Pleural Effusion

Pleural effusion is characterized by the accumulation of fluid in the pleural space. The fluid can be transudative, exudative, or can be due to chylothorax. Clinical features can include dyspnea, pleuritic chest pain, and decreased breath sounds on the affected side. Diagnosis is made by examining chest X-ray and Light criteria. Management may include treating the underlying disorder and thoracentesis as indicated.

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Characteristics

Accumulation of Fluid in Pleural Space
Fluid in Space between Lungs and Chest-wall
Pleural effusion is characterized by the accumulation of fluid in the pleural space. Fluid can be transudative, exudative, or due to chylothorax.

Types

Transudative
Transparent-transudate Source of Fluid around Lungs
Transudative pleural effusion presents with clear fluid. It occurs due to an increase in hydrostatic pressure or a decrease in oncotic pressure. Common causes may include congestive heart failure, cirrhosis, peritoneal dialysis, or nephrotic syndrome.

Exudative
Oozing-exudate Source of Fluid around Lungs
Exudative pleural effusion presents with cloudy fluid. It occurs due to increased vascular permeability (trauma), inflammation or infection, or malignancy. Other common causes may include connective tissue disorders, pulmonary embolism, or coronary artery bypass surgery.

Chylothorax
Kilo-Thor-axe
Pleural effusion resulting from chylothorax presents as milky-appearing fluid. It occurs due to thoracic duct injury. It also can be seen in patients with high triglycerides and can be related to malignancies and infections.

Clinical Features

Dyspnea
Disc-P-lungs
Pleural effusion can cause dyspnea due to compression of the lungs due to fluid. Increased fluid in the pleural space limits ability of the lungs to expand.

Pleuritic Chest Pain
Pearls causing Pain-bolt
Pleuritic chest pain is characterized by sharp pain triggered by movements of the pleural layers. Provoking movements including coughing, sneezing, and deep inspiration.

Decreased Breath Sounds
Down-arrow Muffled Lungs
The presence of pleural effusion in patients leads to decreased breath sounds on auscultation. The effusion creates a fluid layer around the lungs which inhibits acoustic transmission to the stethoscope.

Diagnosis

Chest X-ray

Chest X-ray

A chest x-ray is the initial diagnostic tool for diagnosing pleural effusion. It can present as opacification and blunting of costophrenic angle in the affected area.

Light Criteria

Lighthouse

Types of pleural effusion can be differentiated with Light criteria. Exudative is characterized by pleural fluid protein/serum protein ratio >0.5, pleural fluid lactate dehydrogenase (LDH)/serum LDH ratio >0.6, and pleural fluid LDH >2/3 of the upper limit of normal serum LDH.

Management

Treat Underlying Disorder

Treating Underlying Attacker

Treatment of pleural effusion is based on the etiology. For example, transudative pleural effusions caused by heart failure can be improved by proper management of the patient's heart failure.

Thoracentesis

Thor-centesis-incense

Pleural effusions with certain clinical features or characteristics must be drained via thoracentesis. These include effusions that fail to respond to treatment, effusions associated with fever, those that present with pleuritic chest pain, and/or those that present with bilateral effusions with unequal size. In addition, therapeutic thoracentesis is indicated in patients with moderate to large pleural effusions and respiratory distress.

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