



An overview of

Occupational lung diseases



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Occupational health is concerned with the health of the **workers** as well as the work **environment**

Aims of occupational health

1. **Promotion** and **maintenance** of highest degree of physical, mental and social **wellbeing** of workers.
2. **Prevention** of health hazards and **protection** of workers **risks** that may arise due to occupational exposures.
3. **Proper selection** of worker to fit the worker for proper job.
4. Achieving **highest productivity**.

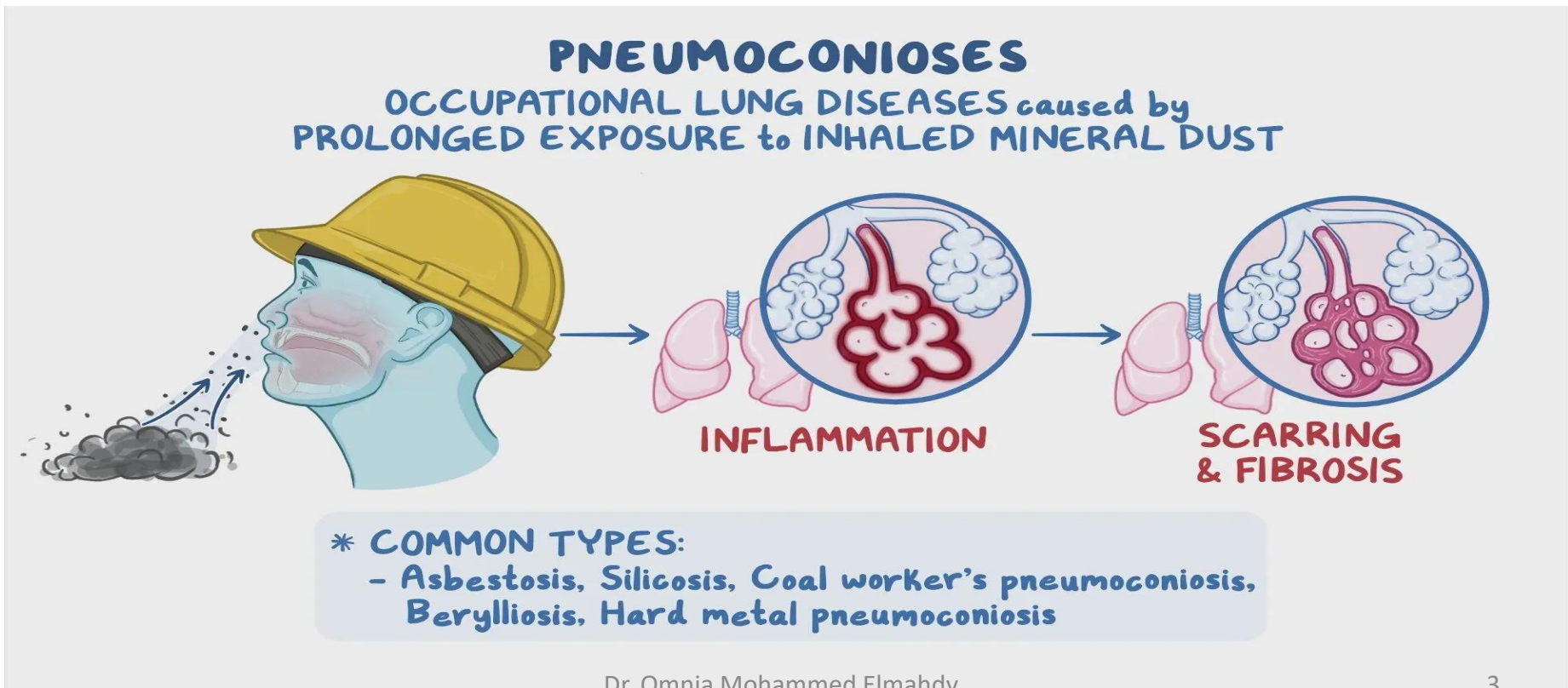


A- Pneumoconiosis

**B- Occupational
Bronchial Asthma**

A- Pneumoconiosis

Group of occupational lung diseases which occurs due to **inhalation of dust**, retention and reaction around such **dust**. The primary pneumoconioses are **asbestosis** and **silicosis**



