

CAUSES OF PLEURAL EFFUSION

Cause	Comments
Transudate	
Heart failure	Bilateral effusions in 81%; right-sided in 12%; left-sided in 7% With left ventricular failure, increased interstitial fluid, which crosses the visceral pleura and enters the pleural space
Cirrhosis with ascites (hepatic hydrothorax)	Right-sided effusions in 70%; left-sided in 15%; bilateral in 15% Ascitic fluid migration to the pleural space through diaphragmatic defects Effusion present in about 5% of patients with clinically apparent ascites
Hypoalbuminemia	Uncommon Bilateral effusions in > 90% Decreased intravascular oncotic pressure causing transudation into pleural space Associated with edema or anasarca elsewhere
Nephrotic syndrome	Usually bilateral effusions; commonly subpulmonic Decreased intravascular oncotic pressure plus hypervolemia causing transudation into pleural space
Hydronephrosis	Retroperitoneal urine dissection into pleural space, producing urin thorax
Constrictive pericarditis	Increases IV hydrostatic pressure In some patients, accompanied by massive anasarca and ascites due to a mechanism similar to that for hepatic hydrothorax
Atelectasis	Increases negative intrapleural pressure
Peritoneal dialysis	Mechanism similar to that for hepatic hydrothorax Pleural fluid with characteristics similar to dialysate
Trapped lung	Encasement with fibrous peel increasing negative intrapleural pressure
Systemic capillary leak syndrome	Exudative or borderline effusion
Myxedema	Rare Accompanied by anasarca and pericardial effusion Effusion present in about 5% Usually transudate if pericardial effusion is also present; either transudate or exudate if pleural effusion is isolated
Exudate	
Pneumonia (parapneumonic effusion)	May be uncomplicated or loculated and/or purulent (empyema) Thoracentesis necessary to differentiate
Cancer	Most commonly, lung, breast cancer or lymphoma, but possible with any tumor metastatic to pleurae Typically causing dull, aching chest pain
Pulmonary embolism	Effusion present in about 30%: Almost always exudative; bloody in < 50% Pulmonary embolism suspected when dyspnea is disproportionate to size of effusion

CAUSES OF PLEURAL EFFUSION—Continued

Cause	Comments
Viral infection	Effusion usually small with or without parenchymal infiltrate Predominantly systemic symptoms rather than pulmonary symptoms
Coronary artery bypass surgery	Effusions left-sided or larger on the left in 73%; bilateral and equal in 20%; right-sided or larger on the right in 7% 10% have > 25% hemithorax filled with fluid 30 days postoperatively Bloody effusions related to postoperative bleeding likely to resolve; Nonbloody effusions likely to recur etiology unknown but probably with an immunologic basis
TB	Effusion usually unilateral and ipsilateral to parenchymal infiltrates if present Effusion due to hypersensitivity reaction to TB protein
Sarcoidosis	Pleural fluid TB cultures positive in < 20% Effusion in 1–2% Extensive parenchymal sarcoid and often extrathoracic sarcoid
Uremia	Pleural fluid predominantly lymphocytic Effusion in about 3% In > 50%, symptoms secondary to effusion: most commonly fever (50%), chest pain (30%), cough (35%), and dyspnea (20%)
Infradiaphragmatic abscess	Diagnosis of exclusion Causes sympathetic subpulmonic effusion Neutrophils predominant in pleural fluid pH and glucose normal
HIV infection	Many possible etiologic factors: pneumonias (parapneumonic), including <i>Pneumocystis jiroveci</i> pneumonia and other opportunistic infections, TB, pulmonary Kaposi's sarcoma
RA	Typically in elderly men with rheumatoid nodules and deforming arthritis
SLE	Must differentiate from parapneumonic effusion May be first manifestation of SLE Common with drug-induced SLE Diagnosis established by serologic tests of blood, not of pleural fluid
Drugs	Many drugs, most notably bromocriptine, dantrolene, nitrofurantoin, IL-2 (for treatment of renal cell cancer and melanoma), and methysergide
Ovarian hyperstimulation syndrome	This syndrome complicates ovulation induction with human chorionic gonadotropin (hCG) and occasionally clomiphene Effusion developing 7–14 days after hCG injection Effusion right-sided in 52%; bilateral in 27%

CAUSES OF PLEURAL EFFUSION—Continued

Cause	Comments
Pancreatitis	<p>Acute: Effusion present in about 50%: bilateral in 77%; left-sided in 16%; right-sided in 8%. Due to transdiaphragmatic transfer of the exudative inflammatory fluid and diaphragmatic inflammation</p> <p>Chronic: Effusion due to sinus tract from pancreatic pseudocyst through diaphragm into pleural space Predominantly chest symptoms rather than abdominal symptoms Patients presenting with cachexia that resembles cancer</p>
Superior vena cava syndrome	<p>Usually caused by blockage of intrathoracic venous and lymphatic flow by cancer or a thrombosis in a central catheter</p>
Esophageal rupture	<p>Effusion may be an exudate or a chylothorax Patients extremely sick Medical emergency Morbidity and mortality due to infection of the mediastinum and pleural space</p>
Benign asbestos pleural effusion	<p>Effusion occurring > 30 yr after initial exposure Frequently asymptomatic Tends to come and go Must rule out mesothelioma</p>
Benign ovarian tumor (Meigs' disease)	<p>Mechanism similar to that for hepatic hydrothorax Surgery sometimes indicated for patients with ovarian mass, ascites, and pleural effusion For diagnosis, disappearance of ascites and effusion postoperatively required</p>
Yellow nail syndrome	<p>Triad of pleural effusion, lymphedema, and yellow nails, sometimes appearing decades apart Pleural fluid with relatively high protein but low LDH Tendency for effusion to recur No pleuritic chest pain</p>