

Introduction to Disorders of the pleura

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Outline

- ▶ Anatomy of the pleura
 - ▶ Morphogenesis
 - ▶ Morphology
 - ▶ Histology
- ▶ Physiology
- ▶ Pleurisy
- ▶ Pleural effusions, pneumothorax
- ▶ Tumours of the pleura

Pleurisy

- ▶ Chest pain due to inflammation of the surfaces of the pleura
- ▶ The pain originates from the parietal pleura

▶ Aetiology

- ▶ Infections (viral, bacterial, TB, parapneumonic effusion)
- ▶ Neoplasm
- ▶ Inflammation (RA, SLE)
- ▶ Metabolic (uraemia)
- ▶ Toxins (asbestos, drugs)
- ▶ Cardiovascular (MI, pericarditis, PE)
- ▶ Others (pancreatitis, sickle cell crisis)

Drugs that cause pleurisy and pleuritic chest pain

 <http://www.pneumotox.com/>

Presentation

- ▶ Chest pain intensified by deep inspiration and movement of the chest
- ▶ Shallow breathing may give a sensation of breathlessness
- ▶ Pleural friction rub

D/D

- ▶ Rib fracture
- ▶ Local muscle pain
- ▶ Costocondritis
- ▶ Pericarditis

Investigations - CXR

▶ Normal CXR

- ▶ PE
- ▶ Viral pleurisy (Bornholm disease - epidemic pleurodynia)
- ▶ Serositis (SLE, RA)
- ▶ Uraemia
- ▶ SCD crisis
- ▶ Dressler's syndrome - post myocardial infarction

▶ Abnormal CXR

- ▶ Pleural effusion
- ▶ Underlying parenchyma disease

Treatment

- ▶ Symptomatic
 - ▶ Analgesia
- ▶ Specific
 - ▶ Treatment of underlying disease

Pleural effusion

- ▶ Abnormal accumulation of fluid in the pleural space
- ▶ Detected radiologically if at least 200 ml and clinically if >500 ml

Pathogenic mechanisms

1. Altered permeability of the pleural membranes
2. Reduced intravascular oncotic pressure
3. Increased pleural fluid oncotic pressure
4. Increased intra-pleural pressure
5. Increased hydrostatic pressure in pleural capillaries
6. Lymphatic obstruction
7. Pulmonary oedema

Pathophysiology

- ▶ Restricted ventilation proportional to the size of the effusion
- ▶ Minimal hypoxia in mild to moderate effusions
- ▶ Haemodynamic compromise - large effusions
 - ▶ Reduction in venous return and CO

Classification

- ▶ By physicochemical characteristics
- ▶ Serous - hydrothorax
- ▶ Blood - haemorrhax
- ▶ Lipids - chylothorax
- ▶ Pus - empyema
- ▶ Lights criteria
- ▶ Pleural fluid protein: serum protein $>.5$
- ▶ Pleural LDH: serum LDH $>.6$
- ▶ Pleural LDH $>2/3$ of normal serum LDH

Exudative effusions

- ▶ Infections - pneumonia, TB
- ▶ Malignancies
- ▶ Collagen vascular disease (SLE, sjogren)
- ▶ GI disease (pancreatitis, pancreatic pseudocyst)

Trans-exudative

- ▶ Hypothyroidism
- ▶ Pulmonary embolism
- ▶ Trapped lung

Transudate

- ▶ CHF
- ▶ Constrictive pericarditis
- ▶ SVC obstruction
- ▶ Hypoalbuminaemia
- ▶ Ascites
- ▶ Peritoneal dialysis

Diagnosis

- ▶ Pleural effusion is usually often identified and part of underlying disease process
- ▶ Specific signs include:
 - ▶ Dullness to percussion
 - ▶ Decreased fremitus
 - ▶ Absent or marked reduced breath sounds
 - ▶ Reduced aegophony

Evaluating

- ▶ Radiography
- ▶ Thoracentesis
- ▶ Thoracoscopy
- ▶ Thoracotomy

Thoracentesis

- ▶ Preferred size of effusion before thoracentesis
 - ▶ >10 mm wide in the lateral decubitus view
- ▶ Examination
 - ▶ Pus - empyema
 - ▶ Putrid - infection
 - ▶ High viscous - mesothelioma
 - ▶ Chocolate sauce or anchovy paste - ALA
 - ▶ Chylous

Serosanguinous

- ▶ The
- ▶ Malignancy
- ▶ PE
- ▶ Oesophageal rupture
- ▶ Pancreatitis

Cytology

- ▶ Staining after centrifugation
- ▶ Total white blood cell count (parapneumonia)
- ▶ Total red blood cell count (high in malignancy and TB)
- ▶ PCV (above 1/5 that of periphery then it is frank bleeding)
- ▶ Biochemical - glucose, total protein and albumin, LDH, pH (low = systemic acidosis, infection, malignancy, <7.30 RA, hypoglycaemia; normal in HF; high =)

Management

- ▶ Treat underlying cause
- ▶ Evacuation, underwater sill drainage