

Respiratory Block

**PATHOLOGY TEAM
430**

2nd Lecture

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■ RESTRICTIVE PULMONARY DISEASES :

• General considerations, definition and causes:

- 1) Restrictive pulmonary disease is a group of disorders characterized by reduced expansion of the lung and reduction in total lung capacity.
- 2) Examples include abnormalities of the chest wall from bony abnormalities or neuromuscular disease that restrict lung expansion. Here is the disease of the paranchyma, connective tissue surrounding the alveoli, interstissueium, alveolar wall, NOT DUCT, duct is intact here
- 3) Also included are the interstitial lung disease, a heterogenous group of disorders, characterized by interstitial accumulations of cells or non cellular material within the alveolar walls that restrict expansion and often interfere with gaseous exchange. Prominent examples are acute conditions such as the adult and neonatal respiratory distress syndromes; pneumoconioses such as coal worker's pneumoconiosis, silicosis and asbestosis; diseases of unknown etiology such as sarcoidosis and idiopathic pulmonary fibrosis, various other conditions such as eosinophilic granuloma , hypersensitivity

Macrophage and T lymphocyte can produce cytokines, ILs especially IL-8 Then neutrophil accumulated and secreted their lysosomes Fibrogenic factors like TGF beta is secreted by macrophage, enhancing the secretion of fibroblast, so fibrosis happened

Why the alveolar wall become سميك ? because of tow things

Fibrosis and connective tissue . Accumulation and infiltration of inflammatory cells So patient compline with hypoxia, severe dyspnea , cyanotic لونه ازرق and lungs become rigid (عس النحل ؟؟ hycolung)

إيش تسوي اختبار له؟ آر تري بلود أناليسيس و

CT scan

FEV1 وراح يكون normal

pneumonitis and chemical or drug associated disorders such as berylliosis or the pulmonary fibrosis associated with bleomycin toxicity; and immune disorders such as systemic lupus erythematosus, systemic sclerosis (scleroderma), Wegener

ما تكلّم عنها ولا شرحها
granulomatosis and Goodpasture syndrome.

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■ **ADULT RESPIRATORY DISTRESS SYNDROME (ARDS) shock lung**

1) ARDS is produced by diffuse alveolar damage with resultant increase in alveolar capillary permeability, causing **leakage** of protein-rich fluid into alveoli . **and RBCs**

2) Characteristics include the formation of an intra-alveolar **hyaline membrane** composed of fibrin and cellular debris.

3) The result is severe impairment of respiratory gas exchange with consequent severe hypoxia.

4) Causes include a wide variety of mechanisms and toxic agents, including Shock **he may developed ARDS** , sepsis, **trauma verey common**, uremia, aspiration of gastric contents, acute pancreatitis, inhalation of chemical irritants such as chlorine, **oxygen toxicity free radicals** or overdose with .street drugs such as heroin or therapeutic drugs such as bleomycin .
والأسباب هذه شرحها وركز عليها .

5) ARDS can be a manifestation of the severe acute respiratory syndrome (SARS). The SARS virus is a coronavirus that destroys the type II pneumocytes and causes diffuse alveolar damage.
ما شرحها.

6) ARDS is initiated by damage to alveolar capillary endothelium and alveolar epithelium and is influenced **by the following pathogenetic factors:**

- (a) Neutrophils release substances toxic to the alveolar wall.
- (b) Activation of the coagulation cascade is suggested by the presence of microemboli.
- (c) Oxygen toxicity is mediated by the formation of oxygen-derived free radicals.

ونادرا ما يكون معاه فايبروسيس لأن المريض عادة يموت قبل ما يتكون الفايبروسيس الذي يحتاج لوقت حتى يظهر يعني في الكرونك أما الحالة هذه فواضح أنها أكوت

■ NEONATAL RESPIRATORY DISTRESS SYNDROME (HYALINE MEMBRANE DISEASE)

• General considerations:

Neonatal respiratory distress syndrome is the most common cause of respiratory failure in the newborn and is the most common cause of death in premature infants. This syndrome is marked by dyspnea, cyanosis and tachypnea shortly after birth. This syndrome results from a deficiency of surfactant, most often as a result of immaturity.

