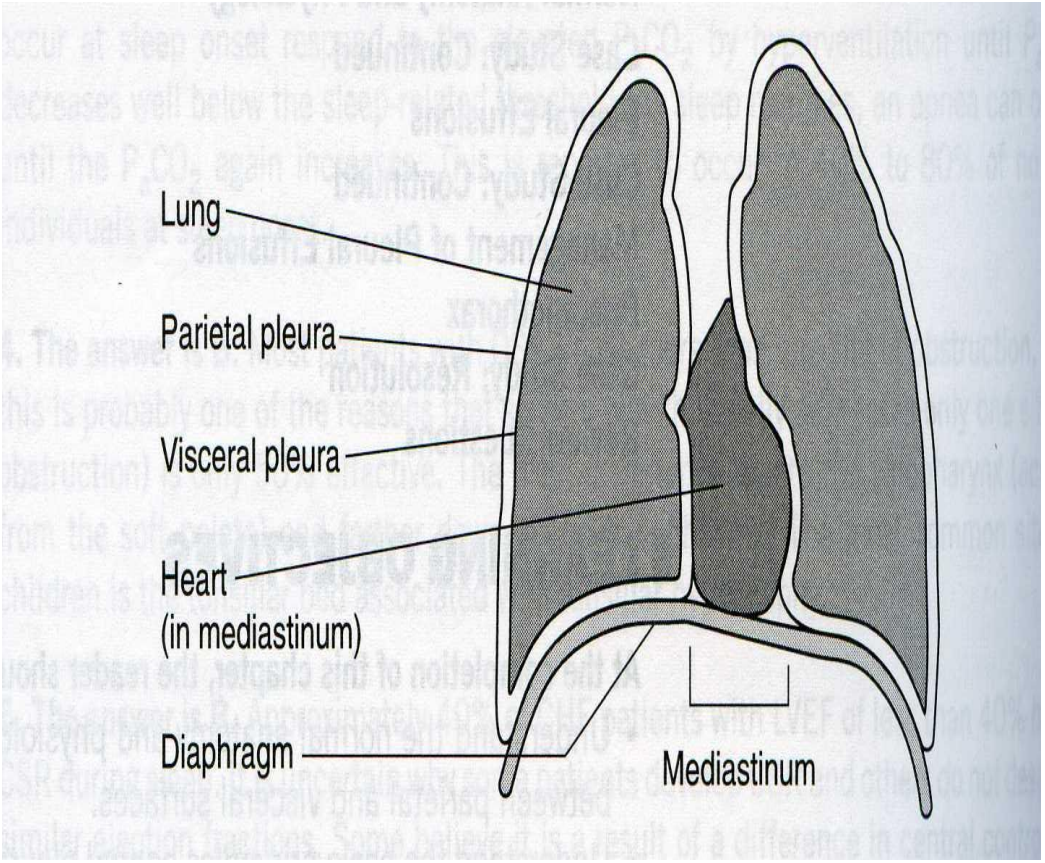
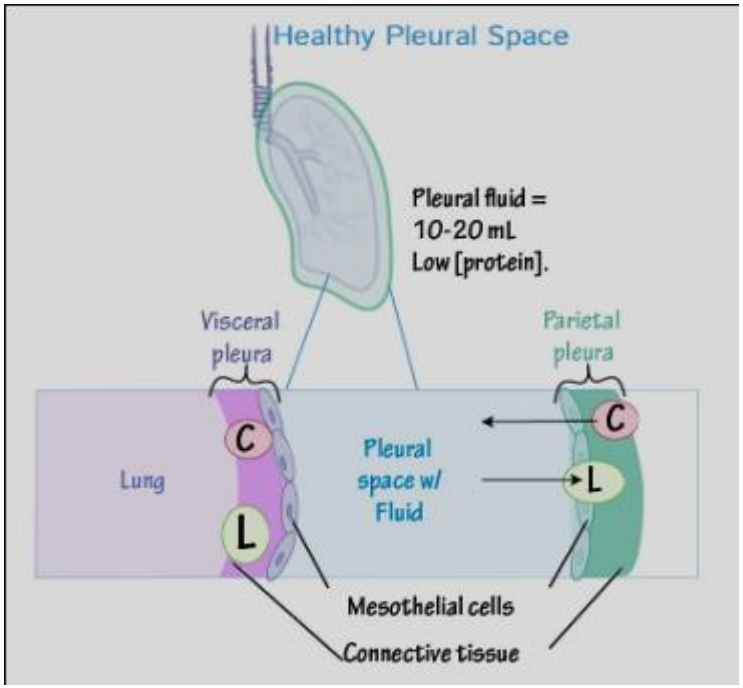
# Diseases of the Pleura



