Recurrent or Persistent Pneumonia

Lower Respiratory Tract

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Recurrent or Persistent Pneumonia

• Definitions
  – Recurrent pneumonia
    • more than two episodes of pneumonia in 18 months
  – Persistent pneumonia
    • symptoms that do not clear within 14 days
    • radiograph that do not revert to normal within 4-6 weeks

• Most common causes of recurrent pneumonia
  – PTB
  – foreign body aspiration
  – misdiagnosed or inappropriately treated asthma
  – HIV
  – bronchiectasis
Approach to recurrent pneumonia

• Localize disease
  – Clinical
  – X-ray
• Localized disease
  – most likely a local abnormality of a bronchus or lung parenchyma
  – common causes
    • TB (glands)
    • foreign body aspiration
    • localized bronchiectasis
  – bronchoscopy and RT of the lung usually indicated
Approach to recurrent pneumonia

• Widespread disease
  – immune compromised group
    • acquired (AIDS & NAIDS)
    • congenital immunodeficiency syndromes
  – non-immune compromised group
    • aspiration syndromes
    • abnormal cough mechanism
    • abnormal mucus clearance
    • “fragile lung” after insult
Anatomic localized illness

- Narrowed airway
  - Extrinsic compression
    - Lymph nodes
      - TB, Lymphoma, Neoplasm
    - Vascular ring
  - Bronchial wall
    - bronchomalasia, web, stricture
  - Endobronchial pathology
- Endobronchial pathology (continued)
  - foreign body, TB granuloma, neoplasm
- Congenital lung lesions
  - Bronchogenic cyst
  - Congenital lobar emphysema
  - Lung sequestration
- Focal bronchiectasis
Widespread Disease with Immunodeficiency

- Acquired
  - NAIDS
  - HIV lung illness
    - Bacterial pneumonia, TB, CMV, PCP
    - Other opportunistic infections
      - Candida albicans
      - Cryptococcus neoformans
  - LIP
  - Lymphoma / Kaposi
  - Immune suppression

- Congenital
  - B cell defects
  - T cell defects
  - Phagocyte defects
  - Complement defects
  - Combined defects
Widespread Disease with Normal Immunity

• Allergy
  – Undiagnosed asthma (mucus plugs)
  – Eosinophil pulmonary infiltrates

• Persisting lung infection - TB

• Recurrent aspiration
  – Sucking or swallowing abnormalities
  – TOF
  – GOR

• Muco-ciliary clearance defects
  – CF, Immotile cilia

• Heart lesions
  – L to R shunting with increased pulmonary blood flow

• “Fragile” lung
  – BPD, Post necrotizing pneumonitis

• Interstitial pneumonitis
Approach to the child with recurrent pneumonia

• Step one
  – careful history
  – clinical evaluation

• Step two
  – localize disease
    • clinical examination
    • CXR
  – exclude common causes
    • TB work-up
    • foreign body aspiration
    • asthma
    • HIV

• Step three
  – diagnose & treat if possible - if not
  – refer for specialist work-up & treatment
    • for localized disease
      – RT
      – bronchoscopy most likely to be done
    • for widespread illness
      – further specialist work-up depending on situation
Suppurative Lung Disease

Bronchiectasis

Lung Abscess
Bronchiectasis

• Permanent destruction of bronchial walls and lung tissue due to chronic infection

• Mechanisms
  – Bronchial lumen obstruction
    • TB glands, foreign body, pertussis
  – Parenchymal destruction from necrotizing pneumonia
    • Bacteria: staphylococci, Klebsiella, anaerobes, tuberculosis
    • Viruses: measles, adenovirus
  – Repeated respiratory infections
    • Malnourished, cystic fibrosis, generalized immunodefficiencies, aspiration pneumonia, ciliary diskinesia
Clinical Picture

• History
  – Repeated visits or admissions with lower respiratory infections
  – Productive cough
    • Activity
    • Change in position
  – Difficult in children
  – Haemoptysis rare in children
Clinical Picture

• Examination
  – Clubbing after \( \pm 1 \) year
  – Halitosis
  – Growth retarded
  – Wide spread crackles and wheezes
  – Pulmonary hypertension and cor pulmonale
Diagnosis

• Clinical picture
• Chest radiograph
  – Non specific or
  – Area of opacification that fails to resolve
  – Honey comb appearance (small cysts)
  – Widespread destruction, fibrosis and loss of volume
• Computed tomography
Differential Diagnosis

Evaluate every patient with bronchiectasis for

- Sinusitis
- Ciliary dyskinesia
- Immunodeficiency
- TB
- Asthma
- CF

- If not found, bronchoscopy for
  - Stenosis, strictures, foreign bodies, tumours
  - Bacterial cultures
Treatment

• Prevention
  – Immunization
  – Correct treatment of pneumonia
  – Correct treatment of foreign body inhalation
  – Early detection and treatment of TB

• Physiotherapy with postural drainage
Treatment

- Appropriate antibiotics
- Immunized against influenza
- Some benefit from bronchodilators

Surgery if
- Disease progression and
- Unilateral
- No pulmonary hypertension
- Adequate lung function
Lung abscess

- Abscesses follow infection with:
  - Staphylococcus aureus
  - Haemophilus influenzae
  - Klebsiella pneumoniae
  - Mycobacterium tuberculosis
  - Anaerobic infections
  - Streptococcus pneumoniae (rare)

- In children most often after aspiration of infected material
Lung abscess

• **Clinical picture**
  – Toxic, malaise
  – High swinging fever
  – Foul smelling sputum
  – Respond poorly to antibiotics
  – Amphoric breathing
  – CXR: cavity with fluid level
Treatment

• Postural drainage
• Intravenous antibiotics
  – Penicillin
  – Cloxacillin
  – Aminoglycoside
• Exclude bronchial obstruction
• Drainage