Community-acquired Pneumonia

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Community-acquired Pneumonia (CAP): pneumonia acquired outside hospital or healthcare facilities. CAP is characterised by a group of signs and symptoms related to lower respiratory tract infection with the presence of fever >38ºC.

Causes:

- Causative organisms: Streptococcus pneuomniae, Staphylococcus aureus, Haemophilus inluenzae, parainfluenza
- Spread via respiratory route - from host to host
- Spread via haematogenous route - from another infection with the same pathogen

Pathophysiology:

- Congestion stage (between days 1-2) - Blood vessels + alveoli fill with excess fluid
- Red hepatitisation (between days 3-4) - Exudate fills air spaces → alveolar capillaries engorged with blood
- Grey hepatitisation (between days 5-7) - Lungs remain firm but no colour changes → red blood cells in exudate start to break down
- Resolution (At approx. day 8 and can continue for 3 weeks) - Exudate digested by enzymes + ingested by macrophages
- Complications: Meningitis, pleural effusions, sepsis

Presentation

- High fever
- Cough with increased mucopurulent sputum
- Haemoptysis
- Pleuritic chest pain
- Tachycardia + tachypnoea
- Crepitation upon palpation of chest
- Dullness upon percussion of chest

Diagnosis

- CURB-65 - a clinical prediction rule that grades the severity of CAP in terms of 30-day mortality
- Chest x-ray - presence of interstitial infiltrates, consolidation +/- pleural effusion
- ABG - hypoxemia
- Complete blood count - elevated leukocytes
- Urinalysis - positive for Streptococcus pneumoniae
- Elevated CRP - indicates active infection
- Sputum sample - Gram stain and culture of sputum +/- PCR testing

Management

Rehabilitation:

- Intermittent positive pressure breathing +/- humidification - aids airways secretion clearance
- Modified postural drainage - effect of gravity facilitates removal of excess bronchial secretions from specific lobes and segments of the lungs
- Early mobilisation of the patient - once medically safe to tolerate exercise - involves bed exercises, sit to stands, walking - improves ventilation and mobilised secretions
- Teach Active Cycle of Breathing Technique- breathing control may alleviate episodes of dyspnoea - thoracic expansion exercises enhance the recruitment of alveoli - inspiratory breath-hold improves collateral ventilation of collapsed alveoli - forced expiration technique/huff used to move secretions, mobilised by thoracic expansion exercises, downstream towards the mouth

Medical: Empirical antibiotics, supplemental oxygen, fluids, antipyretic medication, cough suppressant medication, vaccine against pneumococcus (Pneumovax)

Want to learn more?

With AcePhysio the learning journey doesn't stop here! Take a look at our further reading recommendations below to become an expert in Community-acquired pneumonia:

1. Yang M, Yan Y, Yin X, Wang BY, Wu T, Liu GJ, Dong BR. Chest physiotherapy for pneumonia in adults. Cochrane Database of Systematic Reviews 2013, Issue 2. Art. No.: CD006338.
2. Alcón A, Fàbregas N, Torres A. Pathophysiology of pneumonia. Clin Chest Med. 2005 Mar;26(1):39-46.
3. Lewis LK, Williams MT, Olds TS. The active cycle of breathing technique: a systematic review and meta-analysis. Respir Med. 2012 Feb;106(2):155-72.