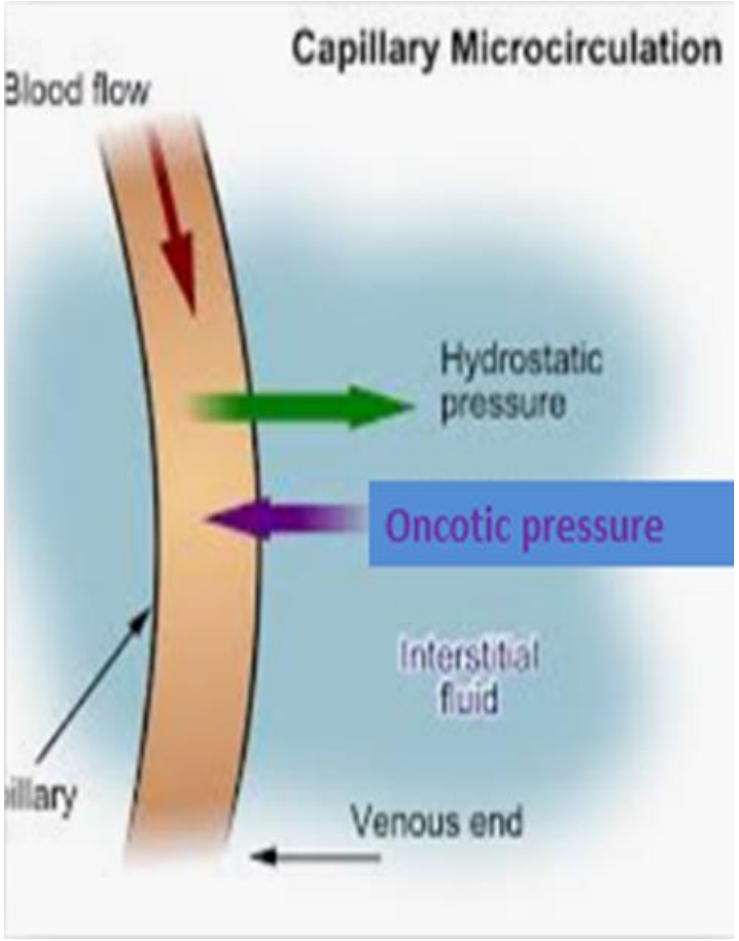
# Pleural effusion

- Definition : Accumulation of fluid in the pleural space.



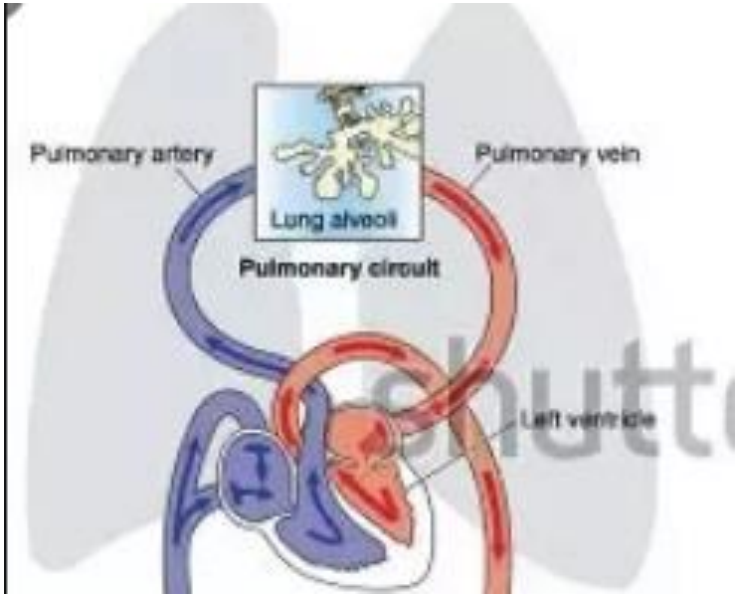
# Principles of movment of fluids in microcirculation

