

Cardiac Troponin I as a marker to diagnose Non-ST Elevation Myocardial Infarction (NSTEMI) in patients presenting with acute chest pain and non-diagnostic ECG

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When the initial ECG of patients suffering from acute chest pain is non-diagnostic, it is difficult to arrive at a clinical diagnosis. Diagnosing NSTEMI and differentiation from unstable angina (UA) requires serial electrocardiograms (ECGs) and serial marker testing. Admitting all the patients diagnosing NSTEMI and differentiation from UA of acute chest pain for serial investigations create a high economic burden and risk of exceeding hospital capacity and limited healthcare resources. Failure to make an early diagnosis can cause significant morbidity and mortality. Cardiac troponins are cardiac-specific proteins detected in high levels even in microscopic areas of myocardial necrosis. Cardiac Troponin I is highly specific for myocardial tissues. In this study, we assessed the levels of cardiac Troponin I as a marker for NSTEMI when an initial ECG is non-diagnostic. We also assessed the potential of the cardiac troponin-I levels to accurately exclude acute coronary syndrome (ACS) when an initial ECG is non-diagnostic. ACS includes STEMI, NSTEMI, and UA. STEMI is diagnosed based on ECG criteria. Descriptive analysis carried out by statistical methodology was adopted for the study. Data were collected from 42 patients of which 36 were used for analysis based on descriptive sampling. With informed consent, data from 36 patients were used for statistical analysis (SPSS). 22.2% were diagnosed with NSTEMI from a single Troponin I result. HEART score was used to assess the risk for Major Adverse Cardiac Event (MACE) for the next six weeks. If MACE was more than 4%, further testing including repeat Troponin I, 2D-ECHO cardiogram, exercise ECG, and cardiologist referral were recommended. Some of them could still be NSTEMI on repeat testing few hours later depending on the time of onset of chest pain). 61.1% were diagnosed with UA or non-cardiac chest pain based on a combination of clinical evaluation, ECG, and single Troponin I result. NSTEMI cannot be excluded on a single troponin I result which requires clinical assessment and repeat troponin I. Therefore, troponin I levels can be used to diagnose NSTEMI in patients with acute chest pain when the initial ECG is non-diagnostic.

Keywords: STEMI, NSTEMI, unstable angina, ECG, Troponin I

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