Chronic Lung Disease in Children

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Chronic Lung Disease in Children

- Cough, wheeze and dyspnoea
- Chest deformity
- Stunting and failure to thrive
- Clubbing
- Halitosis
- Sputum production
- Cyanosis
- Cor pulmonale
Chest deformity

- Barrel shaped chest indicates air trapping
- Horizontal groove due to pull of diaphragm on inside of rib cage found with soft bones (rickets) or long-standing lung disease
Chest deformity

Pigeon Chest (Pectus Carinatum)

CROSS SECTION OF THORAX

CLINICAL APPEARANCE

Groove

Anteriorly displaced sternum
Chest deformity
Clubbing / Trommelstokvingers
Central Cyanosis

- Blue discoloration of lips and mucosa
- Indicates insufficient oxygen carriage (>5 g/dl reduced Hb)
- Due to lung disease, cyanotic heart disease or abnormal Hb
Chronic Lung Disease in Children
Patterns of Onset

• *Chronic symptoms and signs from birth*
  Anatomical and developmental disorders
  T-O Fistulæ
  Laryngo/tracheo/bronchomalacia
  Lung cysts/ dysplasia
  Congenital lobar emphysema
  Diaphragmatic hernia
  Persisting disease after neonatal resp distress
  BPD (Chronic lung disease of infancy)
Chronic Lung Disease in Children
Patterns of Onset

• *Chronic symptoms and signs with insidious onset after normal early life*

  Immune-mediated disorders
  
  Asthma
  Interstitial disorders eg LIP

Immune deficiency disorders

Chronic or recurrent infection

Infections per se

Tuberculosis
Chronic Lung Disease in Children
Patterns of Onset

• *Chronic symptoms and signs after acute onset*
  
  Acute non-febrile onset
  
  Foreign body
  
  Inhalation injury (paraffin, smoke)
  
  Acute febrile onset
  
  Bronchiolitis obliterans
  
  Necrotising pneumonia
Chronic Lung Disease in Children
Disease Patterns

• *Relapsing symptoms with periods of apparent normality*
  Reactive airways eg asthma

• *Exacerbations of symptoms without normality inbetween*
  Episodes of febrile deterioration
    Super-imposed infection on
    Abnormal lung / Bronchiectasis
    Foreign body
    Uncontrolled asthma with acute attacks

• *Chronic persistent symptoms*
  Cough, wheeze
Cough

Forceful contraction of diaphragm and intercostal muscles against closed glottis for expulsion of air, mediated by vagus nerve

Cough arises in the airways:
- Secretions (pus, blood, pulmonary oedema fluid)
- Bronchospasm and mucosal swelling
- Physical irritants (smoke, foreign body)
- Referred stimulus eg external ear canal
- Psychogenic
Chronic lung disease: clinical categories

- Obstructive lung disease
  Mainly airway obstruction with air trapping: XRay shows high lung volume

- Restrictive lung disease
  Low lung volume, lung cannot expand

- Destructive lung disease
  Usually associated with infection and pus formation
Cystic fibrosis

- Autosomal recessive
- Chronic respiratory sx
  - Cough
  - Recurring pneumonia
  - Chronic URTI
  - Chronic airway obstr.
  - Bronchiectasis
- Pancreatic deficiency and malabsorption
- Diagnosis: Sweat Test, Gene Probe Δ508
Bronchiectasis

*Permanent destruction of bronchial wall and lung tissue due to chronic infection, follows on:*

1. Lumen obstruction eg foreign body, lymph nodes
2. Parenchymal destruction from pneumonia with tissue necrosis
3. Repeated respiratory infections with Cystic Fibrosis, malnutrition, HIV, recurrent aspiration
Bronchiectasis

- Repeatedly ill with febrile chest infections
- Clubbing and halitosis
- Discoloured sputum
- Widespread crackles and wheezes
- Progressive deterioration of lung function
- Development of pulmonary hypertension
- Management: Physio, antibiotics, bronchodilators, immunize against ‘flu, surgery in localized unilateral disease with good lung function
Bronchiectasis
Chronic wheezing

• Splinting of upper limb girdle
• Barrel chest
• Air trapping on X Ray

Causes:
• Asthma
• Bronchiolitis obliterans
• HIV-associated lung disease
Chronic lung disease

- Air trapping Right
- Diffuse nodular shadows right
- Bullae left
- Areas of consolidation
- Narrow heart shadow
Chronic lung disease
Think of Tuberculosis

- Recurrent chest infections may indicate missed opportunities for diagnosis
- Wide range of possible XR findings
- Miliary picture
- RUL consolidation
Chronic lung disease: Management

- In patients with **longstanding symptoms** consider the possibility of chronic lung disease rather than just prescribing antibiotic treatment.
- Diagnosis: XRay, TB skin test, special studies incl. sweat test, CT scan, other tests.
- Functional assessment: Lung function, $O_2$, $CO_2$.
- Airway management: bronchodilator.
- Specific therapy (anti-inflammatory etc).
- Antibiotic for infection and fever.
- Physiotherapy: postural drainage.
- Monitor for pulmonary hypertension and cor pulmonale.