

Definitions

Accumulation of fluid between pleura > normal (20-30ml). May be classified as exudates (\uparrow capillaries permeability) or transudates (\uparrow capillary pressure). Protein > 30g/L usually = exudate. Using Light's criteria for LDH may help if unsure: (Also has criteria for cholesterol & albumin)

- Pleural fluid : serum protein ratio > 0.5
- Pleural fluid : serum LDH > 0.6 (some suggest 0.664)
- Pleural LDH > $\frac{2}{3}$ upper limit of normal for serum LDH

Haemothorax

Bloody effusion with haematocrit > 25%.

Causes: Trauma, iatrogenic, spont. pneumothorax (small)

Chylothorax

Milky/turbid appearance. From thoracic duct leak.

Causes: Congenital, lymphoma, lung Ca, trauma, mediastinal fibrosis, TB, sarcoid, cirrhosis, amyloidosis, (Pseudochylothorax causes: TB, RA, poorly treated empyema)

Inv: pleural fluid \rightarrow TG & cholesterol levels, micro for cholesterol crystals and chylomicrons.

Exudates

Causes:

- Common causes:
 - Malignancy - most commonly lung, breast, lymphoma, GIT, GUT
 - Pneumonia or parapneumonic effusions
 - Transient and self-limiting effusion is common after CABG
- Less common causes:
 - TB
 - Pulmonary infarction- usually from embolism
 - Autoimmune disease, especially rheumatoid arthritis, SLE
 - Pancreatitis [left-sided]
 - Dressler's syndrome
 - Asbestosis may cause a small, benign effusion
 - Intra-abdominal (liver) abscess [right-sided]
- Rarer causes:
 - Yellow nail syndrome
 - Drugs e.g. methotrexate, amiodarone, nitrofurantoin and phenytoin
 - Fungal infections

Empyema

Infected collection or pus. May be loculated or \rightarrow fibrothorax.

Fluid: pH < 7.2, glu < 2.2mmol/L, WCC > 100,000/mm³.

Mx: Requires drainage by ICC or thoracoscopy. SK 25,000IU/24h via ICC may help break down pleural adhesions & \uparrow drainage.

Transudates

Causes:

- Most common causes:
 - CCF (may become exudate after diuresis) [right-sided]
 - Cirrhosis, especially with hypoalbuminaemia
 - PE
 - Peritoneal dialysis
- Less common causes:
 - Acquired hypothyroidism
 - Nephrotic syndrome with hypoalbuminaemia
 - Mitral stenosis
- Rarer causes:
 - Superior vena cava obstruction, usually due to lung cancer
 - Constrictive pericarditis
 - Ovarian hyperstimulation
 - Meig's syndrome [right-sided]

Presentation

History: May be asymptomatic unless large or malignant. SOB/SOBOE, cough and (pleuritic) pain. Loss of weight, smoking and haemoptysis suggest lung cancer.

Examination: Note loss of weight, clubbing (lung cancer, cirrhosis, or empyema). Resp distress. If unilateral may be reduced ipsilateral chest wall excursion ± trachea deviation away from effusion (if >1L). "stony" dullness on percussion. Breath sounds are diminished or absent over an effusion. Aegophony above an effusion.

Investigations:

CXR: ~250ml of fluid to be visible on a PA, 50ml for costophrenic blunting on lateral.

USS: to assess the volume of fluid or ?loculated.

CT+contrast:

Blood: FBC (↑WCC common in Ca & TB), U&E, LFTs, glucose, LDH,

ECG and Echocardiography: if ?CCF

Pleural aspiration: Send for culture (in bld cult bottles) protein, LDH, pH (low=infection), glucose (lowest in RA, empyema), Gram stain, ZN stain, cytology and microbiological culture including Lowenstein Jenson slope for TB. If bloody (Hct 1-20% → Ca, PE or trauma).

Pleural biopsy if performed send for TB culture & usual path/cytology

Thoracoscopy if diagnosis still in doubt.

Bronchoscopy if ?bronchial obstruction.

Management

General: Treat underlying disease.

Thoracentesis: For Dx/relief. Avoid in bilat effusion with CCF (transudate), small effusions w/o resp. probs., or ↑bleeding risk. Care in mesothelioma: up to 40% → malig spread along needletrack. USS useful. Limit to 1-1.5L as can → APO. Cx: pneumothorax, visceral injury.

Chest tube drainage: If large non-transudate e.g. haemothorax, chylothorax, empyema

Pleurodesis: If recurrent (esp malignant effusions) - sclerosing agents include tetracycline, talc, bleomycin and doxycycline.

Pleurectomy

Prognosis Dependent on cause. Malignant effusion has 1yr median survival.