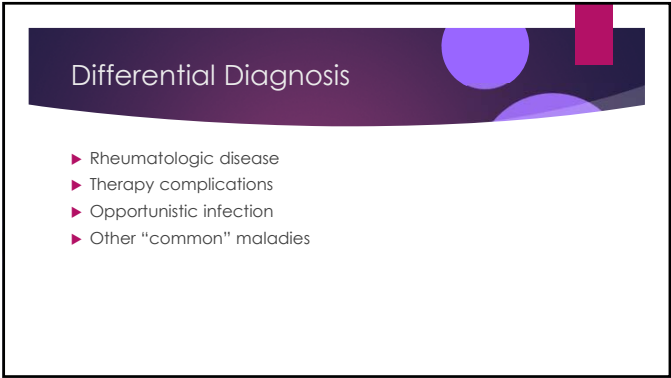








Diagnostic Testing

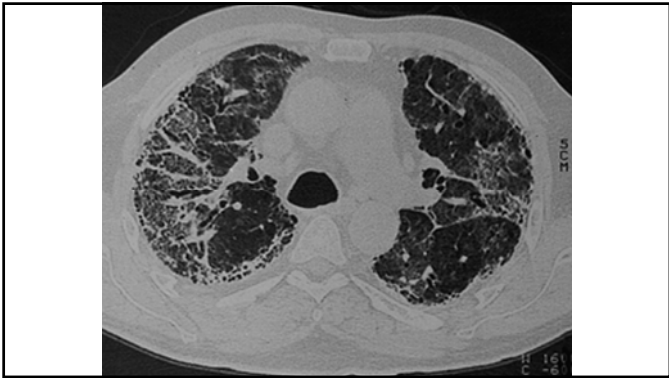
- ▶ Bronchoscopy / lung biopsy
- ▶ Pulmonary function testing
- ▶ Radiographic studies
- ▶ Cardiac testing
- ▶ Autoantibody testing

Rheumatoid Arthritis

- ▶ Interstitial lung disease
- ▶ Airways disease
- ▶ Rheumatoid nodules
- ▶ Pleural effusions

Rheumatoid Arthritis – Interstitial Lung Disease

- ▶ UIP/NSIP
- ▶ High resolution chest CT (HRCT) – (20 – 63%)
- ▶ Risks: smoking/male/↑ age
- ▶ Onset: 20% before rheumatologic symptoms
- ▶ Mild - <10% death ILD
- ▶ Immunosuppressive therapy



Rheumatoid Arthritis – Pleural Disease

- ▶ Pleurisy (20%)
- ▶ Pleural effusion (3 – 5%) – unilateral
- ▶ Pleural thickening (73%)
- ▶ Pneumothorax

- ▶ Men > Women
- ▶ ↑ age



TRANSUDATE vs. EXUDATE

▶ Pleural fluid / serum ratios:

EXUDATE

protein > 0.5

LDH > 0.6

total LDH > 2/3 normal level

(need 2 of 3)

Rheumatoid Arthritis – Pleural Disease

▶ ↓ or absent glucose level

▶ Thoracentesis / pleurodesis

▶ ? Immunosuppressive therapy

Rheumatoid Arthritis – Airways Disease

▶ Upper airway involvement

▶ Bronchiectasis (30 – 58%)

▶ Chronic obstructive lung disease / asthma (60%)

