

Pneumonia

- Infection of the lung parenchyma (alveoli) by pathogenic microorganisms
- 3 types
 - Community acquired pneumonia CAP (Strep pneumonia is the most common)
 - Nosocomial acquired pneumonia NAP (MRSA and resistance gram negative bacteria are common)
 - ◆ Hospital acquired pneumonia HAP
 - ◆ mild moderate pneumonia : enterobacteriaceae
 - ◆ severe pneumonia : Pseudomonas aeruginosa
 - ◆ Recent abdominal surgery or witnessed aspiration : Anaerobes
 - ◆ Ventilator associated pneumonia VAP : Pseudomonas
- 7th leading cause of death in the US
- Differs from inflammation of the lung parenchyma which is called Pneumonitis (immune mediated causes by radiation or drugs .. NOT infection)
- Differs from bronchitis and bronchiolitis which are self limited and from Empyema which is purulent exudate in the pleural cavity
- Atypical Pneumonia :
 - caused by atypical organisms that dont usually cause pneumonia like mycoplasma and Legionella
 - have different radiological imaging (normally lobar consolidation but these show bilateral infiltration)
 - might have extrapulmonary manifestations
 - culturing is difficult so they require serology
- Route of admission
 - Aspiration : oropharyngeal or nasopharyngeal secretions leak to the respiratory tract (most common route)
 - Inhalation
 - hematological spread
 - direct extension from adjacent infected foci
- mechanisms in the airways prevent adherence and colonization by potential bacterial pathogens
 - Epithelial cells synthesize and secrete peptides called Defensins and Cathelicidins that are antimicrobial
 - Pulmonary surfactant proteins A and C can inhibit bacterial binding to host cells and also promote phagocytosis of selected bacteria
 - The presence of IgA
- Symptoms

- Fever
- altered general well being
- respiratory symptoms : cough / purulent sputum production / dyspnea / pleuritic pain / hemoptysis
- Extrapulmonary manifestations of mycoplasma : Erythema Multiform / aseptic meningitis / encephalitis / uveitis / myocarditis / cold agglutinin hemolytic anemia
- Extrapulmonary manifestations of Legionella : confusion / headache / fever / diarrhea / abdominal cramps / proteinuria / haematuria / hyponatremia / seizure / splenomegaly / reduced WBCs in general
 - Water and air conditioning systems are their natural reservoirs
- Physical Examination of Consolidation
 - Increased tactile vocal fremitus on affected side
 - Dullness
 - decreased chest expansion
 - Bronchial breath sounds
 - bronchophony
 - crackles
- Diagnosis
 - Lab tests : Chest Xray / CT / CBC / ABGs / CRP / ESR / Procalcitonin (increases in bacterial pneumonial infections)
 - sputum and blood culture
 - bronchoscopy
 - serologies
 - PCR
 - antigen detection
 - ◆ Urine Legionella Pneumophila test : detect Legionella serogroup A
 - ◆ Strep Pneumococcal Urine test
- CRP and Procalcitonin levels change rapidly (reliable in studying the progress of the disease) but ESR need time to go back to normal)
- Typical Chest Xray : Consolidation : dense white area that covers underlying lung structures (pus and fluid inside the alveoli) and has dark lines called air bronchogram (air)
- Complications
 - CVS : acute coronary syndrome / arrhythmias / failure
 - Acute kidney injury
 - delirium and strokes
 - hyper or hypoglycemia

- adrenal or thyroid insufficiency
- Scoring System : Curb 65 severity index
 - Confusion
 - Urea
 - Respiratory rate > 30
 - Blood Pressure below 90 for systole and 60 for diastole
 - age > 65
- Treatment

