

# Pulmonary fibrosis

- ▶ Abnormal formation of fibre like scar tissue in the lung
- ▶ May take 3 forms
  - ▶ REPLACEMENT FIBROSIS
  - ▶ FOCAL FIBROSIS
  - ▶ INTERSTITIAL FIBROSIS

# Replacement fibrosis

- ▶ Fibrous tissue is laid down in the areas of lung destruction
- ▶ Clinical signs
  - ▶ Chest is asymmetrical with flattening of the affected side
  - ▶ Drooping of shoulder
  - ▶ Decreased movement
  - ▶ Trachea and the mediastinal structures are pulled towards the same side



- ▶ Percussion note is diminished
- ▶ Vocal fremitus and vocal resonance depend on the severity of fibrosis . In severe fibrosis they are decreased
- ▶ In extensive fibrosis the breath sounds are considerably diminished
- ▶ Adventitious sounds may be heard

# Interstitial fibrosis

- ▶ Interstitial lung disease may result from connective tissue disorders like progressive systemic sclerosis, collagen vascular disease, sarcoidosis, chronic pulmonary edema etc
- ▶ 50% occur without any identifiable cause and are known as idiopathic pulmonary fibrosis
- ▶ In all these cases there is increased deposition of fibrous tissue in the interstitium which affect the diffusion of oxygen across alveolar membrane



# Clinical signs

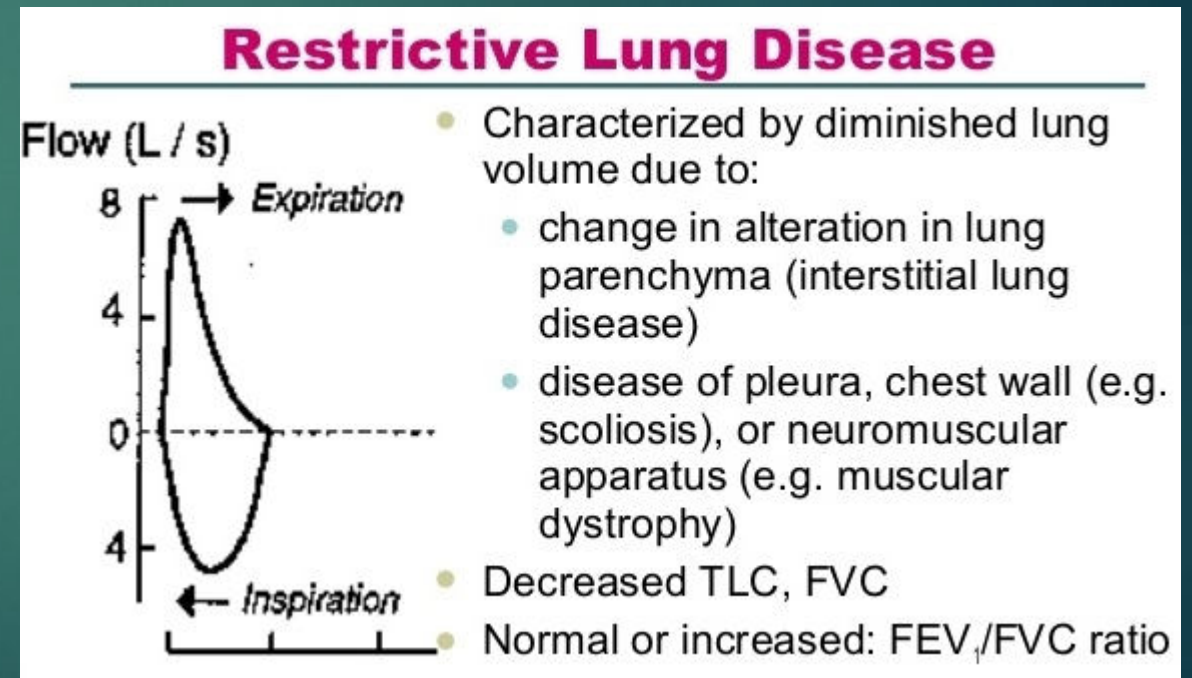
- ▶ Gross clubbing
- ▶ Tachypnoea
- ▶ Cyanosis
- ▶ Decreased respiratory movements
- ▶ Since these changes affect both lungs there is NO marked shift of midline structures
- ▶ Breath sounds are decreased
- ▶ Diffuse rales which persist after coughing are characteristic
- ▶ The characteristic end inspiratory Velcro crackles are present in IPF



- ▶ Chest x ray shows generalised loss of translucency and increased reticulations



- ▶ PFT shows restrictive pattern usually decreased vital capacity



- ▶ In advanced cases of ILD traction bronchiectasis and subpleural honeycombing may be seen



Honeycombing – layered peripheral cysts, stacked one on top of the other

- ▶ Cardiac findings include
  - ▶ right ventricular hypertrophy
  - ▶ Loud pulmonic second sound

# Pulmonary collapse



- ▶ When a portion of the lung becomes airless, it is termed as pulmonary collapse or atelectasis
- ▶ Causes include foreign body, tumors of bronchus, copious secretions, pneumothorax and pleural effusion