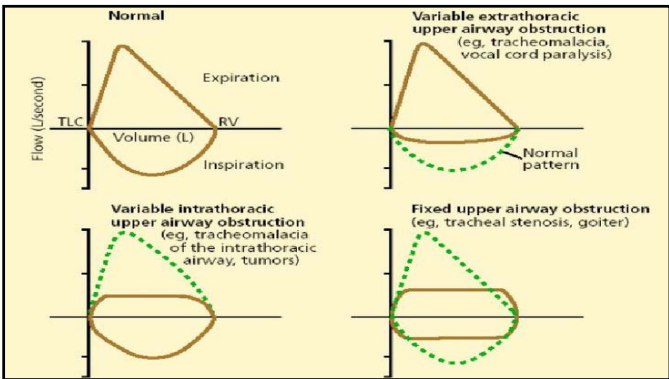
▶ Bronchiolitis obliterans

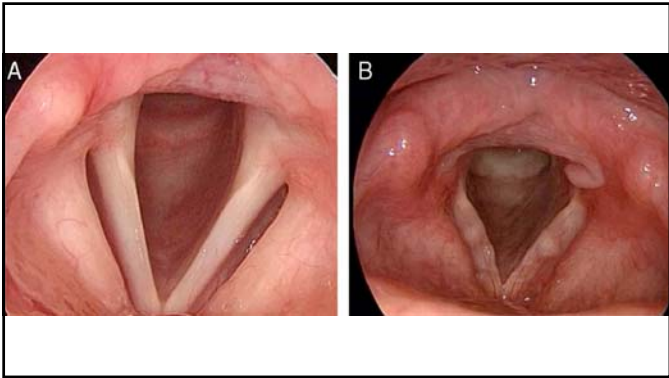
Pulmonary Function Tests

- ▶ FEV/FVC < 0.7 - obstruction
- ▶ Flow-Volume Loop
- ▶ FEV1 = forced expiratory volume at one second
- ▶ FVC = forced vital capacity

Rheumatoid Arthritis – Upper Airway Involvement

- ▶ Acute vs. chronic (cricoarytenoid involvement)
- ▶ Females > Males
- ▶ Flow-volume loop / direct exam (55 – 75%)





Rheumatoid Nodules (22%)

- ▶ Men > Women
- ▶ Subcutaneous nodules / upper airway
- ▶ Multiple / cavitation











Systemic Lupus Erythematosus (SLE)

- ▶ Pleural disease (30 – 50%)
 - ▶ Pleurisy
 - ▶ Pleural effusion
- ▶ Initial manifestation (5 – 10%)
- ▶ Bilateral / small
- ▶ Pleural fluid -
 - ↓ complement levels
 - ↓ glucose
 - + ANA



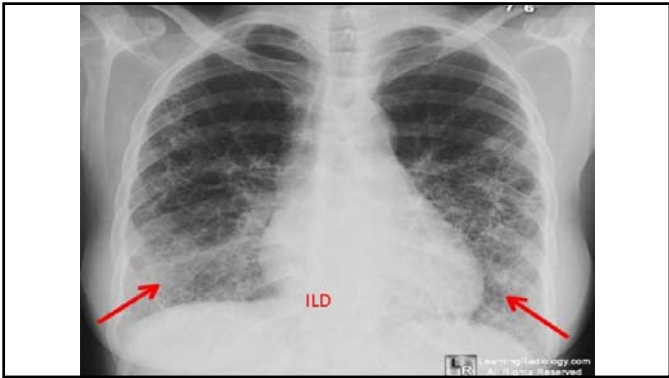
SLE – Acute Pneumonitis (1 – 12%)

- ▶ 50% mortality
- ▶ Mimics bacterial pneumonia



SLE – Chronic Interstitial Lung Disease (3 – 13%)

- ▶ Manifestation of chronic SLE
- ▶ Mimics IPF (Idiopathic pulmonary fibrosis)
- ▶ Anti-SSA antibodies



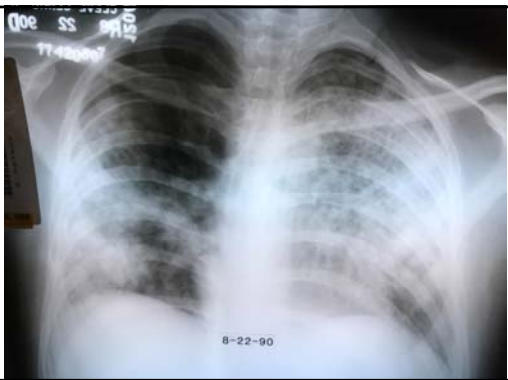
SLE – Shrinking Lung Syndrome (<1%)