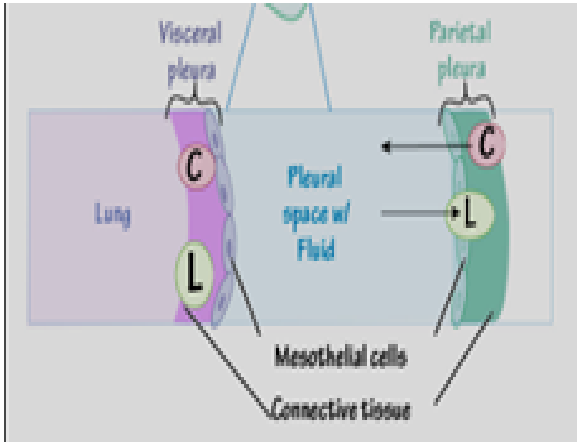
- Fluid moves from high hydrostatic pressure to low hyrostatic pressure.
- Fluids move from low oncotic pressure to high oncotic prssure



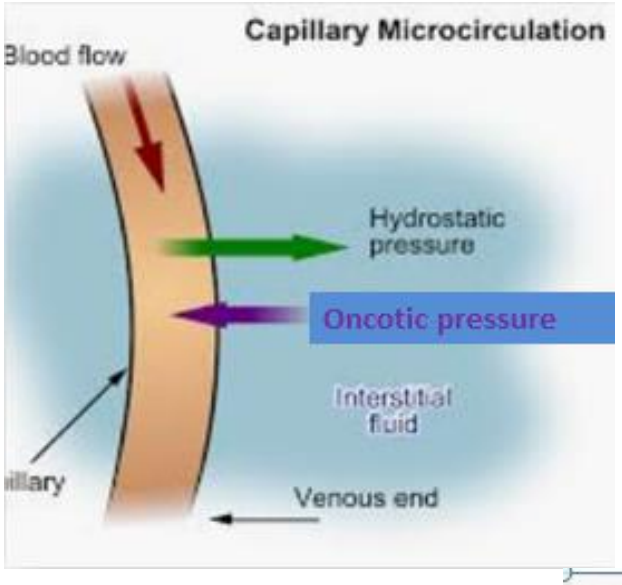
# What are the mechanisms responsible for the clinical accumulation of pleural fluid?

1- An increase in hydrostatic pressure in the LUNG  microvascular circulation .



