

PNEUMOCONIOSES

1) Coal Worker's Pneumoconiosis (CWP)

• Upper lobes and upper zones of the lower lobes are more heavily involved .

1) Asymptomatic anthracosis : Inhaled **carbon pigment** is engulfed by alveolar or interstitial **Macrophages** accumulate in the **connective tissue** along the pulmonary and pleural lymphatics and in draining lymph nodes.

2) Simple coal worker's pneumoconiosis (CWP): Coal macules And Coal nodules

Coal macules: **dust-laden macrophages** & small amounts of **collagen** fibers arrayed in a delicate network.

- located primarily adjacent to **respiratory bronchioles**
- **centrilobular emphysema** can occur.

3) Complicated CWP (a.k.a) progressive massive fibrosis (PMF): Occurs on a background of a simple CWP by **coalescence** of coal nodules.

- Histology: black pigment + extensive fibrosis.
- The **mild** forms **do not affect lung function** significantly.
- 10% of complicated CWP progress to PMF: increasing pulmonary dysfunction, pulmonary hypertension, and cor pulmonale.
- CWP alone Doesn't increase the risk of lung carcinoma.

2) Silicosis

- The most prevalent chronic occupational disease in the world.
- this disease is related to **crystalline silica** and mostly the **quartz**.
- Mostly in the **upper zone** of the lung.
- Concentrically arranged **hyalinized collagen fibers** surrounding an amorphous center , With "**whorled**" collagen fibers.
- silica crystals (bright white with variable sizes) —> ingested by macrophages—> **never completely digested**.
- Most patients do not develop shortness of breath until late in the course.
- Silicosis is associated with **increased susceptibility to tuberculosis**. this happens because silicosis is associated with depressed cell mediated immunity.

3)Asbestosis

- IS SCARRING OF THE LUNG CAUSED BY ASBESTOS EXPOSURE
- Remarkable **synergy** between **tobacco smoking** and the development of lung **carcinoma (but not mesothelioma)** in **asbestos** workers > Smoking enhances the effect of asbestos by interfering with the **mucociliary clearance** of fibers .
- Characteristic feature of asbestosis:
 - I. **diffused pulmonary interstitial fibrosis.**
 - II. **asbestos bodies:** golden brown, fusiform, or beaded rods with translucent center.
 - III. **The most common manifestation of asbestos exposure is the plural plaques:** dense laminated layers of collagen containing calcium .
- Affects the lower lobe of the lung.
- Dyspnea is the first manifestation (by exertion, but later at rest).
- Usually associated with cough and production of sputum (due to smoking mainly).