

1718 Tuberculous Pleuritis (See also Chap. 202) In many parts of the world, the most common cause of an exudative pleural effusion is tuberculosis (TB), but tuberculous effusions are relatively uncommon in the United States. Tuberculous pleural effusions usually are associated with primary TB and are thought to be due primarily to a hypersensitivity reaction to tuberculous protein in the pleural space. Patients with tuberculous pleuritis present with fever, weight loss, dyspnea, and/or pleuritic chest pain. The pleural fluid is an exudate with predominantly small lymphocytes. The diagnosis is established by demonstrating high levels of TB markers in the pleural fluid (adenosine deaminase >40 IU/L or interferon γ >140 pg/mL). Alternatively, the diagnosis can be established by culture of the pleural fluid, needle biopsy of the pleura, or thoracoscopy. The recommended treatments of pleural and pulmonary TB are identical (Chap. 202).

Effusion Secondary to Viral Infection Viral infections are probably responsible for a sizable percentage of undiagnosed exudative pleural effusions. In many series, no diagnosis is established for ~20% of exudative effusions, and these effusions resolve spontaneously with no long-term residua. The importance of these effusions is that one should not be too aggressive in trying to establish a diagnosis for the undiagnosed effusion, particularly if the patient is improving clinically.

Chylothorax A chylothorax occurs when the thoracic duct is disrupted and chyle accumulates in the pleural space. The most common cause of chylothorax is trauma (most frequently thoracic surgery), but it also may result from tumors in the mediastinum. Patients with chylothorax present with dyspnea, and a large pleural effusion is present on the chest radiograph. Thoracentesis reveals milky fluid, and biochemical analysis reveals a triglyceride level that exceeds 1.2 mmol/L (110 mg/dL). Patients with chylothorax and no obvious trauma should have a lymphangiogram and a mediastinal CT scan to assess the mediastinum for lymph nodes. The treatment of choice for most chylothoraxes is insertion of a chest tube plus the administration of octreotide. If these modalities fail, a pleuroperitoneal shunt should be placed unless the patient has chylous ascites. Alternative treatments are ligation of the thoracic duct and percutaneous transabdominal thoracic duct blockage. Patients with chylothoraxes should not undergo prolonged tube thoracostomy with chest tube drainage because this will lead to malnutrition and immunologic incompetence.

Hemothorax When a diagnostic thoracentesis reveals bloody pleural fluid, a hematocrit should be obtained on the pleural fluid. If the hematocrit is more than one-half of that in the peripheral blood, the patient is considered to have a hemothorax. Most hemothoraxes are the result of trauma; other causes include rupture of a blood vessel or tumor. Most patients with hemothorax should be treated with tube thoracostomy, which allows continuous quantification of bleeding. If the bleeding emanates from a laceration of the pleura, apposition of the two pleural surfaces is likely to stop the bleeding. If the pleural hemorrhage exceeds 200 mL/h, consideration should be given to thoracoscopy or thoracotomy.

Miscellaneous Causes of Pleural Effusion There are many other causes of pleural effusion (Table 316-1). Key features of some of these conditions are as follows: If the pleural fluid amylase level is elevated, the diagnosis of esophageal rupture or pancreatic disease is likely. If the patient is febrile, has predominantly polymorphonuclear cells in the pleural fluid, and has no pulmonary parenchymal abnormalities, an intraabdominal abscess should be considered.

The diagnosis of an asbestos pleural effusion is one of exclusion. Benign ovarian tumors can produce ascites and a pleural effusion (Meigs' syndrome), as can the ovarian hyperstimulation syndrome. Several drugs can cause pleural effusion; the associated fluid is usually eosinophilic. Pleural effusions commonly occur after coronary artery bypass surgery. Effusions occurring within the first weeks are typically left-sided and bloody, with large numbers of eosinophils, and respond to one or two therapeutic thoracenteses. Effusions occurring after the first few weeks are typically left-sided and clear yellow, with predominantly small lymphocytes, and tend to recur. Other medical manipulations that induce pleural effusions include abdominal

TABLE 316-1 DIFFERENTIAL DIAGNOSES OF PLEURAL EFFUSIONS

Transudative Pleural Effusions

1. Congestive heart failure
2. Cirrhosis
3. Nephrotic syndrome
4. Peritoneal dialysis
5. Superior vena cava obstruction
6. Myxedema
7. Urinothorax

Exudative Pleural Effusions

1. Neoplastic diseases
 - a. Metastatic disease
 - b. Mesothelioma
2. Infectious diseases
 - a. Bacterial infections
 - b. Tuberculosis
 - c. Fungal infections
 - d. Viral infections
 - e. Parasitic infections
3. Pulmonary embolization
4. Gastrointestinal disease
 - a. Esophageal perforation
 - b. Pancreatic disease
 - c. Intraabdominal abscesses
 - d. Diaphragmatic hernia
 - e. After abdominal surgery
 - f. Endoscopic variceal sclerotherapy
 - g. After liver transplant
5. Collagen vascular diseases
 - a. Rheumatoid pleuritis
 - b. Systemic lupus erythematosus
 - c. Drug-induced lupus
 - d. Immunoblastic lymphadenopathy
 - e. Sjögren syndrome
 - f. Granulomatosis with polyangiitis (Wegener)
 - g. Churg-Strauss syndrome
6. Post-coronary artery bypass surgery
7. Asbestos exposure
8. Sarcoidosis
9. Uremia
10. Meigs' syndrome
11. Yellow nail syndrome
12. Drug-induced pleural disease
 - a. Nitrofurantoin
 - b. Dantrolene
 - c. Methysergide
 - d. Bromocriptine
 - e. Procarbazine
 - f. Amiodarone
 - g. Dasatinib
13. Trapped lung
14. Radiation therapy
15. Post-cardiac injury syndrome
16. Hemothorax
17. Iatrogenic injury
18. Ovarian hyperstimulation syndrome
19. Pericardial disease
20. Chylothorax