DIFFICULT ASTHMA

Dr. Prathyusha
Dr. S. Balasubramanian
KKCTH
CASE SUMMARY

- 11 yr old girl, Neyveli
- Treated as moderate persistent asthma x 5 years

- On Seroflo [LABA + steroid] 250 2 puffs BD and intermittent Levosalbutamol + / - steroid x 1 yr
- recurrent EXACERBATIONS
- hospitalizations for nebulisations

- Referred here in v/o persistence of symptoms
On examination

- Afebrile
- Hacky cough
- Severe distress
- Tachypneic with suprasternal and subcostal retractions
- Severe wheeze
- SPO2 maintaining in room air
- Other systems normal
DIAGNOSIS

DIFFICULT ASTHMA
What is difficult asthma

- Children with asthma who do not have adequate control of symptoms, despite therapy with more than 800 micrograms/day of inhaled beclometasone or equivalent (e.g. 500 micrograms per day of fluticasone)
IN EMERGENCY ROOM

• Received back to back nebulisations with bronchodilators.

• Steroids

• Spo2 monitoring
Next day in rounds

- On taking history
  - No significant night symptoms
  - Significant school absenteeism
- Tachypneic
- Suprasternal and sub costal retractions
Summary

• Predominantly Inspiratory Stridor
• No night symptoms
• Symptoms - Poorly Controlled With Asthma Treatment

ALTERNATIVE DIAGNOSIS
? VOCAL CORD DYSFUNCTION
During night rounds

- Asleep
- Comfortable
- No tachypnoea / dysnoea
- No adventitious sounds
APPROACH TO DIFFICULT ASTHMA

• Reconfirm the diagnosis
• Evaluate the reasons for treatment failure
• Consider alternative diagnoses or possible precipitating factors
• Further investigations
RELOOKING into HISTORY

- No history of sleep disturbance at all.
- Exercise induced symptoms +
- No family history of asthma / atopy
- No much improvement with appropriate MDI with good technique and compliance
Spirometry

- Poor respiratory effort
- Restrictive pattern
- No evidence of obstructive pattern
Final diagnosis

VOCAL CORD DYSFUNCTION
• Reassured

• One to one counselling

• Stopped controllers

• Asymptomatic - with no ER visit x 2 months
Discussion
What is difficult asthma

- Children with asthma who do not have adequate control of symptoms, despite therapy with more than 800 micrograms/day of inhaled beclometasone or equivalent (e.g. 500 micrograms per day of fluticasone)
APPROACH TO DIFFICULT ASTHMA

• Reconfirm the diagnosis
• Evaluate the reasons for treatment failure
• Consider alternative diagnoses or possible precipitating factors
• Further investigations
Reconfirm the diagnosis

- detailed history
  - inspiratory or expiratory stridor, triggers and associated symptoms hoarseness, dysphagia, heartburn
- clinical examination
- spirometry
Reasons for treatment failure

- Drug
  - Device
  - Dose
  - Delivery
- Environmental triggers
Consider alternative diagnoses or possible precipitating factors

Infants

- **UPPER AIRWAY**
  - congenital anomalies [laryngomalacia, laryngeal angiomatosis, vocal cord paralysis]

- **LARGE AIRWAY OBSTRUCTION**
  - Tracheomalacia, bronchomalacia, tracheal stenosis, laryngeal web, vascular ring
  - Tracheal/bronchial FB

- **SMALL AIRWAY OBSTRUCTION**
  - Bronchiolitis, cystic fibrosis, bronchopulmonary dysplasia, primary ciliary dyskinesia, cardiac causes
Alternative diagnosis

Older children and adolescents

- Hyperventilation syndrome
- Upper airway obstruction - VCD, Laryngeal tumors, tracheal stenosis
- GERD
- Bronchiectasis
- Cystic fibrosis
- Chronic obstructive pulmonary disease
- Restrictive lung disease
- Endobronchial lesion
- Cardiac causes
Further investigations
- Evaluation for GERD [PH, BARIUM]
- direct laryngoscopy [anatomy of vocal cords]
- flexible bronchoscopy
- echo
- total Ig E, specific Ig E, skin prick test
VOCAL CORD DYSFUNCTION
DEFINITION

• Involuntary and inappropriate closure of vocal cords during inspiration and sometimes exhalation.

• VCD can mimic asthma, but it is a distinct disorder

• VCD may coexist with asthma

• VCD should be considered in patients with difficult-to-treat, atypical asthma and in children who have exercise related breathlessness unresponsive to asthma medication
Vocal cord irritability

VOCAL CORD DYSFUNCTION

IRRITANTS

POST NASAL DRIP

ANXIETY

GERD

EXERCISE
DIAGNOSIS

- Indirect or direct vocal cord visualization during an episode - abnormal adduction seen

- Spirometry - Variable flattening of the inspiratory flow volume loop is strongly suggestive of VCD
SPIROMETRY

- a flattened inspiratory flow volume loop, indicating an extrathoracic obstruction,

- and then a normal loop once the VCD episode has passed

- No improvement with bronchodilators
• 100 confirmed to have VCD via laryngoscopy
• Inspiratory flow volume loop was normal in the majority of confirmed VCD cases

• VCD remains difficult to predict with spirometry or flow volume loops.
• If VCD is suspected, normal flow-volume loop patterns should not influence the decision to perform laryngoscopy

Clinical and Lung Function Variables Associated with VCD
Watson et al. Respiratory Care 2009 54(4):467-473
Washington over 3 years
Treatment

• Patient education - relieves stress and anxiety
• Treat Comorbid condition
  GERD - with PPI
  Allergic rhinitis
  asthma
  Avoid triggering agents
• For exercise-induced symptoms - **inhaled Ipratropium**
  [decreases smooth muscle tone in the vocal cords.]
• **Specialized speech therapy** training in the relaxation and control of vocal cord movement
• Last and perhaps most important is to gradually **taper and discontinue** unnecessary asthma medications.
Indian Reports

• Vocal cord dysfunction presenting as recurrent acute severe asthma
  • Gupta D et al. J ASSOC PHYSICIANS INDIA, 2001 Apr, 488-9 [Chandigarh PGi]

• Vocal cord dysfunction presenting as refractory asthma
  • Suri J C et al, INDIAN J CHEST DIS ALLIED SOCIETY, 2002, 44[1], 49-52

  [15 YR old girl- required tracheostomy and psycho therapy]

• Vocal cord dysfunction masquerading as bronchial asthma
  • Hira HS. J Assoc Physicians India 2002 May, 50 [5], 712-6
Learning points

• Absence of night symptoms is unlikely in asthma

• Difficulty in treating asthma is made easy by proper history

• Methodical approach by retaking history, reexamining, reinvestigating as needed will lead to correct diagnosis and better outcome.