Common manifestations Of Pneumoconiosis



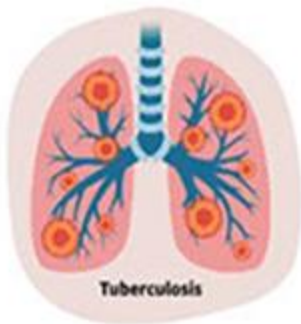
Affect activities of daily living



Decrease heart and lung function



Increase risk of lung cancer



More susceptible to infectious disease



Loss ability of work



Family burden



May lead to death

1- Silicosis

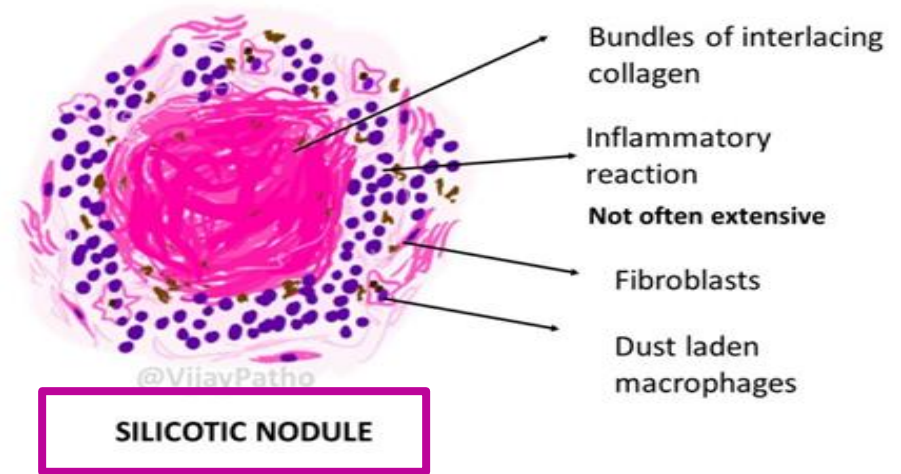
- Def.; Occupational fibrotic restrictive lung disease, due to inhalation of **silica dust** (SiO_2)
- Source;
 - ✓ Stone cutting
 - ✓ Construction
 - ✓ Ceramic industry
 - ✓ Glass industry.
 - ✓ Pottery manufacturing



- Pathogenesis;

The prevalence & severity of the disease is determined by the intensity of exposure to free silica dust. This may be due to:

- ✓ Mechanical irritation
- ✓ Chemical irritation
- ✓ Immunological reaction



- Complications;

- * **T.B** : The incidence of tuberculosis in patients with silicosis is **21.8 times higher** than that recorded in the general population.
- * **Lung cancer**
- * **Super infection** especially fungal infections.

Pathology;

