

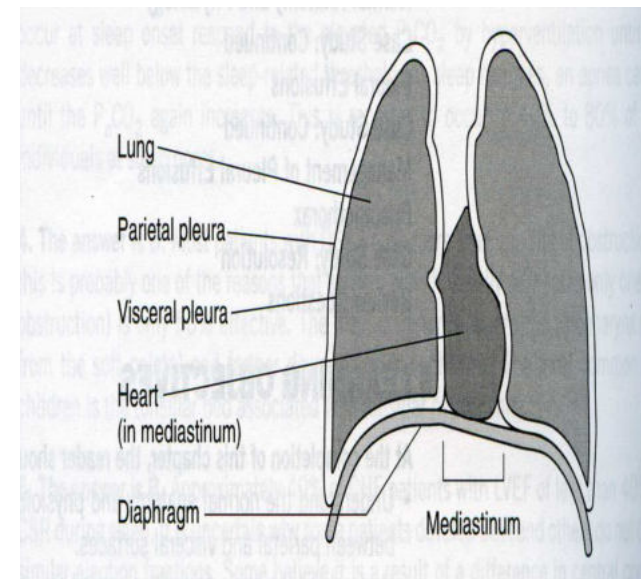
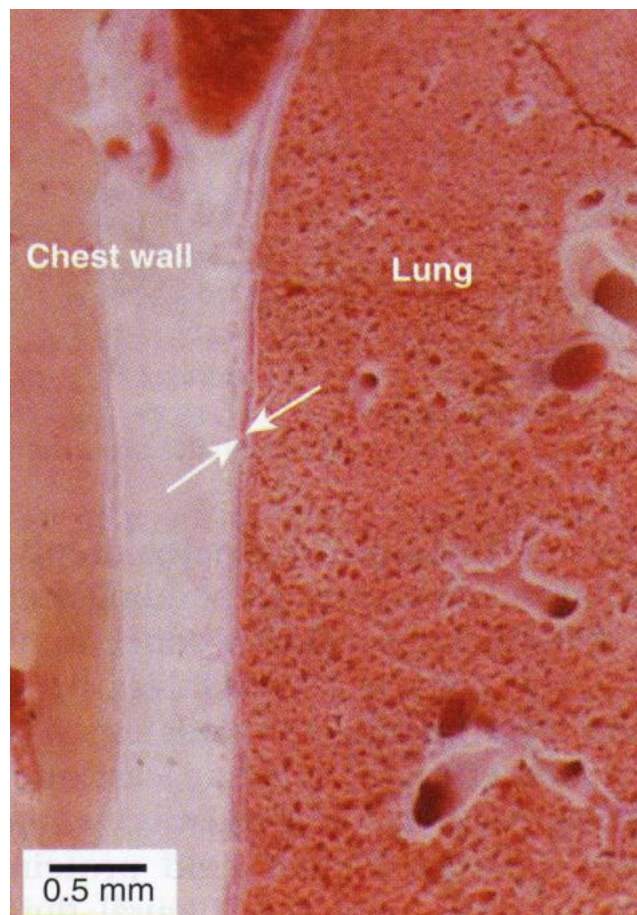
Pleural Disorders