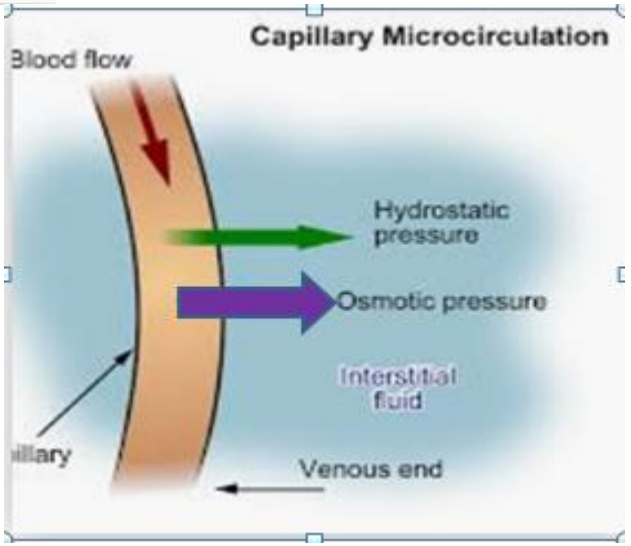



# What are the mechanisms responsible for the clinical accumulation of pleural fluid?



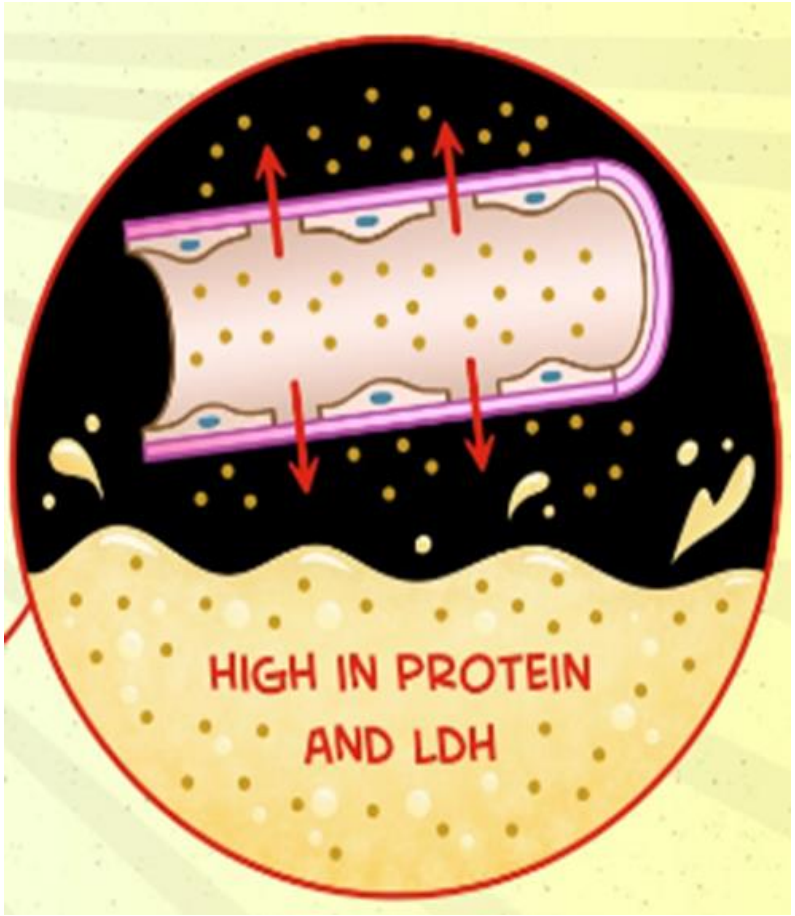

**Normal Oncotic pressure keeps fluids intravascular**

- 2- A decrease in oncotic pressure in the microvascular circulation (hypoalbuminemia)leads to movment of fluids to interstitial space(and pleural space)



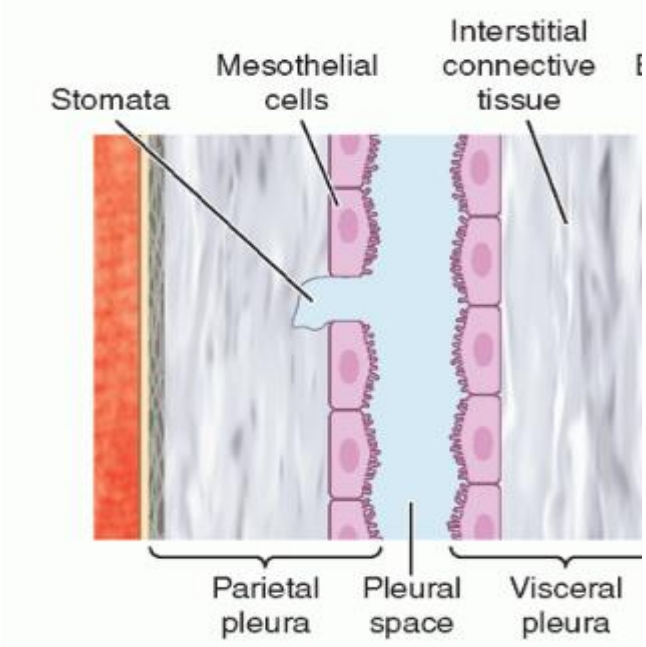
# What are the mechanisms responsible for the clinical accumulation of pleural fluid?

