the ENT clinic the following day. On follow-up with the ENT registrar you learn that Emily was diagnosed with a condition called laryngomalacia. Briefly outline the pathophysiology and natural history of this condition

This is a common cause of stridor in infants. It is also appropriately called 'floppy larynx', both names implying collapse of the supraglottic tissues during inspiration. The cause is unknown. The features are intermittent inspiratory stridor, signs of upper airway obstruction, a normal cry and general health that is usually (but not always) normal. The features are often alarming to parents. As the condition is usually self-limiting there is seldom any need for treatment once a certain diagnosis has been established to differentiate laryngomalacia from the many other causes of stridor in infants. Occasionally, severe cases warrant laser removal of part of the redundant, floppy, supraglottic tissues