Dept of Pulmonary Medicine

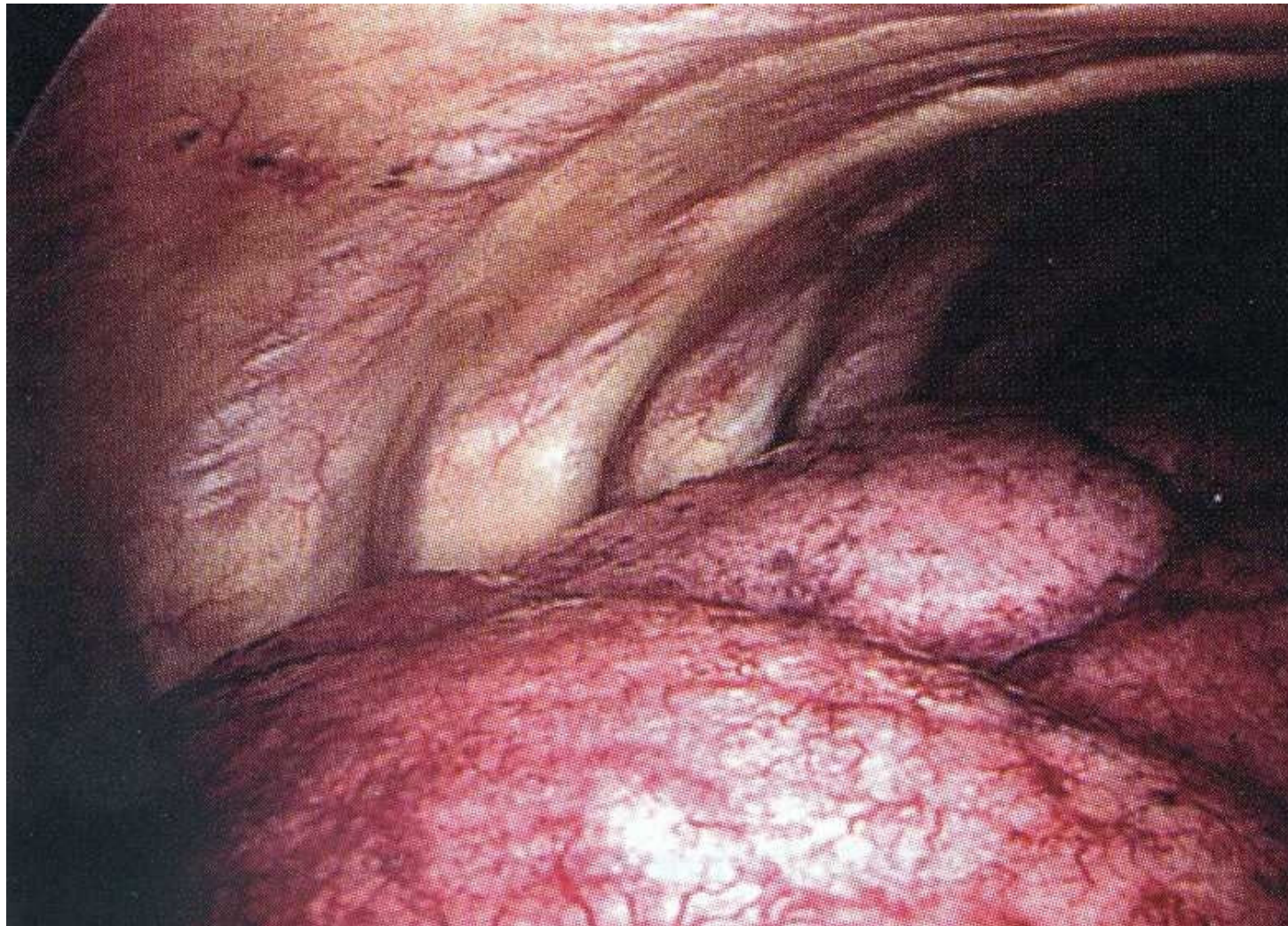
Learning Objectives

- What are various pleural disorders
- When to suspect Pleural effusion
- Symptoms & signs
- Basic Evaluation & Management

Anatomy & Physiology



- The normal pleura is a thin translucent membrane consisting of 1- mesothelium, 2- thin layer of subendothelial connective tissue rich in lymphatics, arteries veins and nerves.
- Functions:
 - Space for movement &
 - protective in volume overload



Types of Pleural Pathology

- Pneumothorax
- Effusion
- Haemothorax
- Pyothorax
- Chylothorax
- Hydro-pneumo
- Malignancies: Mesothelioma & metastasis
- Others

Symptoms

- Chest pain
- Cough
- Dyspnea
- +-Systemic features

Signs

- LN
- Clubbing
- Tachypnea/Tachycardia
- cynosis

Signs:Respiratory

- Inspection
- Palpation
- Persussion:**Stony dull**
- Auscultation:Rub 
 - Dec Breath sounds

