Occupational Hazards

Pneumoconiosis

- Group of lung diseases occurring out of specific occupation, caused by inhalation of insoluble dust , over a prolonged period of exposure.
- Characterized by fibrosis of lung parenchyma.
- Progressive, permanent, pulmonary pathology.
- Persistent cough, progressive breathlessness, reduced working capacity of lung.
- Followed by complications like tuberculosis, emphysema, COPD, pulmonary hypertension, cor pulmonale, carcinoma.

- **Factors influencing pneumoconiosis:**

1. Concentration of dust in air
2. Composition of dust.
3. Size of dust particles
4. Duration of exposure
5. Individual susceptibility (health status)

Silicosis

- Silica particles → Macrophages → Autolysis & Death → Fibrogenic factor → Fibrogenic reaction in pulmonary interstitium → Deposition of collagen & formation of fibrosis → Hyalinization of collagen.
- Nodular fibrosis- 3-4 mm, hard, greyish, frequently in the apex & posterior border of lung.
- Silico-tuberculosis

- IP- few mths. to few yrs.
- Clinical features- cough, dyspnea, loss of weight, emphysema, hemoptysis.
- Diagnosis- X-ray chest (snow storm appearance).
- Management- No treatmet
- Notifiable disease

Anthracosis (coal worker pneumoconosis)

- Pathology – coal dust accumulates just before bronchioles open into alveoli (Coal macule)
- Stage I (Simple pneumoconiosis)- ventilatory impairment, atrophy of bronchial smooth muscles, dilation of bronchioles causing focal emphysema.
- Stage II (Progressive massive fibrosis)- Pulmonary hypertension & cor pulmonale leading to cardiac failure & death.

- Predisposing factors- Tuberculosis, smoking, non specific respiratory infections, autoimmunity.
- Beat elbow/ beat knee, Miner’s nystagmus
- X-ray shows multiple nodular densities (Black lung)

Asbestosis

1. Serpentine- white asbestos
2. Amphibole- Crocidolite (blue), amosite (brown)

- Fibrosis around terminal bronchioles
- Tissue reaction is due to mechanical irritation usually in lower half of lung.
- Pleural calcification, neoplasm (bronchogenic carcinoma)
- X-ray – ground glass appearance
- Sputum- asbestos bodies.

Byssinosis

- Inhalation of cotton dust.
- Tightness of chest, altered respiratory function, chronic cough, progressive dyspnea, emphysema.

Bagassosis (cane sugar)

- Thermoactinomyces sacchari
- IP- 2-4 months
- X-ray shows mottling appearance

Farmer's lung

- Mouldy hay or grain dust in agriculture field.
- Moisture- 30%, Temp.- 45 c
- Thermophiliic actinomycete fungi (Microspora faeni)
- Allergic reaction
- Bronchial asthma
- Repeated attacks causes pulmonary fibrosis & lung damage (cor pulmonale)
- X ray shows fine nodular density.

Prevention

- *Health Promotion*

1. Pre-placement examination
2. Health education
3. Provision of healthy physical environment
4. Control of dust

   - prevention of formation

   - prevention of escape of dust

   - Removal of dust

- *Specific protection*
- *Early diagnosis & treatment*
- *Disability limitation*
- *Rehabilitation*

Lead Poisoning

- Sources- Mines of lead ore, industries of glass, paint, batteries, plumbing material

  -Absorption- Inhalation, ingestion

  -Storage- Bones, liver & kidney

  -Elimination- 90% non-absorbed in stools
- Clinical features- Toxic affect appears if level exceeds 70 mcg/ 100 ml.
- Involvement of CNS: insomnia, headache, mental confusion, irritability, nervousness, anxiety, convulsions, delirium, coma, death.

- IUGR
- Children- growth failure, progressive mental retardation, low IQ, aggressive behavior, lack of concentration.
- Diagnosis- History, clinical symptomatology, investigation (PBS, Hb, blood level of lead, urinary level of lead)

Management

1. Prevention of further exposure
2. Saline purge
3. Chelating agents as Ca-EDTA, d- penicillamine

Prevention & Control

Health Promotion

1. Preplacement examination
2. Improvement of sanitation
3. Control of dust
4. Unleaded petrol for automobiles
5. Health education

- *Specific protection*

  Gloves in painters

  Respirators
- *Early diagnosis & treatment*
- *Disability limitation*
- *Rehabilitation*

Occupational cancers

- Agent- Chemicals
- Environmental factors- heat, radiation
- Influencing factors
- Features
- Prevention

1. Preplacement examination
2. Sanitation
3. Health education
4. Protective device- lead apron, gloves, dosimeter

Occupational dermatosis- dermatitis, eczema, folliculitis, urticaria, cancer

- Physical agents: heat, radiations
- Chemical agents: acids, alkalies, dye
- Host factor: young, males, summers, lack of hygiene
- Prevention

Agricultural industry

1. Physical hazards
2. Chemical hazards
3. Biological hazards
4. Mechanical hazards
5. Social hazards
6. Miscellaneous