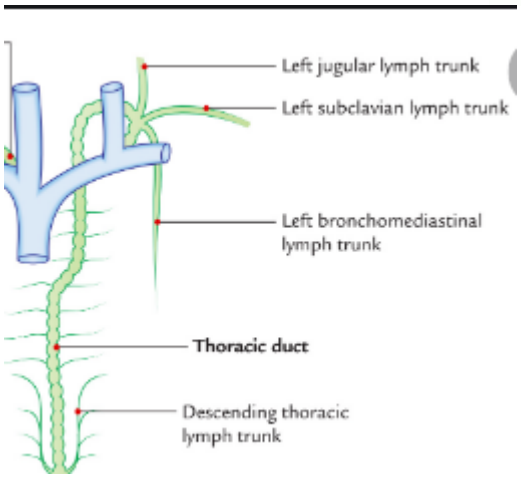
- 3- Increase permeability of the microvascular circulation (pneumonia)
- Or pneumonitis



# What are the mechanisms responsible for the clinical accumulation of pleural fluid?

- 4-impaired lymphatic drainage from the pleural space (malignancy).



# Causes of transudative pl. effusion

- Congestive heart failure
- Cirrhosis
- Nephrotic syndrome
- Hypoalbuminemia.

# Causes of exudative pl. effusion

1. Pneumonia.and TB
2. Malignancy .
3. Connective tissue disease (SLE , Rh A).
4. Pulmonary embolism.

# Clinical Picture

- **Symptoms :**
  - Dyspnea
  - Pleuritic chest pain
  - Cough
  - symptoms of underlying disease.
- **Signs :**
- (Can be detected when fluid > 300 mL )
  - Stony dull P/N
  - Decreased tactile fremitus
  - Asymmetric chest expansion
  - Decreased or absent breath sounds
  - Bronchial breathing above the level of effusion.

# Cl features

c/o (chest pain /dyspnea )

o/e decrease expansion in the affected side , absent TV ,decrease breath sounds ,and stony dullness on percussion)

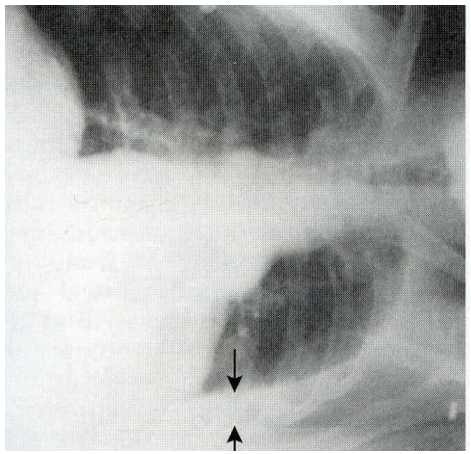
<u>Aaproach</u>

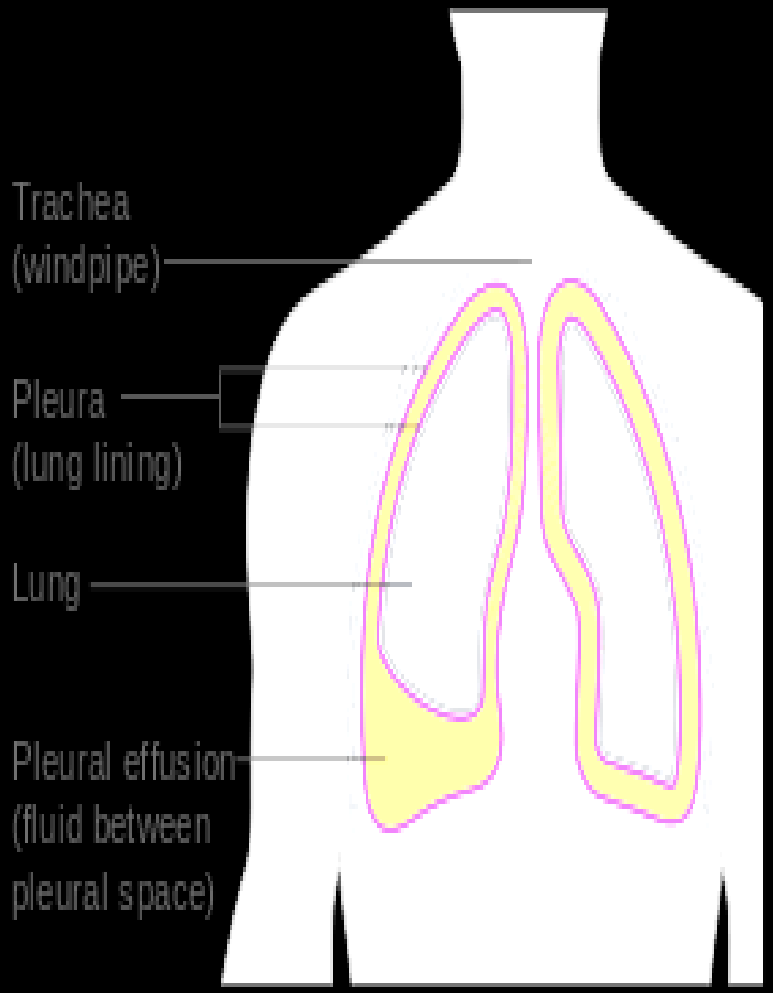
CXR when effusion upright or a lateral decubitus views