Approach

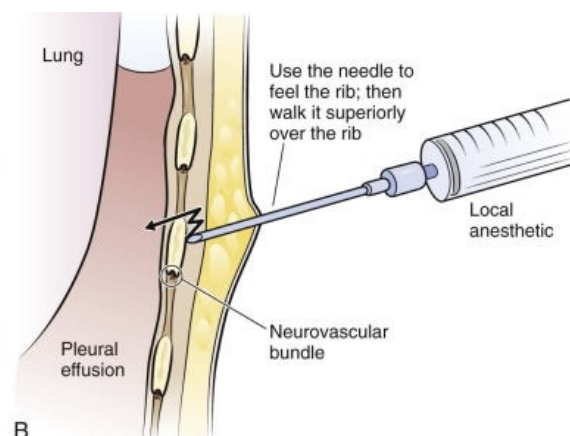
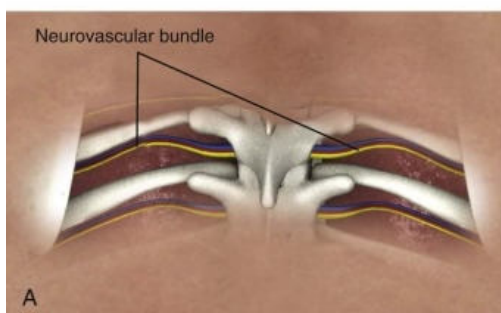
- **Detailed history and physical examination.**
- **imaging: CXR; Ultrasound Chest CT.**
- **Pleural fluid/tissue analysis.**

Radiology

- PA view > 200
- Lateral 75 ml
- USG 10 ml
- Ct sensitive

Thoracocentesis

- Diagnostic (not always needed)
- Therapeutic



- Transudative Vs Exudative
- Exudative:cells predominate
- Cytology & cultures

TEST	SENSITIVITY FOR EXUDATE	SPECIFICITY FOR EXUDATE
	%	
Light's criteria (one or more of the following three)	98	83
Ratio of pleural-fluid protein level to serum protein level >0.5	86	84
Ratio of pleural-fluid LDH level to serum LDH level >0.6	90	82
Pleural-fluid LDH level >two thirds the upper limit of normal for serum LDH level	82	89
Pleural-fluid cholesterol level >60 mg/dl (1.55 mmol/liter)	54	92
Pleural-fluid cholesterol level >43 mg/dl (1.10 mmol/liter)	75	80
Ratio of pleural-fluid cholesterol level to serum cholesterol level >0.3	89	81
Serum albumin level – pleural-fluid albumin level ≤1.2 g/dl	87	92

*LDH denotes lactate dehydrogenase.

TYPES

- Transudative
- Exudative
- Extrapleural:transmigration

Pleural fluid analysis

- Colour/turbid
 - Smell
 - Protein
 - Sugar
 - Cells
 - TLC/DLC
- Smear
 - Culture
 - Cytology
 - ADA
 - HCT
 - TG/Cholesterol
 - Amylase