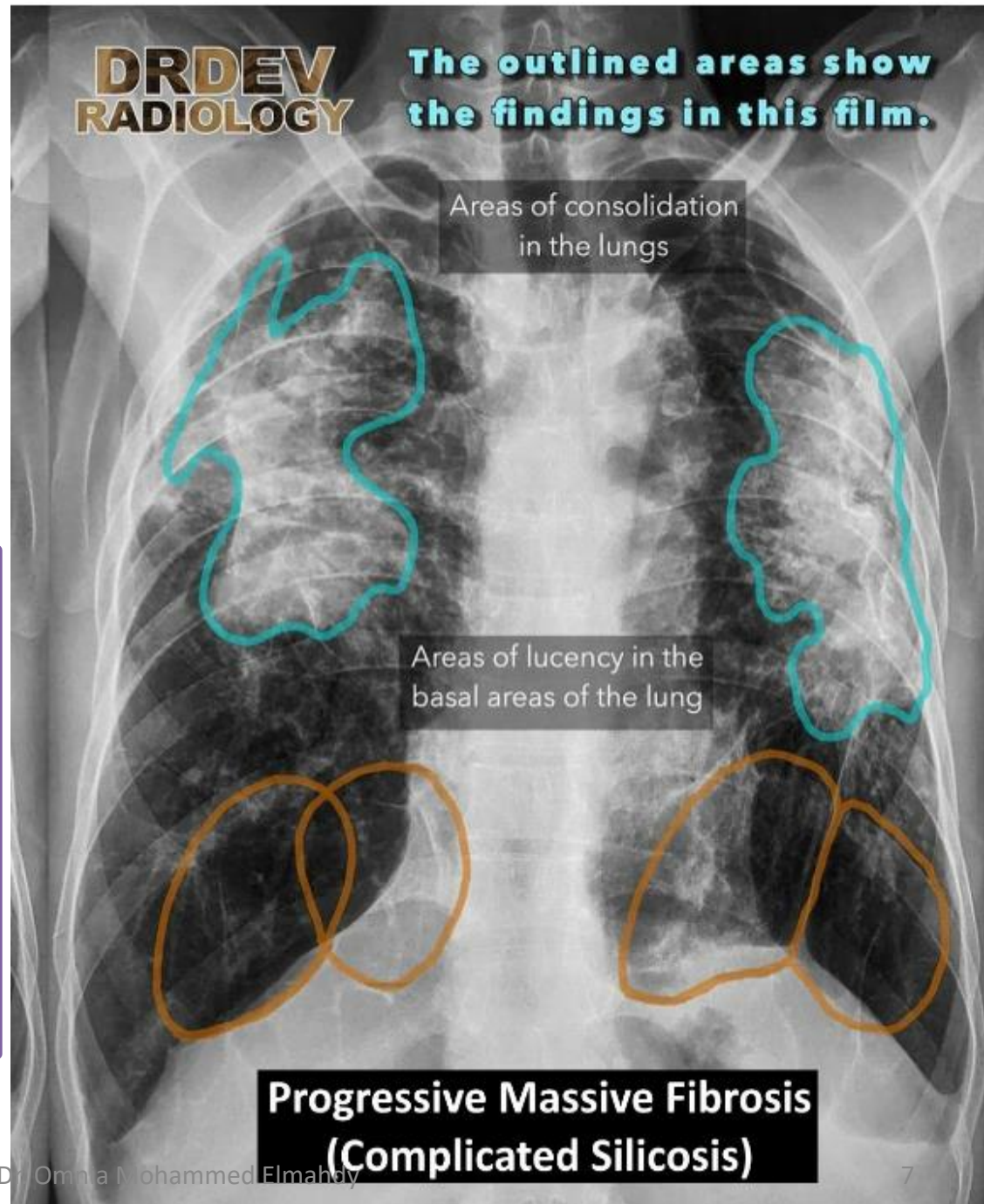
• **Nodular fibrosis**

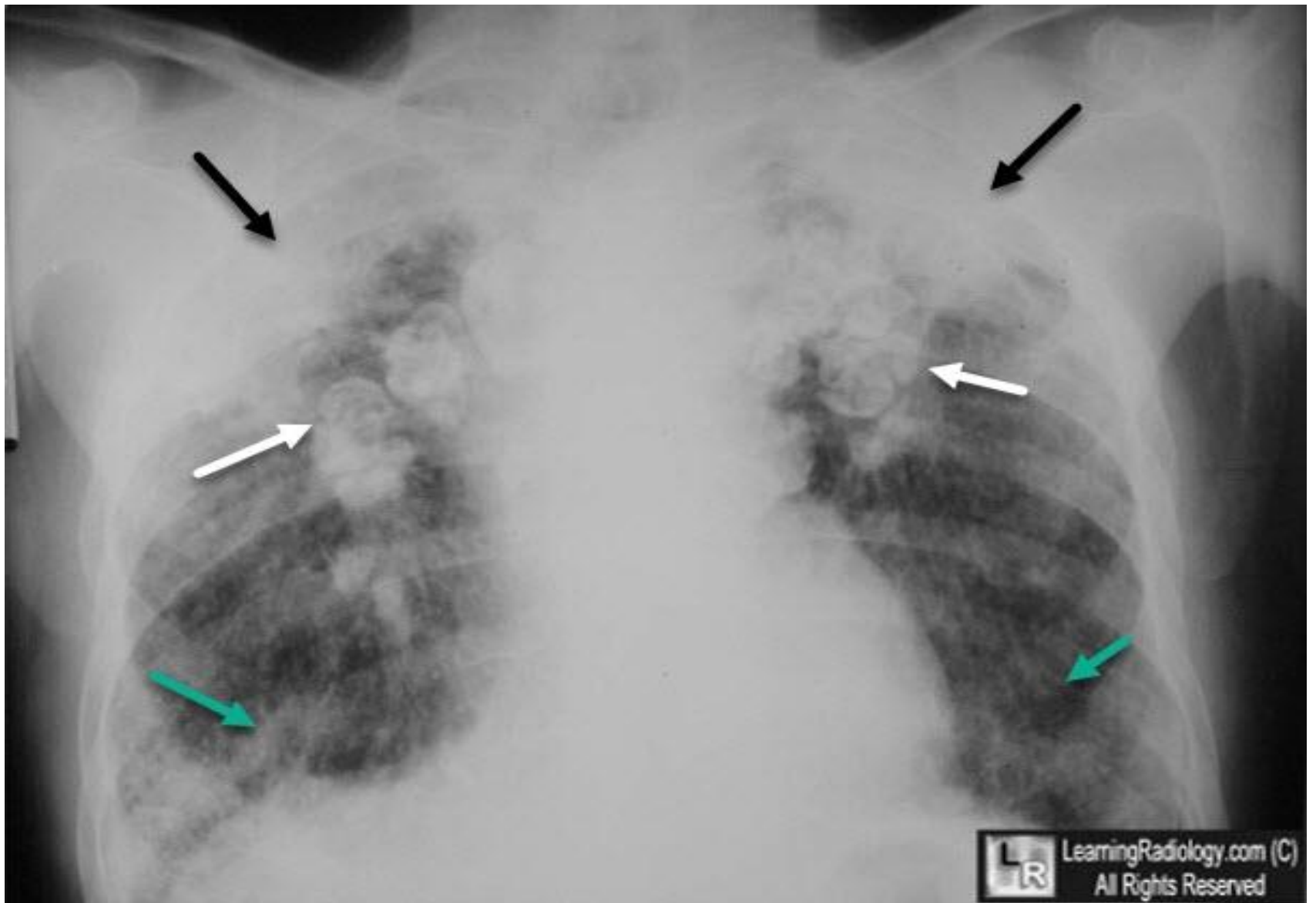
- Calcification
- The pathological lesions characteristics are:

bilateral, found in **upper lung lobes**.

Chest X-ray; according to severity

bilateral fine **nodular** opacities in **upper part** of the lung in the early stage and **egg shell calcification** of hilar L.N





2- Asbestosis

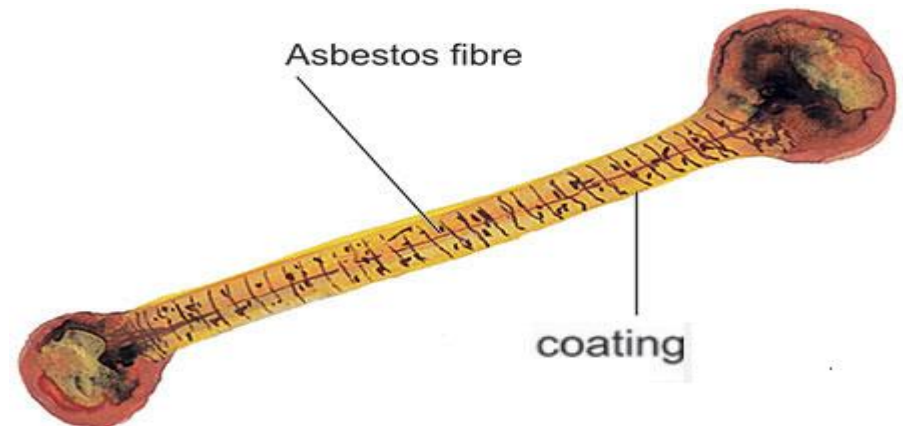
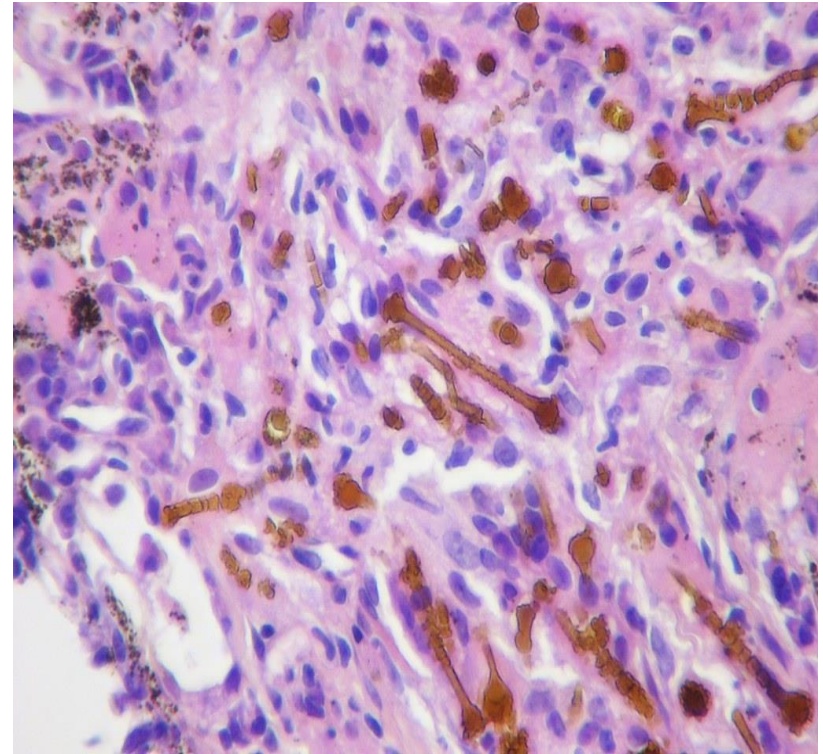
- Def.; Occupational fibrotic restrictive lung disease due to inhalation of **asbestos fibers**
- Source;
 - ✓ Car brakes manufacturing.
 - ✓ Clothes & gloves for oven
 - ✓ Workers for insulation of roofs, materials.
 - ✓ Cement industry.



