

Title: The Importance of Serial 12-Lead ECGs in the Prehospital Setting: A Case of Transient ST Elevation Myocardial Infarction (TSTEMI)

Authors: Blickley, Zachary J, Kent, Matthew E, Lawner, Benjamin J

Introduction: Transient ST elevation myocardial infarction (TSTEMI) represents 6% of patients presenting with an acute coronary syndrome (ACS) and is defined as the complete resolution of ST segment changes and ischemic symptoms prior to reperfusion therapy. This pathology presents unique treatment considerations and exemplifies the importance of obtaining serial 12-lead ECGs in the prehospital setting as a means of increasing diagnostic sensitivity.

Case Presentation: A 73-year-old female with a history of type II diabetes mellitus and irritable bowel syndrome presented to emergency medical services (EMS) reporting substernal chest pain radiating to the jaw and epigastric pain following a brief syncopal episode. She had similar pain intermittently for the prior 3 weeks, but never to this extent. Her primary care physician started a trial of omeprazole and antacids which provided no relief. On initial evaluation, she was afebrile and normotensive. 12-lead ECG revealed ST elevations in leads II, III and aVF with reciprocal depressions in leads I, aVL and V2, consistent with an inferior wall STEMI. The patient was treated with aspirin and an IV was initiated, but the patient did not receive nitroglycerin. Shortly after, her symptoms and ECG changes completely resolved without further intervention, and she was transported to a center capable of percutaneous coronary intervention (PCI). The patient never experienced a recurrence of symptoms or ECG changes and was scheduled for delayed coronary re-vascularization where she was found to have significant occlusions in both the proximal RCA and LAD. Reperfusion was successful with 2 stents deployed and she was discharged on day 4 post-admission without significant deficit.

Discussion: In ACS, up to 15.7% of patients experience ST segment changes during EMS transport. Thus, relying on one 12-lead ECG offers false reassurance and inadequate sensitivity to capture events such as TSTEMI. Given that TSTEMI has significant management implications in the emergency department, it is imperative that prehospital providers obtain serial 12-lead ECGs to capture changes that the receiving facility may never see. In summary, undue dependence on a single 12-lead ECG in the setting of suspected ACS may result in diagnostic and management inaccuracies associated with adverse patient outcomes.