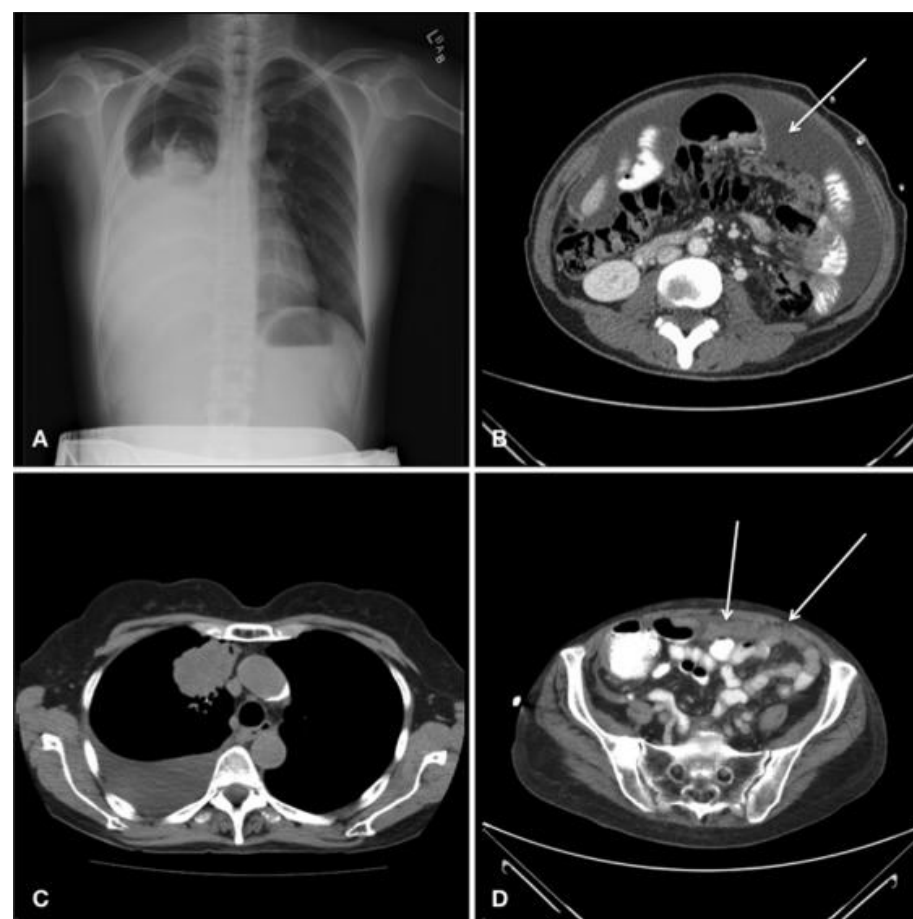
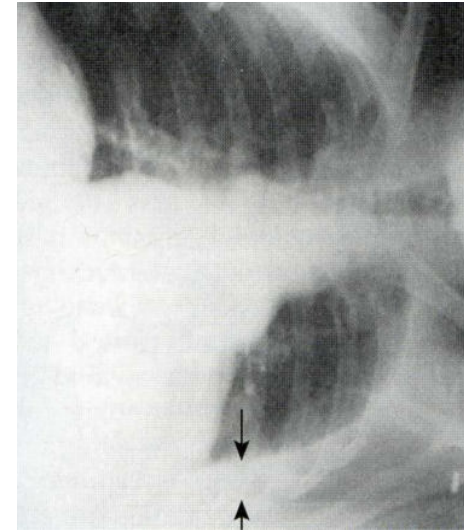
LEADING CAUSES OF PLEURAL EFFUSIONS

Causes	Annual Incidence	Transudate	Exudate
Congestive heart failure	500,000	Yes	No
Pneumonia	300,000	No	Yes
Cancer	200,000	No	Yes
Pulmonary embolus	150,000	Sometimes	Sometimes
Viral disease	100,000	No	Yes
Coronary artery bypass surgery	60,000	No	Yes
Cirrhosis with ascites	50,000	Yes	No

Light RW. Pleural diseases. 4th ed. Lippincott Williams &Wilkins, 2001

Investigations

- CXR

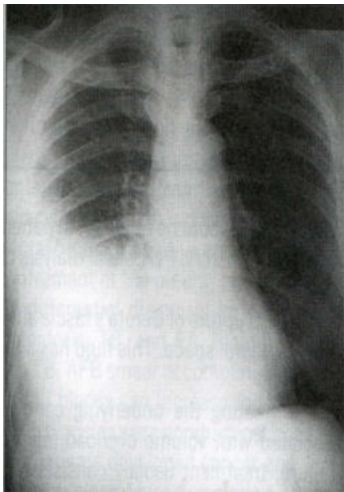


Clinical Scenario

- A 25 yr male:prot 3.5,sugar 55,cells 2000,L-90%
- A 35 yr male:prot 5.5,sugar 25,cells 3000,P-90%
- A 65 male:prot 5.5,sugar 65,cells 1000,L-90%,Hhagic
- A 65 male:prot 1.5,sugar 65,cells 200,L-90%

CASE Pleural Fluid Analysis

67 yo man with dyspnea and Rt. Pleural effusion



Pleural Fluid	Serum
Nucleated Cell Count 1700; >90%Lymphocytes	
Total protein: 4.0 g/dl	Total protein: 6.3 g/dl
LDH: 242 U/L	LDH: 143 U/L
Cytology : negative	

Etiology

- **Transudative**
- **CHF**
- **CLD**
- **Renal Failure**
- **Anaemia/Hypoproteinemia**
- **Myxedema**
- **Gross ascites**
- **Exudative**
- **Pneumonia**
- **Tb**
- **CA**
- **Pulmonary Embolism:Both**
- **Trauma**
- **Post surgery**
- **Inflammatory:RA/SLE**

Management

- **Tubercular:ATT+-steroids**
- **Parapneumonic:aspiration & antibiotics to ICD+fibrinolytics or Surgery**
- **Malignancy:Pleurodesis**
- **Rest:Treat underlying cause**