Pathogenesis:

✓ Asbestos bodies:

- Formed of accumulation of **reticulin** around asbestos fibers, surrounded by **ferritin** granules, yellow in color, beaded and clubbed ended
- They can be detected microscopically in the **sputum** of asbestos exposed workers
- They are indicators **exposure** to asbestos but **not diagnose** asbestosis



Pathology ;

- It is a **bilateral** diffuse interstitial pulmonary fibrotic, lesion affect at first **lower lung lobes**.

Chest X-ray; according to severity

- start in lower lobes,
- **honey comb appearance of lung,**
- shaggy heart,** tenting of diaphragm,
- no LN affected.**



Complications ;

- ✓ Mesothelioma
- ✓ Lung cancer
- ✓ Super infection

Diagnosis of occupational lung diseases

(1) Occupational history

(2) Clinical examination:

symptoms & signs

(3) Investigations:

* x-ray:

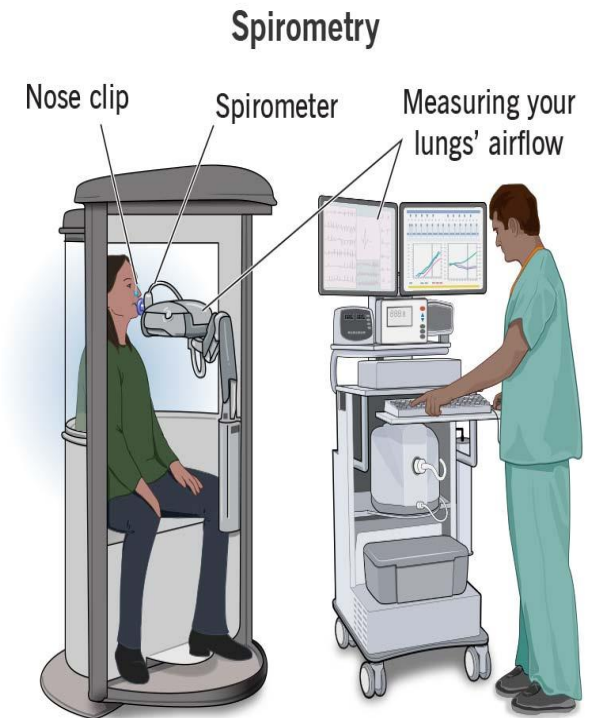
site (upper or lower) and shape (rounded or irregular) of the opacities

* lung function tests:

Restrictive

* CT & MRI

- **Sputum examination** for T.B in silicosis and for asbestos bodies in asbestosis

