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→ air → dust

PNEUMOCONIOSES:

Occupational lung disease:

def: Pneumoconiosis are defined as chronic fibrotic lung disease produced by exposure to organic and inorganic particulates.

Coal dust - example coal workers pneumoconiosis
- Progressive massive fibrosis (PMF)

Silica - silicosis

Asbestos - Asbestosis, Pleural Plaques, Mesothelioma

PATHOGENESIS:

development of pneumoconiosis depends on:

⇒ Amount of dust Retained in the lung And Airway.
of the duration of exposure And the effecting of host clearance Mechanisms.

⇒ size, shape & floating capacity of the particles that ranges in size from 1-5 μm in diameter tend to lodge at the bifurcation.

⇒ Solubility And physicochemical Reactivity of the particles.

→ Smaller particle → soluble in pulmonary fluid
can Reach toxic level → cause Acute lung injury.

→ large particle → persist in the lung parenchyma
of produce pneumoconiosis (silicosis)

ALVEOLAR MACROPHAGE: It is a key cell involved
in the initiation and prolongation of inflammatory
lung injury, & fibrosis

As they Release inflammatory Mediators.

COAL WORKER'S PNEUMOCONIOSIS:

It is a parenchymal lung disease caused
by inhalation of carbon particles:

MORPHOLOGY: A group of lung disease caused by coal
mine dust is commonly Referred to as black lung
lung lesions due to the progressive Accumulation of
carbon particle Range from

→ Asymptomatic Anthracosis

→ simple CWP

→ progressive massive fibrosis (PMF)

i) PULMONARY ANTHRACOSIS:

→ Inhaled carbon pigment is engulfed by
macrophages present in the Alveoli of the lung.

→ carbon-laden macrophage accumulate in the connective
tissue and are also carried by lymphatics

2) Simple CWP:

coal induced lesion / no pulmonary dysfunction.

GROSS:

Coal macule: Appear as non-palpable lesion 1-2mm in diameter

Coal nodule: larger than coal macule, less than 2cm,
It's palpable, Round or irregular, firm lesion.

⇒ mainly seen in upper lobes & upper zone of lower lobes.
which progress to produce centrilobular emphysema

MICRO

Coal macule: focal collection of many laden macrophages.

Coal nodule: small Amount of collagen & Reticular fibres.

3) COMPLICATED CWP.

- Formed by fusion of coal nodules

GROSS:

lung show multiple, dense black scars,
larger than 2cm.

MICRO: show carbon pigment, dense collagen
disrupted lung Architecture

Clinical course:

⇒ pulmonary hypertension, cor pulmonale