# Clinical findings

- ▶ Symptoms depend on the extent of the collapse and its onset
- ▶ Acute lesions are more symptomatic
- ▶ Massive collapse lead to dyspnoea with or without cyanosis
- ▶ Movement of the affected side is reduced and the chest is flattened
- ▶ Trachea and cardiac apex is shifted to the same side
- ▶ Percussion note over the affected side is reduced
- ▶ Breath sounds are diminished or absent
- ▶ Adventitious sounds are absent

# Chest Xray

## Direct signs

- ❑ Displacement of the interlobar fissure
- ❑ Loss of aeration
- ❑ Vascular and bronchial signs

## Indirect signs

- ❑ Elevation of hemidiaphragm
- ❑ mediastinal displacement
- ❑ Hilar displacement
- ❑ Compensatory hyperinflation

# Patterns

- ▶ Complete lung collapse

## Right lung collapse - PA view



- **Ipsilateral shift of mediastinum and trachea**
- **Bronchial cut-off sign suggestive of endobronchial obstruction**
- **Rib crowding**
- **Loss of volume**
- **Obscured right mediastinal and cardiac outline**
- **Obscured right hemidiaphragm (silhouette sign)**
- **Compensatory hyperinflation of left lung**
- **Prominent left pulmonary artery (cardiac output passing through single artery)**

► Partial lung collapse

## Left upper lobe collapse – PA view



- **Loss of volume on left side**
- **Ipsilateral shift of trachea and mediastinum**
- **Compensatory hyperinflation of left lung**
- **Raised left hemidiaphragm (compare with right) with tenting**
- **Haziness over the aortic knuckle (silhouette sign)**

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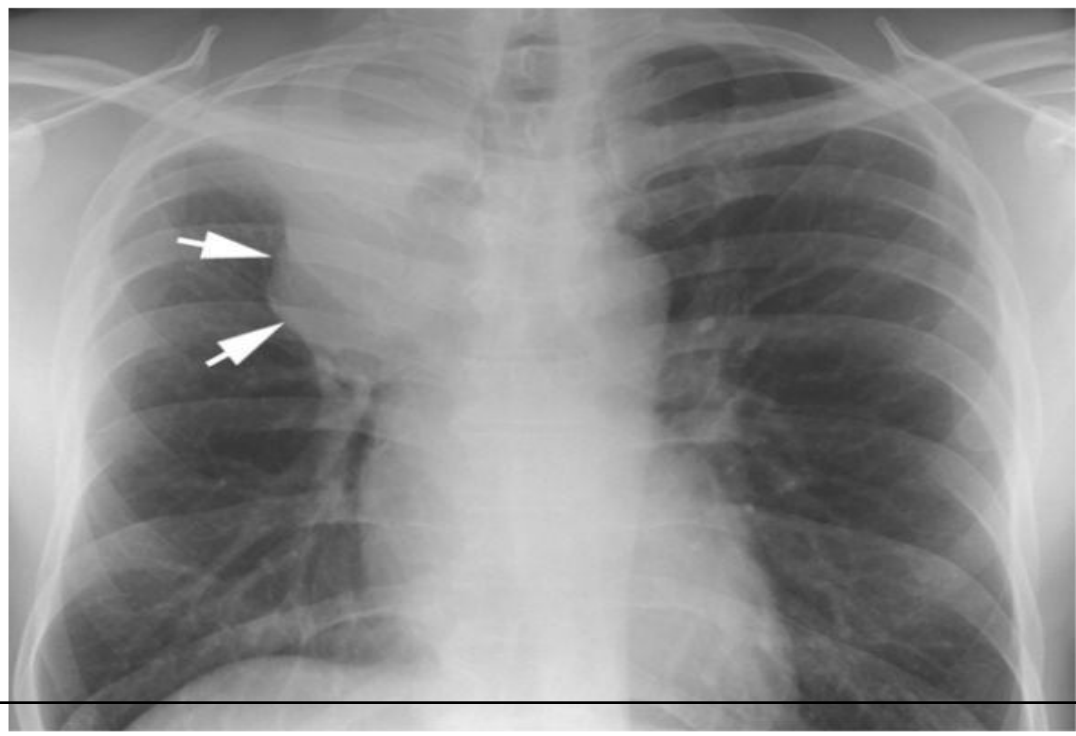




# Golden's S sign

## Golden's S sign

- ▣ The sign refers to the S shape (or more accurately, reverse S on the right) of the fissure due to the combination of collapse and mass centrally resulting in a focal convexity with a concave outline



A right upper lobe collapse demonstrating peripheral concavity and central convexity (arrows) due to an underlying bronchogenic carcinoma resulting in a reverse S shape.

# Juxtaphrenic peak sign

## Juxtaphrenic peak sign

- ❑ An useful ancillary sign of upper lobe collapse (or a combination of right upper and middle lobe collapse) is a juxtaphrenic peak of the diaphragm
- ❑ The sign refers to a small triangular density at the highest point of the dome of the hemidiaphragm, due to the anterior volume loss of the affected upper lobe resulting in traction and reorientation of an inferior accessory fissure

