

ST Elevation in aVR with Coexistent Multilead ST Depression

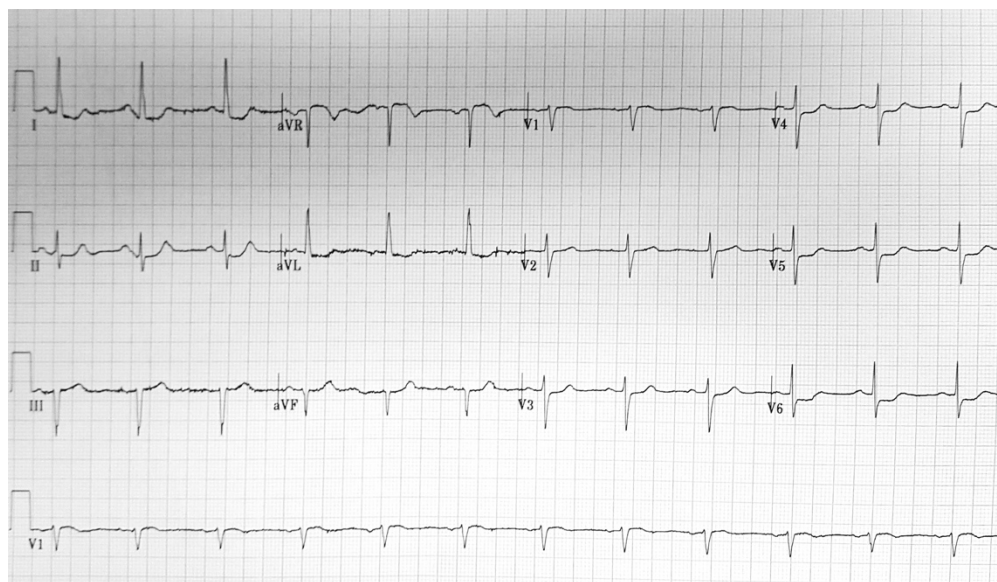
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History of present illness: An 80-year-old female with a history of Crohn's disease presented to the emergency department with chest pain. She had two weeks of exertional chest pain that preceded an episode of chest pain immediately prior to arrival associated with diaphoresis. Her pain nearly completely resolved with sublingual nitroglycerin provided by pre-hospital personnel. She was hemodynamically stable with normal vital signs on arrival. An electrocardiogram (ECG) was immediately obtained.

Significant findings: The ECG shows ST-segment depressions in precordial leads V3 through V6, and limb leads I, II, and aVL, and 1 mm of ST-segment elevation in aVR. The initial troponin I was elevated at 1.37 ng/mL (upper limit of normal 0.40). Cardiology decided to delay catheterization until the next day when diffuse coronary disease was discovered (including 90% of the left circumflex stenosis, 60% proximal and 75% mid-left anterior descending stenosis, 75% third diagonal branch stenosis, and 90% posterior descending artery stenosis). The following day, the patient went to the operating room for coronary artery bypass grafting (CABG).

Discussion: Traditionally, lead aVR has not received attention when interpreting acutely ischemic changes on ECG, leading some to refer to it as “the forgotten lead.”¹ Current guidelines acknowledge the significance of multilead ST depression with coexistent ST elevation in aVR, and this pattern has been identified as the strongest predictor of severe left main coronary artery and/or 3-vessel disease.²⁻³ When this ECG pattern is recognized in patients with ischemic symptoms, the emergency physician should involve cardiology early.

When managing patients with suspected left main coronary artery and/or 3-vessel disease, it is important to withhold dual anti-platelet therapy as CABG is likely to be indicated,^{1,3} and guidelines recommend discontinuing P2Y₁₂ inhibitors like clopidogrel or ticagrelor at least 24 hours prior to urgent CABG.²

Topics: ECG, electrocardiogram, STEMI, aVR elevation, The forgotten lead, left main disease, triple vessel disease.

References:

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