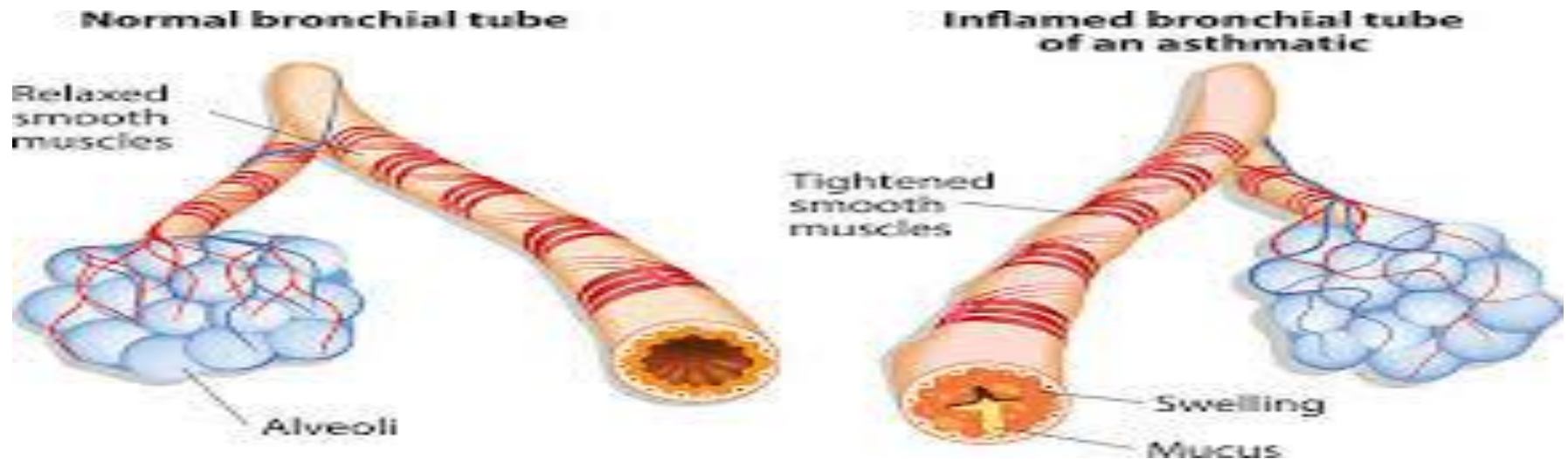


Pulmonary function test

Cleveland Clinic ©2024

B- Occupational Bronchial Asthma

Hyper responsiveness of trachea, bronchial tree due to causes & conditions attributable to a particular occupational environment characterized by recurrent attacks of dyspnea, cough, sneeze & variable airflow obstruction.



