PE (Pulmonary Circulation)

Definition

Etiology

Arises from thrombi in the systemic venous circulation of the right side of the heart, or from tumors in the venous circulation.

Where do more than 90% of pulmonary emboli originate from?

DVT in lower extremities

Virchow's Triad (risk factors)

Venous stasis + endothelial injury + hypercoagulable state (pregnancy, cancer, estrogen OCP, nephrotic syndrome)

Clinical features

Tachycardia + tachypnea

Gold standard diagnostic test

Spiral CT

Treatment

Anticoagulation (heparin, Lovenox, warfarin) for at least 3 months

Buzzwords: Dyspnea after surgery, travel (airplane), LE Fx. May have c/o calf pain also. Lung scan with perfusion defects, venous stasis + vessel wall injury + hypercoagulability

Pneumoconioses

Definition

Chronic fibrotic lung diseases caused by inhalation of coal dust or various inert/-inorganic/silicate dusts

Clinically important pneumoconioses

Coal workers' pneumoconiosis, silicosis, and asbestosis

Pneumoconioses (cont)

Clinical Features

Often asymptomatic, can have dyspnea, inspiratory crackles, clubbing, and cyanosis

Lab Findings

PGTs show restrictive dysfunction and reduced diffusing capacity. CXR variable.

Treatment

Supportive (no effective tx available): O2, vaccines, rehab

Foreign Body Aspiration

Definition

Aspiration of gastric contents, inert material, toxic material, or poorly-chewed food. Know Heimlich maneuver!

Clinical Features

Chocking, coughing, unexplained wheezing or hemoptysis

Possible Sequelae

Asphyxia, PNA (aspiration pneumonia),

What is one of the most common causes of ARDS?

Acute gastric aspiration

Lab Studies

Expiratory radiography may show regional hyperinflation caused by a check valve effect

Treatment

Bronchoscopy for diagnosis and removal/treatment. Cultures should be obtained if post-obstructive PNA suspected

Pulmonary HTN (Pulmonary Circulation)

Definition

Present when the pulmonary arterial pressure rises to a level inappropriate for a given cardiac output; self-perpetuation once present

Primary (idiopathic) pulmonary HTN

Rare + fatal

Secondary pulmonary HTN

Many causes that develop as a result from obliteration and obstruction of the pulmonary arterial tree

Hypoxia

Most important/potent stimulus of pulmonary arterial vasoconstriction (others are acidosis and veno-occlusive diseases)

Clinical features

Dyspnea, angina-like pain, weakness, fatigue, edema, ascites, cyanosis, syncope

Signs on physical exam

Narrow splitting and accentuation of the 2nd heart sound, systolic ejection click

Treatment

Chronic oral anticoagulants, CCB to lower systemic arterial pressure, and prostacyclin (a potent pulmonary vasodilator), and heart-lung transplant

ARDS (Acute adult respiratory distress syndrome)

Definition

Increased permeability of the alveolar capillary membranes --> leads to pulmonary edema and widespread inflammation

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ARDS (Acute adult respiratory distress syndrome) (cont)

3 Clinical Settings that account for 75% of ARDS cases

> *Sepsis syndrome* + severe multiple trauma + aspiration of gastric contents

Clinical Features

> Rapid onset of dyspnea 12-24 hrs after the precipitating event, PE shows tachycardia, frothy pink/red sputum, diffuse crackles. Many pts are cyanotic with increasingly severe hypoxemia that is refractory to administered O2

Lab Findings

> CXR shows peripheral infiltrates with air bronchograms, spares costophrenic angle, can get multi-organ failure

Treatment

> Treat underlying precipitating problems, supportive care (O2, PEEP), high mortality rate. 33% of deaths occur within 3 days of ARDS sx onset

Sarcoidosis

Definition

> Multiorgan disease involving abnormal collections of inflammatory cells (granulomas), most often in the lungs

Classic Patient

> Higher incidence in North American black women, and northern European whites

Clinical features

> Respiratory sx (cough, dyspnea of insidious onset, chest discomfort)

Other extrapulmonary signs/sx

> Malaise, fever, erythema nodosum or enlargement of parotid glands/lymph nodes/spleen/liver

Sarcoidosis (cont)

Lab Findings

> ACE levels elevated, CXR shows bilateral hilar and right paratracheal adenopajhty and bilateral diffuse reticular infiltrates

How to confirm diagnosis

> Transbronchial biopsy of the lung or fine-needle node biopsy --> will show non-caseating granulomas

Treatment

> Corticosteroids at maintenance doses

Idiopathic Fibrosing Interstitial Pneumonia

General

> Most common dx among pts with interstitial lung disease.

Three histopathologic patterns w/ different natural histories and treatments

> Usual interstitial PNA, respiratory bronchiolitis-associated interstitial lung disease, and acute interstitial pneumonitis

Clinical Features

> Insidious dry cough, exertional dyspnea, constitutional sx. Exam might show clubbing and inspiratory crackles.

Lab Findings

> CXR shows fibrosis, CT shows fibrosis + pleural honeycombing, PFTs show restrictive pattern (decreased lung volume with a normal to increased FEV1/FVC ratio)

Treatment

> Controversial--none has been showed to improve survival or QOL

Hyaline Membrane Disease

Definition

> Developmental insufficiency of surfactant production and structural insufficiency in lungs. Most common cause of respiratory disease in preterm infant

Etiology

> Deficiency of surfactant

Clinical Features

> Signs of respiratory distress

Lab Findings

> CXR shows air bronchograms, diffuse bilateral atelectasis causing a *ground glass* appearance, doming of the diaphragm

Treatment

> Synchronized intermittent mandatory ventilation. (Can also give exogenous surfactant in delivery room for prophylaxis)

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