Respiratory Infections
&
Bronchopneumonia
Respiratory tract defences

- Ventilatory flow
- Cough
- Mucociliary clearance mechanisms
- Mucosal immune system
Upper respiratory tract infections

- Rhinitis
  - Rhinovirus
  - Influenza
  - Parainfluenza
  - Non-infective (allergic) rhinitis

- Sinusitis
- Pharyngitis
- Epiglottitis
- Otitis media
Laryngitis

- Most commonly upper respiratory viruses
- Diphtheria
  - \textit{C. Diphtheriae}
  - Produces a cytotoxic exotoxin
  - Causing tissue necrosis
  - Membrane cause narrow airway
BRONCHOPNEUMONIA

1. Community- Acquired pneumonia
2. Hospital – Acquired pneumonia (Nosocomial)
3. Aspiration pneumonia
4. Pneumonia in immuno-compromised patient.
Pneumonia

- Infection of pulmonary parenchyma
- Patchy or Lobular
- Exudative consolidation
- Terminal bronchiolitis
- Consolidation of Peribronchial Alveoli.
- Severity of illness = Depend on bacteria
Etiology:
- Bacterial
- Viral
- Fungal
- Protozoal
- Parasitic
<table>
<thead>
<tr>
<th>Infection Type</th>
<th>Example Pathogens</th>
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<tbody>
<tr>
<td>Mycobacterial infection</td>
<td><em>M. tuberculosis</em></td>
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<tr>
<td>Bacterial infection</td>
<td><em>Streptococcus pneumoniae</em>, <em>Staphylococcus aureus</em>, <em>Klebsiella pneumoniae</em>, <em>Pseudomonas aeruginosa</em></td>
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<tr>
<td>Viral Infection</td>
<td><em>Haemophilus influenzae</em></td>
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<tr>
<td>Fungal Infection</td>
<td><em>Pneumocystis carinii</em>, <em>Candida albican</em>, <em>Histoplasmosis</em></td>
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<td>Parasite infection</td>
<td><em>Strongyloides stercoralis</em></td>
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<tr>
<td>Protozoal infection</td>
<td><em>Toxoplasmosis</em></td>
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</table>
Bronchopneumonia may occur as a complication of some disease.

- Diphtheria
- Measles
- Whooping Cough
- Influenza
- Typhoid & Paratyphoid fever
Predisposing factors:

- Unable to clear their lungs
  - Old age
  - Physical weakness
  - Pulmonary fibrosis.

- Retention of secretions
  - Most commonly involves the lower lobes.

- Cilia not functioning
  - Hereditary dyskinesis – Kartagener Syndrome
  - Cigarette smoking
  - Gas exposure.

- Alveolar macrophages inability
  - Alcohol, Tobacco

- Bacteria grow within secretions collected in chest.
  - Chronic bronchitis
  - Cystic fibrosis
  - Malignant tumour.
Clinical manifestation:

- High Grade Fever with chills
- Cough with Purulent sputum.
- Blood-streaked mucus
- Chest pain
- Chest congestion
- Breathlessness
Pathological description of pneumonia

A  Bronchopneumonia

B  Lobar pneumonia

Pathogenesis:
- Initial terminal bronchiolitis
- Patchy consolidation of Peribronchial tissue.
- Bronchioles are plugged by the swollen mucosa and their secretion.
- Air cannot enter the alveoli.
- Imprisoned air in the alveoli is absorbed Causing collapse of the alveoli.
- Surrounded areas of compensatory emphysema.
- Congestion, Collapse and Emphysema
- Resolution of the exudate usually restores normal lung structure.
- May result in fibrous scarring in some cases.
- Aggressive disease may produce abscesses.
Complications:

1. Pulmonary fibrosis
2. Bronchiectasis
3. Lung abscess
4. Empyema
5. Bacteraemia with abscess in other organs
Diagnosis

- Medical history and physical examination
- Complete Blood Count
- Chest X-ray
- Sputum for culture & sensitivity
- CT scan
- Pleural fluid culture
Pneumonic Patch In X-Ray
Treatment

- Antibiotics.
  - Tetracyclines
  - Fluoroquinolones = Levofloxazine, Gatifloxacin, Ciprofloxacin, Ofloxacin
  - Cephalosporins = Cefriaxone, Cefixime, Cefoperazone
  - Vancomycin
  - Macrolides = Azithromycin, Erythromycin, Clarithromycin
  - Penicillins

- Additional pharmaceutical intervention
  - Antitussive
  - Expectorant
  - Cough suppressants
  - Pain relievers
  - Fever reducers, such as Acetaminophen or Paracetamol
  - In severe cases, oxygen therapy and artificial ventilation may be required.
ANTITUSSIVE = CODEINE

- Decreases sensitivity of center for cough
- Suppression of irritating non-productive cough
- Potentiation of suppressive effect of other CNS drugs
- With opioid analgetics – deepening depression of CNS and breathing center

Other Anti-tiltive

Etymorphine = derivate of morphine similar to codeine,
Dextromethorphan
EXpectorants

Mucolytics and secretolytics – lower viscosity of mucus

BROMHEXINE
- Reduces its viscosity
- Promotes secretion of mucus
- Improves ciliary function

AMBROXOL
N-ACETYLCYSTEINE
Thank You!