Leakage of RBCs → fibrin → hyaline membrane

• Predisposing factors:

- 1) Prematurity.
- 2) Maternal diabetes mellitus and delivery by cesarean section.

■ Pneumoconioses تغير الرئة

These environmental diseases are caused by inhalation of inorganic dust particles. **They are exemplified by the following conditions:**

Acanthracosis is caused by inhalation of carbon dust; it is endemic in urban areas and causes no harm. Characterized by carbon-carrying macrophages, **it results in irregular black patches visible on gross inspection.** وهذا موجود عندي وعندك

1) **Coal worker's pneumoconiosis** is caused by inhalation of **coal dust**, which contains both carbon and silica.

(a) Simple coal worker's pneumoconiosis :

is marked by coal macules around the bronchioles, formed by ingestion of coal dust particles by macrophages. In most cases, it is inconsequential and produces no disability.

(b) Progressive massive fibrosis :

is marked by fibrotic nodules filled with necrotic black fluid. It can result in bronchiectasis! pulmonary hypertension! or death from respiratory failure or right-sided heart failure.

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2) Silicosis is a chronic occupational lung disease caused by exposure to free silica dust; it is seen in miners, glass manufacturers and stone cutters. In the Gulf region and in JJ desert climate", it could be due to inhalation of sand. **Building industry**

a) This disease is initiated by ingestion of silica dust by alveolar macrophages; damage to macrophages initiates an inflammatory response mediated by lysosomal enzymes and various chemical mediators.

b) Silicotic nodules that enlarge and eventually obstruct the airways and blood vessels are characteristics.

c) Silicosis is associated with increased susceptibility to tuberculosis; the frequent concurrence is referred to as silicotuberculosis. Granuloma formation it is not rare disease here

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3) Asbestosis is caused by inhalation of asbestos fibers.

a) This disease is initiated by uptake of asbestos fibers by alveolar macrophages. A fibroblastic response occurs, probably from release of fibroblast-stimulation growth factors by macrophages and leads to diffuse interstitial fibrosis mainly in the lower lobes.

b) It is characterized by the presence of ferruginous bodies which are yellow-brown, rod-shaped bodies because of the **hemosiderin** with clubbed ends that stain positively with **Prussian blue**; these arise from iron and protein coating on asbestos fibers. Dense hyalinized fibrocalcific plaques of the parietal pleura are also present

c) Asbestosis results In marked predisposition to bronchogenic carcinoma and to malignant **mesothelioma** of the pleura or peritoneum. Cigarette smoking further increases the risk of **bronchogenic carcinoma**

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■ Selected Examples of Interstitial Lung Disease

Disorder	Description
Hypersensitivity pneumonitis (extrinsic allergic alveolitis)	Interstitial pneumonia caused by inhalation of various antigenic substances exemplified by inhalation of spores of thermophilic actinomycetes from moldy hay causing "farmer's lung" .
Goodpastures syndrome Young man comes with hemoptosis وبناخذ إن شاء الله هذا المرض مع بلوك الرينال يعني سعال ودم	Hemorrhagic pneumonitis and glomerulonephritis caused by antibodies directed against glomerular basement membranes .
Eosinophilic granuloma	Proliferation of histiocytic cells related to Langerhan's cells of the skin . malignant
Idiopathic pulmonary fibrosis	Immune complex disease with progressive fibrosis of the alveolar wall.
Sarcoidosis	Granulomatous disorder of unknown etiology. #

ونفرق بين هذا المرض وبين التي بي أنه ما فيه أسيد فاست باسيلاي وما فيه كازيشن نيكروسيس تجبن #

Good Luck