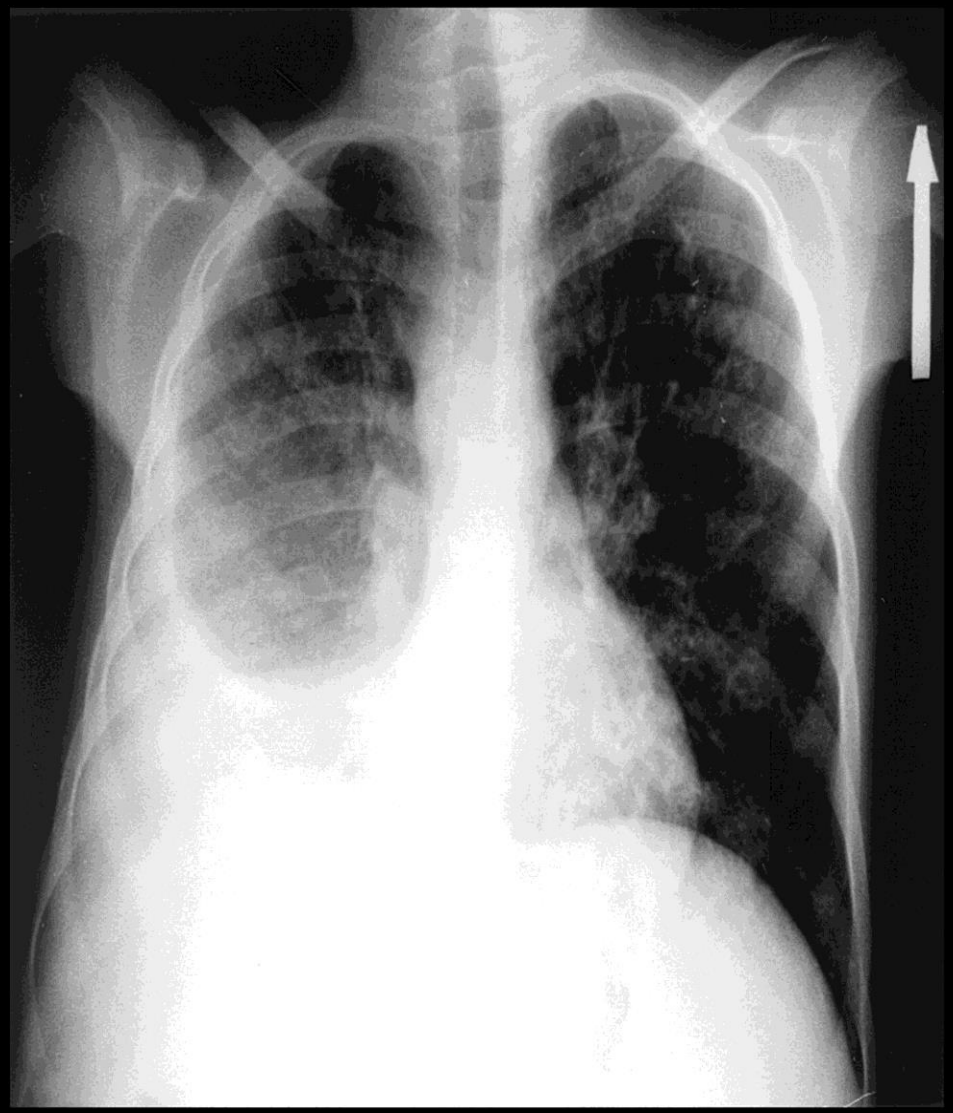
USS dx and aspiration guidance.