- ▶ Pleuritic chest pain
- ▶ ? diaphragm dysfunction
- ▶ Good prognosis



SLE – Diffuse Alveolar Hemorrhage

- ▶ Active organ involvement
- ▶ Pneumonia + hemoptysis
- ▶ Poor prognosis

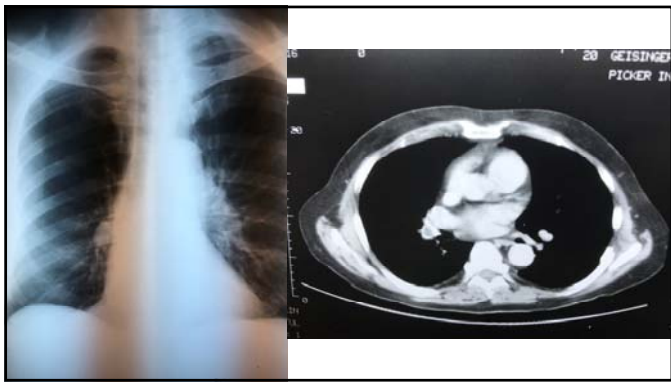


SLE – Vascular Lung Disease

- ▶ Pulmonary hypertension (rare)
 - ▶ Doppler echocardiography
 - ▶ Isolated diffusion impairment (PFTs)

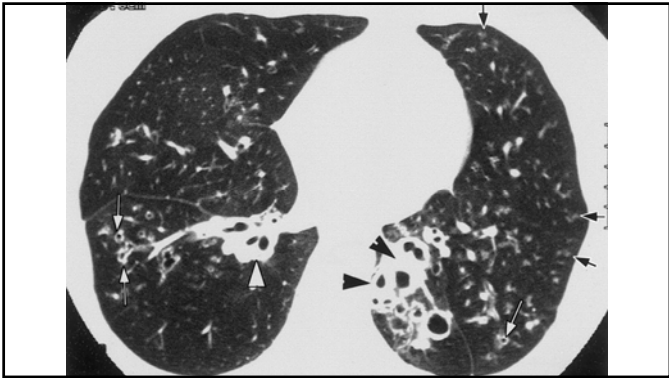
SLE – Thromboembolic Disease

- ▶ Anti-phospholipid antibodies



SLE – Airway Disease

- ▶ Upper airway disease (30%)
- ▶ Bronchiectasis

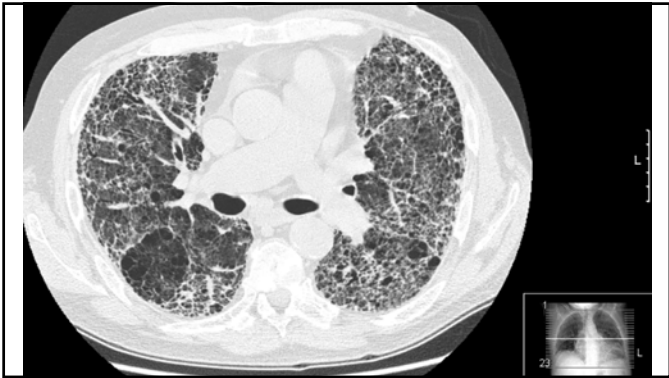


Scleroderma

- ▶ Interstitial Lung Disease (ILD)
 - PFTs: Restrictive Lung Disease
 - Diffusion impairment
- ▶ Clubbing (rare)
- ▶ Crackles – chest exam

Scleroderma - ILD

- ▶ Variable prognosis
 - ▶ PFTs – early ↓ FVC (poor prognosis)
 - ▶ 6 minute walk test
 - ▶ Radiographic imaging (HRCT)
 - ▶ ? Biomarkers



Scleroderma – PAH (8 – 12%)

- ▶ Late manifestation
- ▶ Mean PAP 25 mmHg (rest)
- ▶ Echocardiogram screening (8 – 12 months)



Scleroderma - Malignancy

- ▶ Bronchogenic carcinoma (5%)



Idiopathic Inflammatory Myopathies

- ▶ Interstitial lung disease (5 – 65%)
- ▶ Initial presentation – 17%
- ▶ Anti-Jo-1 antibody
- ▶ 5 years survival – 87%





Toxicity of Immunosuppressive Therapy

- ▶ Opportunistic respiratory infection
- ▶ Inflammatory / interstitial lung disease
- ▶ Malignancy
- ▶ Diffuse alveolar damage
- ▶ Hypersensitivity pneumonitis
