Pneumonia

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General Considerations

• Definition – inflammatory process of infectious origin affecting lung parenchyma
• Signs & Symptoms: fever, chills, productive cough, blood tinged or rusty sputum, pleuritic chest pain, hypoxia with SOB and sometimes cyanosis.
• If bacterial in origin: FBE - neutrophilic leucocytosis with increase in band forms ("left shift").
Morphological Types

• 3 morphological & clinical patterns recognised.
• Lobar pneumonia
• Bronchopneumonia
• Interstitial pneumonia
Lobar Pneumonia

• *Streptococcus pneumoniae* is frequent causative agent.

• Characterised by: intra-alveolar exudate & may involve an entire lobe hence “lobar pneumonia”.

• Natural history: morphologically evolve through 4 stages: congestion, red hepatization, grey hepatization & resolution.
Bronchopneumonia

- Caused by wide variety of agents: *S.aureus*, *H.influenzae*, *K.pneumoniae*, *S.pyogenes*.
- Characterised by: patchy distribution involving 1 or more lobes, with inflammatory infiltrate extending from bronchioles into adjacent alveoli.
Bronchopneumonia vs Lobar Pneumonia

Patchy consolidation

Grey hepatisation: uniformly consolidated
Interstitial (primary atypical) pneumonia

• Most frequently caused by viruses or *mycoplasma pneumoniae*.
• Characterised by: diffuse, patchy inflammation localised to interstitial areas of alveolar walls. Distribution involving 1 or more lobes.
  – No exudate in alveolar spaces.
  – There is intra-alveolar hyaline membranes but no exudate in alveolar spaces.
Mycoplasma pneumonia

• Most common form of interstitial pneumonia
• Commonly occurs in children & young adults. May occur in epidemics.
• Insidious onset compared to bacterial pneumonia.
• Usually follows mild, self-limiting course.
Viral pneumonia

- Most common form of pneumonia in children.
- *Influenzae* viruses is common causative agent.
- Other virus: *adenovirus, rhinovirus, respiratory syncytial virus*.
- May also occur after measles, varicella.
- Measles virus produces giant cell pneumonia and complicated by tracheobronchitis.
Other forms of pneumonia

• Rickettsial pneumonia: Q fever is the common form.
• Caused by Coxiella burnetti.
• Affects people working with infected cattle or sheep who inhale dust particles containing the organism
• Also from drinking unpasteurised milk from infected animals.
Other forms of pneumonia

• Ornithosis (psittacosis): caused by *Chlamydia* species.
• Transmitted by inhalation of dried excreta of infected birds.
Pneumocystis jirovecii (carinii) pneumonia

- Most common opportunistic infection in AIDS patients.
- Caused by *Pneumocystis jiroveci*, a fungus.
- Diagnosed by identifying the organisms in biopsy or bronchial washings.
Hospital Acquired Pneumonias

• Often fatal
• Occur in chronic bed ridden hospitalised patients.
• Gram negative organisms common causative agents and include: *Klebsiella, Pseudomonas aeruginosa* and *E.coli*.
• Endotoxin plays important role contributing to its high mortality.
Study Guide

• Define and describe the morphological changes occurring in:
  – Congestion
  – Red hepatization
  – Grey hepatization
  – Resolution

• *Hint: focus on gross anatomical and microscopic pathological changes.*

• Compare & contrast lobar pneumonia, bronchopneumonia & interstitial pneumonia

• Reference: Robins Pathological Basis of Diseases.
References
Robins Pathologic Basis of Disease 6th & 7th Ed

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