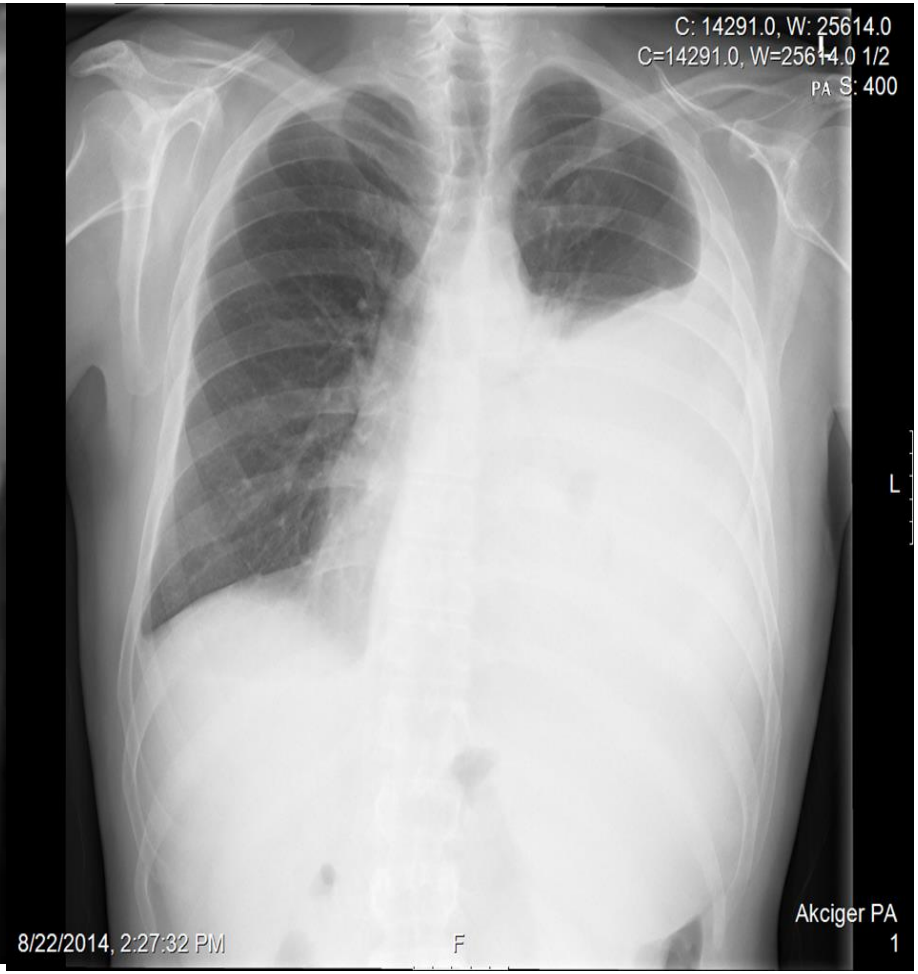
CT(thickening other path).

Pleural aspiration & pleural biopsy




Trachea
(windpipe)
Pleura
(lung lining)
Lung
Pleural effusion
(fluid between
pleural space)

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**pleural fluid microbiology** gram stain c/s
Afb smear and c/s +_PCR

**Pleural fluid cytology** cell count and diff cell count

**Biochestry** protein .LDH

**Pathology** for malignant cells

OTHER TEST for possiple underlying dis examination of the sputum for AFB and bronchoscopes , and serological tests for Auto immune dis etc

| Transudate | | |
|---|---|---|
| | Absolute value | Pl.fluid/serum |
| Protein | < 3 g/dl | <0.5 |
| LDH | < 200 units/L | <0.6 |
| Glucose | < 60 mg/dl | 1.0 |
| WBC count | <1000 | ---- |

| | | |
|---|---|---|
| **CCF CH LIVER DIS OR NEPHROTIC SYNDROME** | **Serous, straw coloured** | **transduate** |

