

# 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

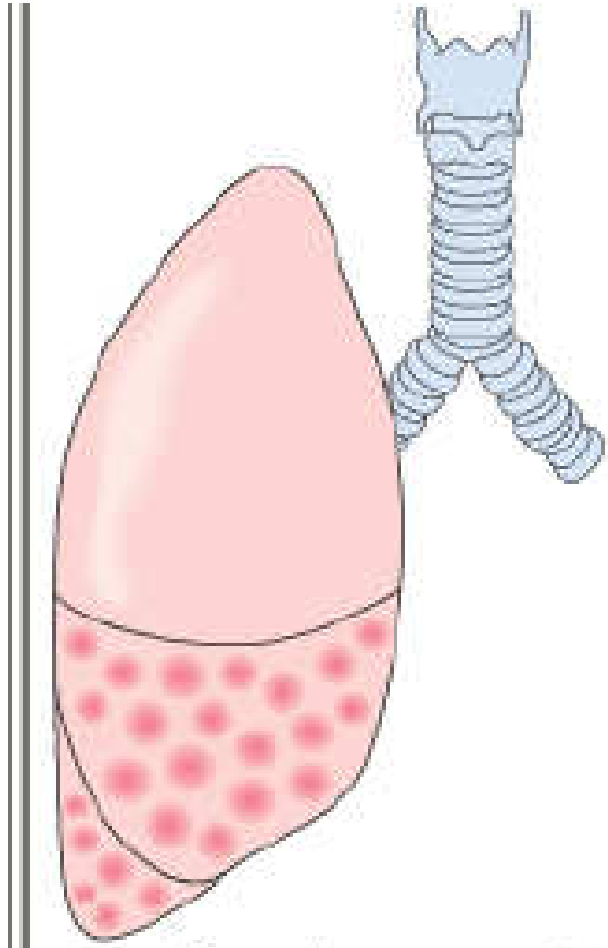
- 3 morphological & clinical patterns recognised.
- Lobar pneumonia
- Bronchopneumonia
- Interstitial pneumonia

# Lobar Pneumonia

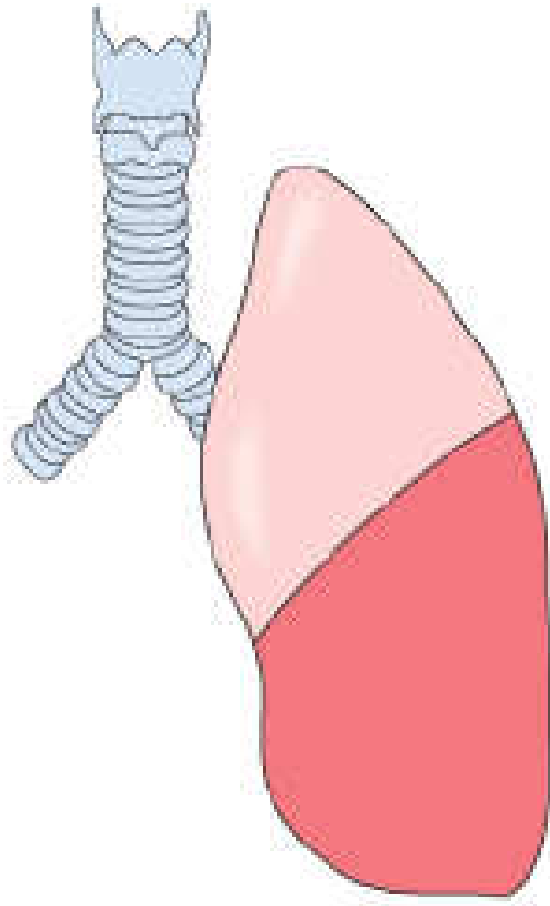
- *Streptococcus pneumoniae* is frequent causative agent.
- Characterised by: intra-alveolar exudate & may involve an entire lobe hence “lobar pneumonia”.
- Natural history: morphologically evolve through 4 stages: congestion, red hepatization, grey hepatization & resolution.

# 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



Lobar pneumonia

# Bronchopneumonia vs Lobar Pneumonia



Patchy consolidation



Grey hepatization: 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 organism 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.

**END**

### References

Robins Pathologic Basis of Disease 6<sup>th</sup> & 7<sup>th</sup> Ed

Download PDF copy of notes at:

[www.pathologyatsmhs.wordpress.com](http://www.pathologyatsmhs.wordpress.com)