

OCCUPATIONAL HEALTH

By

Dr. Muhammad Shoaib

M.B.B.S, MPH

PNEUMOCONIOSIS:-

“Group of diseases resulting from inhalation of respirable fraction of different chemical dusts (organic / inorganic) leading to irreversible fibrosis is called Pneumoconiosis”

PNEUMOCONIOSIS TYPES:-

Agent	Type
Inorganic Dust: <ul style="list-style-type: none">▪ Silica▪ Coal dust▪ Asbestos▪ Iron	<ul style="list-style-type: none">▪ Silicosis▪ Anthracosis▪ Asbestosis▪ Siderosis
Organic Dust: <ul style="list-style-type: none">▪ Cane fiber▪ Cotton dust▪ Tobacco▪ Hay or grain dust	<ul style="list-style-type: none">▪ Bagassosis▪ Byssinosis▪ Tobaccosis▪ Farmer's lung

PNEUMOCONIOSIS:-

It includes:

- 1) Silicosis
- 2) Anthracosis
- 3) Asbestosis
- 4) Bagassosis
- 5) Byssinosis
- 6) Farmer's lung

1) SILICOSIS:-

Etiology:

It is caused by the inhalation of fine free crystalline silicon dioxide dust or quartz particles.

Occupations Involved:

Mining, quarrying, dressing of sandstone and granite, the pottery and ceramics industry, manufacturing of silica blocks and abrasive soaps, iron and steel industries, sand blasting, metal grinding and boiler scaling.

1) SILICOSIS (Cont.):-

Pathogenesis:

- Silica is the most fibrogenic dust and causes the development of hard nodules, which coalesce as the disease progresses.
- These nodules are 3-4 mm in diameter.
- Silicotics are prone to pulmonary tuberculosis, a condition called silicotuberculosis.

Sign and Symptoms:

Cough, Dyspnoea and chest pain.

1) SILICOSIS(Cont.):-

Radiology:

- The radiological features are dense nodular opacities involving upper zone of lungs.
- The hilar shadows may be enlarged and eggshell calcification in hilar nodes is a distinctive feature but not occur in all patients

Treatment:

- The disease progresses even when exposure to dust ceases.
- The patients should, therefore, be removed from offending environment as soon as possible.

2) ANTHRACOSIS:-

Etiology:

The disease follows prolonged inhalation of coal dust.

Types:

Clinically it is subdivided into two types:

- a) Simple coal workers pneumoconiosis
- b) Progressive massive fibrosis

Occupations Involved:

Coal mining

2) ANTHRACOSIS (Cont.):-

Radiology:

The diagnosis is on radiological examination and not on clinical presentation

a) Simple Coal Workers Pneumoconiosis:

- This is categorized radiologically into three grades depending upon the size of nodules
- It does not progress if miner leaves the industry

b) Progressive Massive Fibrosis:

- In this form of disease, large dense masses, single or multiple, occur mainly in upper lobes
- These may be irregular in shape and may cavitate.
- Tuberculosis may be a complication
- The disease progresses even miner leaves the industry

2) ANTHRACOSIS (Cont.):-

Signs and Symptoms:

- Cough and sputum from associated chronic bronchitis are frequently present.
- The sputum may be black called “melanoptysis”
- Progressive breathlessness on exertion occurs in later stages
- Respiratory and right heart failure supervene as terminal events

3) ASBESTOSIS:-

Etiology:

Asbestos

Occupations Involved:

- Manufacture of asbestos cement
- Manufacture of roof tiles
- Mining and milling of the mineral, manufacturing processes involving asbestos, demolition and shipyard workers

3) ASBESTOSIS (Cont.):-

Respiratory Disorders:

Asbestos inhalation causes four types of lesions in lungs:

- 1) Benign Pleural Plaques
- 2) Benign Pleural Effusion
- 3) Progressive Pulmonary Fibrosis
- 4) Malignant Disease of Pleura

3) ASBESTOSIS (Cont.):-

Diagnosis:

Diagnosis is based on radiologically.

1) Benign Pleural Plaques:

- Are identified on routine **Chest x-rays**.
- They are most commonly observed on the diaphragm and anterolateral pleural surfaces.

2) Benign Pleural Effusion:

- This is associated with pleural pain, fever and leukocytosis
- The effusion is usually blood stained
- The disease is self-limiting but may cause pleural fibrosis, which sometimes lead to breathlessness.

3) ASBESTOSIS (Cont.):-

3) Progressive Pulmonary Fibrosis:

- This is also called asbestosis
- This is characterized by exertional breathlessness; finger clubbing and end inspiratory crepitations are audible over the lower zones of both lungs
- Radiology shows mottled shadows with some streaky opacities

4) Malignant Disease of Pleura:

- Blue asbestos is thought to be the most potent cause of mesothelioma.
- This is presented clinically as chest pain, pleural effusion and breathlessness.

4) BYSSINOSIS:-

Etiology:

Inhaling cotton fiber dust.

Occupations Involved:

Cotton factory

Signs and Symptoms:

- Chronic cough, progressive dyspnoea, chronic bronchitis, emphysema, chest, tightness.
- Other features are mild fever, malaise and rigor.

Treatment:

Symptomatic

5) BAGASSOSIS:-

Etiology:

Inhalation of sugarcane dust.

Occupations Involved:

Sugarcane industry

Signs and Symptoms:

Breathlessness, cough, hemoptysis, fever, bronchitis, impairment of pulmonary function.

- ❑ If treated early resolution
- ❑ If not treated diffuse fibrosis, emphysema and bronchiectasis

6) FARMER'S LUNG:-

Etiology:

Inhalation of moldy hay or grain dust.

Mechanism:

- In grain dust or hay with moisture content of over 80%, or 30% mold fungi and grow rapidly, causing a rise of temperature to 40-50
- This heat encourages the growth of thermophilic fungi that cause farmer's lung

Sign and symptoms:

Dyspnoea, fever, respiratory insufficiency, reduced lung capacity, repeated attack cause pulmonary fibrosis and inevitable pulmonary damage and corpulmonale.

PNEUMOCONIOSIS PREVENTION:-

Preventive measures of Pneumoconiosis are as follows:

- 1) Medical measures
- 2) Engineering measures
- 3) Legislation

1) MEDICAL MEASURES:-

- ▶ Application of ergonomics
- ▶ Regular medical checkup
- ▶ Health education
- ▶ Notification of disease and research on it

2) ENGINEERING MEASURES:-

In order to prevent pneumoconiosis, following measures must be taken:

- ▶ Good ventilation
- ▶ Isolation of the process
- ▶ Dust control
- ▶ Substitution, if possible

3) LEGISLATION:-

- ▶ It is of particular importance in pneumoconiosis prevention and control
- ▶ Proper laws in favour of workers must be established, if not possible then already established laws must be regularly modified and implicated according to workers best interest.
- ▶ Workers should be provided with proper medical facilities (free of cost), proper leaves and if retired or disabled, he must be given proper gratuity or pension along with job to one of his siblings, if possible.