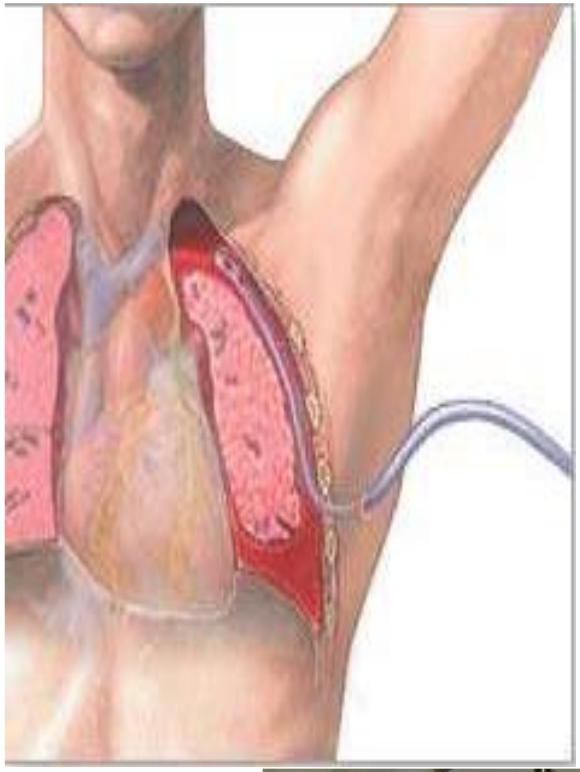
| Test | Disease |
| --- | --- |
| **pH <7.2** | **Empyema** |
| Glucose < 60mg/dl | Infection, rheumatoid, TB |
| Amylase > 200 unit/dl | Pancreatic disease |
| RF, ANA, LE cells | CTD |
| RBC >5000/ml BLOODY | Trauma, malignancy, PE |
| Chylous effusion<br>TG > 110 mg/dl | INJURY TO thoracic duct (trauma, malignancy) |

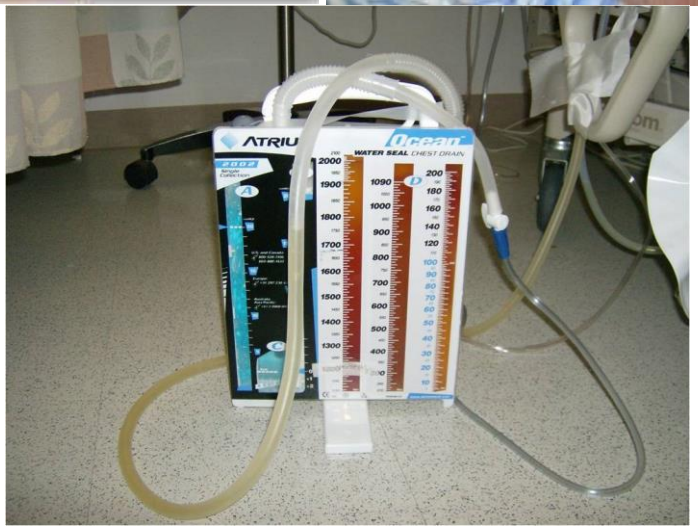
TRANSUDATE EXUDATE BLOODY

| | Appearance of fluid | Type of fluid | Predominant cells | Other DX feature |
|---|---|---|---|---|
| TB | CLOUDY BLOODY YELOW | Exudate | Lymphocytes- | + TT & pl.biopsy 80% |
| Malignant disease | often blood – stained | Exudate | lymphoctes | Positive pl .biopsy 40% |
| Pul. infarction | bl.stained | exudate | RBC | Source of embolism |
| Rheumatoid disease | Serous YELOW | Exudate | Lymphocyte) | RF , ANTI CCP |
| SLE | serous | Exudate | Lymph. | Anti-DNA |
| Obst. of thoracic duct | Millky | Chyle | None | Chylomicrons |

# Empyema

- presence of pus in the pleural space .
  Clinical presention :- pleural pain, dyspnea ,cough and sputum (copious purulent sputum if empyma rupture) associated with H/O Fever , rigors, sweating, malaise and weight loss
  Clinical signs of fluid in the pl. Space .
  Investigation:- CXR, aspiration of pus & bacteriological examination of pus
  managment :Treatment of non TB
  ACUTE:- Intercostal tube & iv antibiotic
  decortication may be reguried if open drainge has been performed, and re-expantion of the lung is prevented by thickining of visceral pl.






**CHEST TUBE DRAINAGE SYSTEM**