



Pericardial and Myocardial Disease

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PERICARDIAL DISEASE

The pericardium is a thin, fibrous sac that envelops the heart and consists of two layers: visceral and parietal. The space between these two layers contains a small amount of fluid (15 to 50 mL), which is a plasma ultrafiltrate. The pericardium has mechanical, immunologic, and anatomic barrier functions.

Due to a paucity of randomized trial data and absence of practice guideline statements, the recommendations for assessment and treatment of pericardial disorders in this chapter are largely based on expert opinion and professional consensus.

Acute Pericarditis

Definition and Epidemiology

Acute pericarditis is an inflammatory disorder of the pericardium that has several causes. It is difficult to determine the exact incidence of acute pericarditis because a subclinical course is common.

Pathology

About 85% of cases are idiopathic or viral. Less common causes include infection (other than viral), uremia, trauma, metabolic disorders, autoimmune disorders, and neoplastic involvement. Causes of acute pericarditis are listed in [Table 10-1](#).

Clinical Presentation

Patients may have symptoms of low-grade fever, malaise, dyspnea, and less frequently, hiccups (i.e., phrenic nerve irritation). The classic manifestation of acute pericarditis is chest pain, which is often severe, sharp, and positional. It is aggravated by a supine position, inspiration, and cough, and it is relieved by sitting up and leaning forward. The pain is usually substernal and left precordial, and it may radiate to the neck, shoulder, and scapular ridge, mimicking that of myocardial ischemia. Chest discomfort may be mild or absent in patients with connective tissue disorders, uremia, or neoplastic involvement.

In the absence of significant pericardial effusion, results of the inspection and palpation of the precordium are normal. A high-pitched, rasping pericardial friction rub is heard on cardiac auscultation in most patients with acute pericarditis. It may have three components corresponding to atrial contraction, ventricular systole, and early diastole, and it is best appreciated at end expiration with the patient leaning forward. It can be intermittent, and serial auscultation is recommended.

Diagnosis

The electrocardiographic (ECG) changes of acute pericarditis typically evolve over days to weeks. In the early stages, there is diffuse ST segment elevation (i.e., concave upward) with upright T waves and PR depression, which occasionally precedes the ST segment elevation. Resolution of the ST elevations is followed by diffuse T wave inversion. These ECG changes are not always seen, and serial tracings should be obtained.

The laboratory findings of acute idiopathic pericarditis are not specific and consist of mild elevation of the white blood cell count, sedimentation rate, and C-reactive protein level. If indicated, specific testing for tuberculosis, human immunodeficiency virus (HIV), thyroid disease, or autoimmune disorders is recommended. However, routine performance of viral serologic testing has limited utility. Elevation of serum cardiac biomarkers (e.g., creatine kinase, troponin) reflects involvement of the adjacent

TABLE 10-1 CAUSES OF PERICARDITIS

Idiopathic
Infectious
Viral (echovirus, coxsackievirus, adenovirus, cytomegalovirus, hepatitis B virus, Epstein-Barr virus, human immunodeficiency virus)
Bacterial (<i>Staphylococcus</i> , <i>Streptococcus</i> , and <i>Mycoplasma</i> species; <i>Borrelia burgdorferi</i> , <i>Haemophilus influenzae</i> , <i>Neisseria meningitidis</i>)
Mycobacterial (<i>Mycobacterium tuberculosis</i> , <i>Mycobacterium avium-intracellulare</i>)
Fungal (<i>Histoplasma</i> and <i>Coccidioides</i> species)
Protozoal
Immune or inflammatory
Connective tissue disease (systemic lupus erythematosus, rheumatoid arthritis, scleroderma)
Arteritis (polyarteritis nodosa, temporal arteritis)
Late after myocardial infarction (Dressler's syndrome), late postcardiotomy or thoracotomy
Drug induced
Procainamide, hydralazine, isoniazid, cyclosporine
Trauma or damage to adjacent structures
Penetrating trauma
Acute myocardial infarction, cardiac surgery, coronary angioplasty, implantable defibrillators, pacemakers
Pneumonia
Neoplastic disease
Primary: mesothelioma, fibrosarcoma, lipoma
Secondary (metastatic or direct extension): breast, lung, thyroid carcinoma, lymphoma, leukemia, melanoma
Radiation induced
Miscellaneous
Uremia
Hypothyroidism
Gout