

arrhythmias, and assessing for ischemia after a revascularization procedure.

The most common form of stress testing uses continuous ECG monitoring while the patient walks on a treadmill. With each advancing stage, the speed and incline of the belt increases, increasing the amount of work the patient performs. The commonly used Bruce protocol employs 3 minutes of exercise at each

stage. The modified Bruce protocol incorporates two beginning stages with slower speeds and lesser inclines than are used in the standard Bruce protocol.

The modified Bruce or similar protocols are used for older, markedly overweight, and unstable or more debilitated patients. Exercise testing may also be performed using a bicycle or arm ergometer. The stress test is deemed adequate if the patient achieves 90% of his or her predicted maximal heart rate, which is equal to 220 minus the patient's age. Indications for stopping the test include fatigue, severe hypertension (>220 mm Hg systolic), worsening angina during exercise, developing marked or widespread ischemic ECG changes, significant arrhythmias, or hypotension. The diagnostic accuracy of stress testing is improved with adjunctive echocardiography or radionuclide imaging. Contraindications to stress testing include unstable angina, acute MI, poorly controlled hypertension (blood pressure >220/110 mm Hg), severe aortic stenosis (valve area <1.0 cm²), and decompensated congestive heart failure. In the era of reperfusion therapy (i.e. thrombolytic and percutaneous interventions), for acute coronary syndromes or acute MI, little role exists for the pre-discharge submaximal stress test that was commonly used in the past.

The diagnostic accuracy of the exercise test depends on the pretest likelihood of CAD in a given patient, the sensitivity and specificity of the test results in that patient population, and the

TABLE 4-3 ELECTROCARDIOGRAPHIC LOCALIZATION OF MYOCARDIAL INFARCTION

INFARCT LOCATION	LEADS DEPICTING PRIMARY ELECTROCARDIOGRAPHIC CHANGES	LIKELY VESSEL INVOLVED*
Inferior	II, III, aVF	RCA
Septal	V ₁ , V ₂	LAD
Anterior	V ₃ , V ₄	LAD
Anteroseptal	V ₁ to V ₄	LAD
Extensive anterior	I, aVL, V ₁ to V ₆	LAD
Lateral	I, aVL, V ₅ to V ₆	CIRC
High lateral	I, aVL	CIRC
Posterior [†]	Prominent R in V ₁	RCA or CIRC
Right ventricular [‡]	ST elevation in V ₁ ; more specifically, V ₄ R in setting of inferior infarction	RCA

CIRC, Circumflex artery; LAD, left anterior descending coronary artery; RCA, right coronary artery.

*This is a generalization; variations occur.

[†]Usually in association with inferior or lateral infarction.

[‡]Usually in association with inferior infarction.

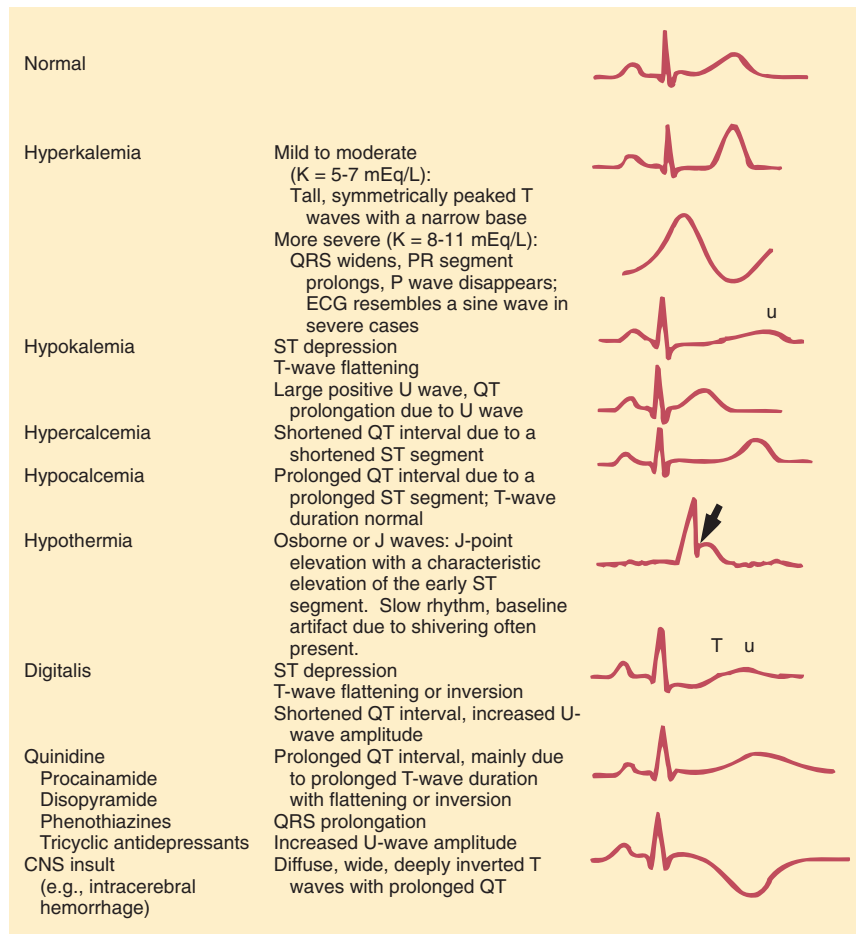


FIGURE 4-8 Metabolic and drug influences on the electrocardiographic recording. CNS, Central nervous system; ECG, electrocardiogram.