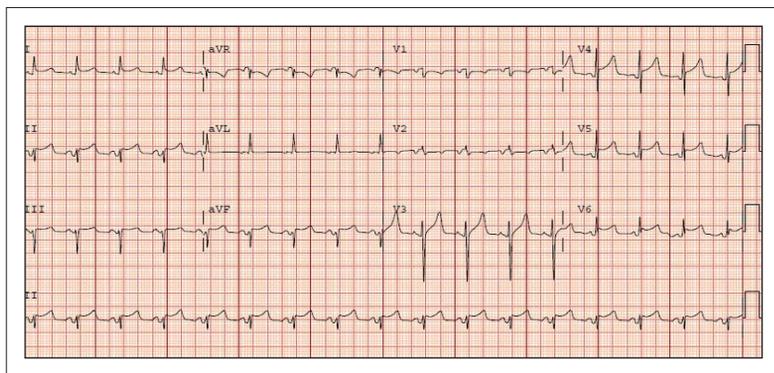


# ECG Diagnosis: Acute Pericarditis

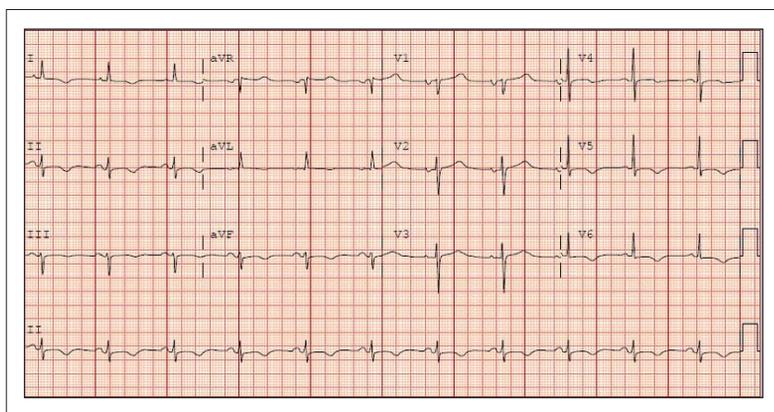
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**Figure 1. 12-lead electrocardiogram from a 59-year-old man with pleuritic chest pain radiating to the left arm and neck for 2 days, worsened by supine position.**  
Demonstrates nearly diffuse, concave-upwards ST-segment elevation and PR-segment depressions (Stage I), consistent with acute pericarditis.



**Figure 2. 12-lead electrocardiogram from same patient 17 days later following treatment with nonsteroidal antiinflammatory drugs.**  
Demonstrates T-wave inversions in leads I, II, III, aVF, V<sub>4</sub>-V<sub>6</sub>, with normalization of the ST- and PR-segments (Stage III).

Acute pericarditis is an inflammation of the pericardium that can result in chest pain, pericardial friction rub, and serial electrocardiogram (ECG) changes. The most common causes of pericarditis are viral or idiopathic in developed countries, and tuberculosis in developing countries.<sup>1</sup> Other causes of pericarditis include bacterial and fungal infections, myocardial infarction, chest trauma, neoplasm, renal failure, radiation therapy, autoimmune disorders, and certain medications (eg, phenytoin, rifampin).<sup>2</sup> Patients must have 2 of the following 4 clinical criteria for diagnosis: typical pericardial chest pain, pericardial friction rub, widespread ST-segment elevation or PR depression, and new or worsening pericardial effusion on echocardiography.<sup>1,3</sup> In patients with acute pericarditis, chest pain is generally abrupt in onset; pleuritic, and substernal or left precordial in location; may radiate to the neck, arms, or jaw; and is relieved by leaning forward and worsened by lying supine.<sup>2</sup> The 4 ECG stages of pericarditis include: 1) diffuse ST elevation and/or PR depression, 2) normalization of ST- and PR-segments, 3) diffuse T-wave inversions with isoelectric ST-segments, and 4) normalization of the ECG.<sup>4,5</sup> Plasma troponin concentrations are elevated in 35% to 50% of patients with pericarditis, a finding that is thought to be caused by epicardial inflammation rather than myocardial necrosis.<sup>5</sup> Transthoracic echocardiography is often recommended in patients with suspected pericarditis, because the presence of an effusion helps to confirm the diagnosis, and clinical or echocardiographic evidence of tamponade indicates the need for pericardiocentesis.<sup>5</sup> Although the mainstay of treatment includes nonsteroidal anti-inflammatory drugs, colchicine is an efficacious adjunct to nonsteroidal anti-inflammatory drugs therapy, reducing recurrence rates by 50%.<sup>1,3,5</sup> Admission is recommended in patients with fever > 38°C (100.4°F), subacute onset (several days or weeks), tamponade or pericardial effusion > 20 mm, or lack of response after one week of treatment, as patients with these findings are at increased risk of complications.<sup>1,5</sup> ♦

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