

Serial performance of ECGs (every 30–60 min) is recommended in the ED evaluation of suspected ACS. In addition, an ECG with right-sided lead placement should be considered in patients with clinically suspected ischemia and a nondiagnostic standard 12-lead ECG. Despite the value of the resting ECG, its sensitivity for ischemia is poor—as low as 20% in some studies.

Abnormalities of the ST segment and T wave may occur in a variety of conditions, including pulmonary embolism, ventricular hypertrophy, acute and chronic pericarditis, myocarditis, electrolyte imbalance, and metabolic disorders. Notably, hyperventilation associated with panic disorder can also lead to nonspecific ST and T-wave abnormalities. Pulmonary embolism is most often associated with sinus tachycardia but can also lead to rightward shift of the ECG axis, manifesting as an S-wave in lead I, with a Q-wave and T-wave in lead III (**Chaps. 240 and 279**). In patients with ST-segment elevation, the presence of diffuse lead involvement not corresponding to a specific coronary anatomic distribution and PR-segment depression can aid in distinguishing pericarditis from acute MI.

CHEST RADIOGRAPHY

(See **Chap. A12**) Plain radiography of the chest is performed routinely when patients present with acute chest discomfort and selectively when individuals who are being evaluated as outpatients have subacute or chronic pain. The chest radiograph is most useful for identifying pulmonary processes, such as pneumonia or pneumothorax. Findings are often unremarkable in patients with ACS, but pulmonary edema may be evident. Other specific findings include widening of the mediastinum in some patients with aortic dissection, Hampton's hump or Westermarck's sign in patients with pulmonary embolism (**Chaps. 279 and A12**), or pericardial calcification in chronic pericarditis.

CARDIAC BIOMARKERS

Laboratory testing in patients with acute chest pain is focused on the detection of myocardial injury. Such injury can be detected by the presence of circulating proteins released from damaged cardiomyocytes. Owing to the time necessary for this release,