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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