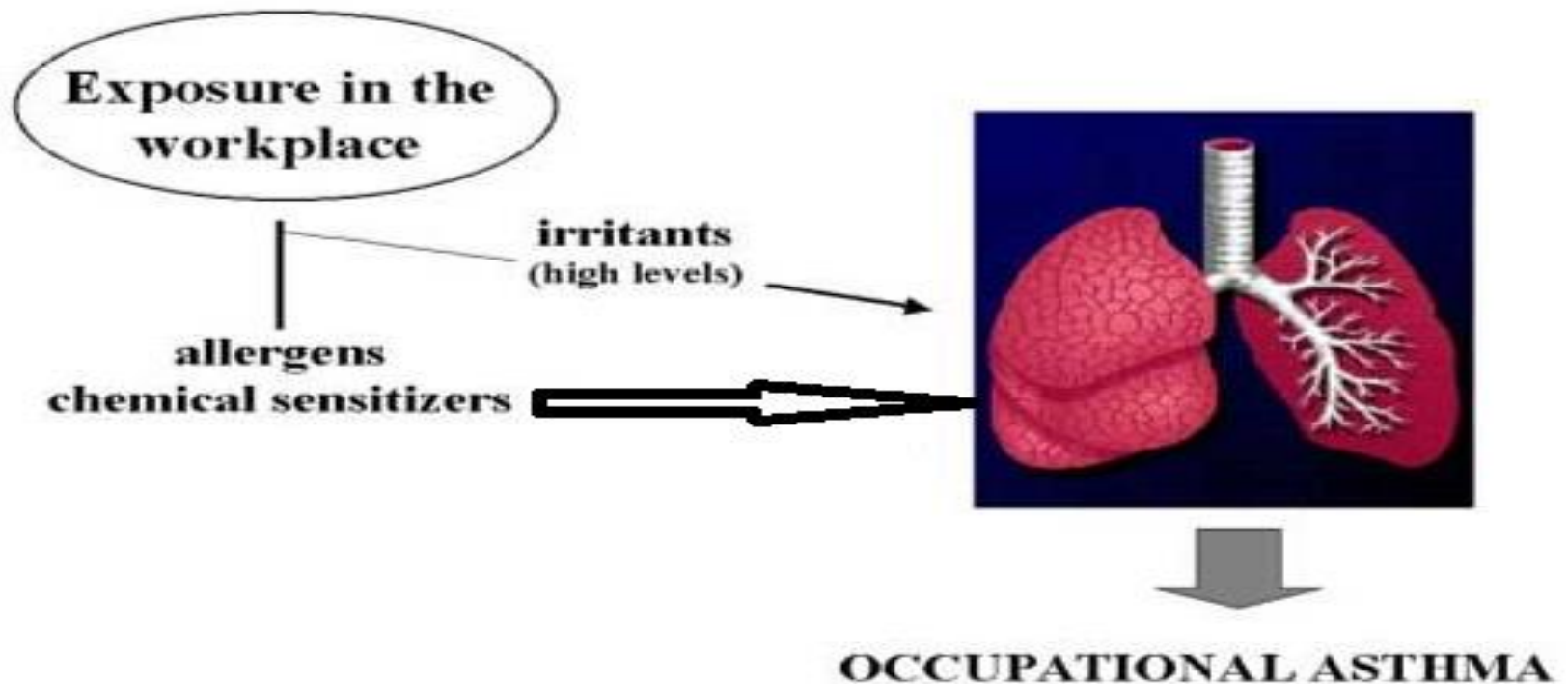
Sources of exposure

- ✓ **Lab workers:** "exposure to mice, rats, guinea pigs"
- ✓ **Farmers:** "grain mites, chicken, ducks"
- ✓ **Carpenters:** "Hard wood dust"
- ✓ **Veterinarians:** "cats, dogs, horses"
- ✓ **Chemicals :** Isocyanates (most common)



Pathogenesis

- Ag-Ab reaction with release of mediators leading to immediate or delayed reaction + irritation {Irritant-induced asthma (IriA)}



Reactive airways dysfunction syndrome

It is an example of **irritant-induced asthma**. A case of RADS is defined as follows:

- ✓ **No previous respiratory complaint.** (history)
- ✓ Exposure to known **irritant** in **high concentration**.
- ✓ **Onset** of symptoms after a **single** exposure **within 24 hours**, and persistence of symptoms for at **least 3 months**.
- ✓ Symptoms **similar to asthma** with cough, wheeze and dyspnea.
- ✓ Air-flow **obstruction** on **pulmonary function testing**.
- ✓ Presence of nonspecific **bronchial hyper-responsiveness**.
- ✓ Other pulmonary **diseases ruled out**.

Diagnosis

(1) Occupational history

(2) Clinically: tightness- cough- expectorations- wheeze

(3) Investigations:

- Chest X-ray: **Free**

- Pulmonary function test: **Obstructive**

- Inhalation bronchial provocation test: ← **Hyper-responsiveness.**

 - Carried out by allowing the patients to **inhale the accused substance** in the form of aerosol, pulmonary function tests are **performed before and after.**

- Stop Resume Work Test: ←

 - **Drop in eosinophil** in blood & sputum, several days **after stopping work.**



Byssinosis

It is an occupational asthma due to exposure to Cotton dust (as in textile industry).

Source of exposure

- ✓ Cotton , flax القطن والكتان
- ✓ Textile industry



Diagnosis

(1) Occupational history

(2) Clinically :

- Symptoms: Feeling of **chest tightness on the day following the holiday**, then proceed to the different Clinical grades
- Signs: **may be free between attacks**, sometimes wheeze in late stage according to functional grade

(3) Investigations:

- **Chest X-ray: “Free”**
- **Lung function test: Obstructive**
- **Inhalation bronchial provocation test.**

Prevention and control of occupational lung diseases

1. **Pre-employment & periodic medical examination:**
Pulmonary function tests
2. **Environmental monitoring**
3. **Administrative control measures:** worker rotation
4. **Adequate control:** adequate ventilation and dust control
5. **Personal protective equipments:** wearing masks



**May Success
be with you,
always.**

All The Best.