

- ST and/or T wave abnormalities suggesting myocardial ischemia



*Myocardial ischemia suggested by ST segment depression, T wave inversion, and U wave.*

- Ischemic ST segment changes:

- Horizontal or downsloping ST segments with or without T wave inversion

Flutter waves or prominent atrial repolarization waves (as can be seen in left/right atrial enlargement, pericarditis, atrial infarction) can deform the ST segment and result in “pseudo-ST depression.”

- Ischemic T wave changes:

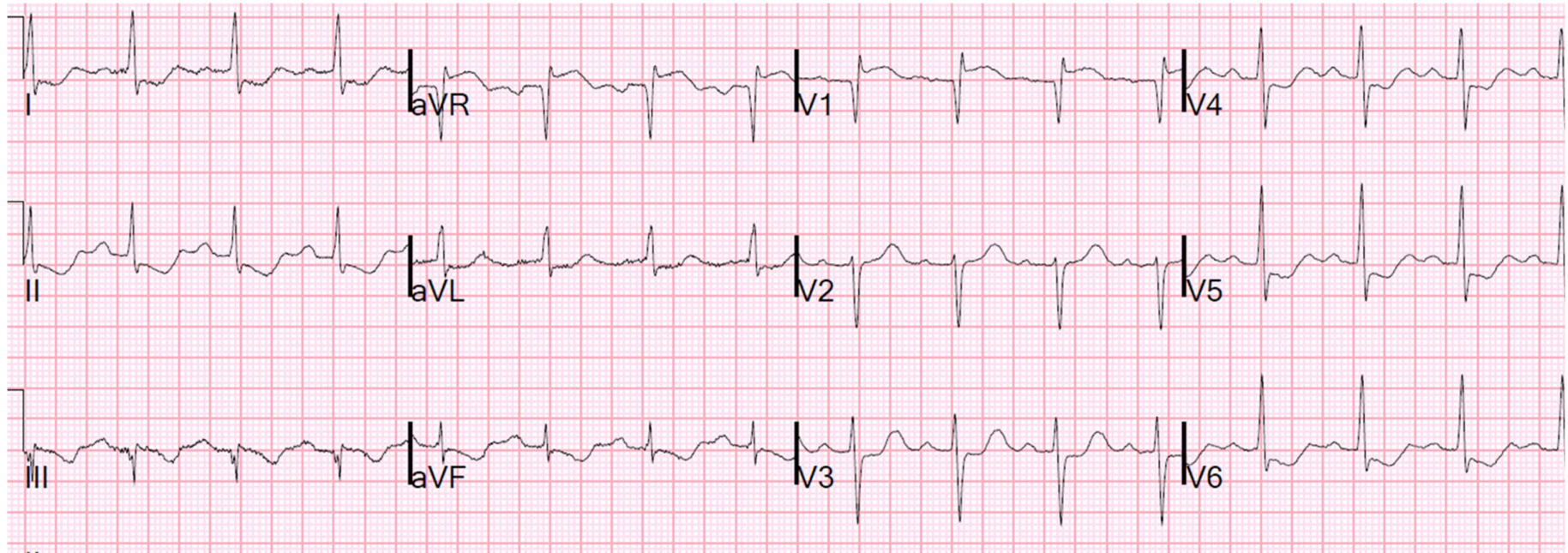
- Biphasic T waves with or without ST depression
- Symmetrical and deeply inverted T waves

Reciprocal T wave changes may be evident (e.g., tall upright T waves in inferior leads with deeply inverted T waves in anterior leads).

T waves may become less inverted or upright during acute ischemia (“pseudonormalization”).

QT interval may be prolonged. Prominent U waves (upright or inverted) are often present.

Approximately 70% of patients with > 1 mm ST segment elevation in lead aVR and deep ST segment depression in the precordial leads will have significant multi-vessel or left main coronary disease.



*Patient presenting with ischemic chest discomfort. Coronary angiography revealed a 95% left main coronary stenosis. Note ST elevation in leads aVR and V1.*

ST-T changes consistent with either ischemia or injury may be observed during Holter recordings and may not be associated with typical chest pain symptoms as: (1) ST-T changes may occur and resolve before the development of symptoms; or (2) silent ischemia may be present.

In patients with RVH, ischemic-looking ST-T changes are considered repolarization changes due to hypertrophy when confined to the right precordial leads (V1–V3). In contrast, ischemic-looking ST-T changes involving other leads (V4–V6, II-III-aVF, I-aVL) should be coded as ischemia.

In patients with LVH, ischemic-looking ST-T changes are considered due to hypertrophy repolarization changes when the ST depression is less than 1 mm. In contrast, ischemic-looking ST-T changes should be coded as ischemia if the depression is 1 mm or greater.

ST-T of ischemia should not be coded for examination purposes once acute Q wave MI has been identified, since the associated ST segment depression may be reciprocal in nature (and not ischemic). In contrast, ST-T of ischemia can be coded in the presence of old or age-indeterminate Q wave MI as ST segment depression is not a characteristic of the normal ST-T changes of old or indeterminate Q wave MI.

It is important to consider the clinical context since ST segment depression and/or T wave inversion can also be seen in:

- Repolarization changes secondary to LVH, RVH, LBBB, RBBB
- Digitalis effect
- “Pseudo-depression” from superimposition of atrial flutter waves or prominent atrial repolarization wave on the ST segment, as seen in atrial enlargement, pericarditis, or atrial infarction
- CNS disorder
- Hypokalemia
- Antiarrhythmic drug effect
- Mitral valve prolapse
- WPW pattern
- Juvenile T waves, normal variant