Abstract 25

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Title: Delayed Detection NSTEMI – Patient Characteristics and Outcomes

Background:
Evidence of myocardial ischemia can be determined by patients subjective feelings of chest pain, electrocardiographic (ECG) evidence of ischemia (ST segment elevations, new left bundle branch block, development of pathological Q waves), or imaging findings consistent with loss of myocardium or regional wall motion abnormalities. Acute Coronary Syndrome (ACS) is comprised of three distinct groups: unstable angina (UA), non-ST-segment elevation myocardial infarction (NSTEMI), and ST-segment elevation myocardial infarction (STEMI). NSTEMI is differentiated from UA based on the elevation of cardiac biomarkers, most commonly troponin, but without the characteristic ST segment elevation on ECG that defines STEMI. Troponin levels peak between 4 and 6 hours, and persist for days after myocardial necrosis. Due to this initial delay, some patients with an NSTEMI may not initially have an elevated troponin, but will later rule in with a delayed elevated troponin value. Patients who are admitted or placed in observation for ACS rule out, who later rule in with an NSTEMI are a poorly characterized group. The purpose of this study was to determine the characteristics and outcomes of patients diagnosed with a delayed detected NSTEMI (ddNSTEMI) vs. those with an initial NSTEMI (iNSTEMI).

Methods:
Retrospective chart review of 1077 patients with an ICD-9 discharge diagnosis code of NSTEMI (410.7, non-ST-segment elevation, sub-endocardial infarction, non-transmural infarction) from November 2009 through July 2014 at a large urban hospital. Data abstraction was performed by one chart reviewer, a 4th year medical student, from the Amalga Electronic Medical Record. Discharge summaries, progress notes, emergency room notes, procedure reports, and radiologic readings were used for data collection including coronary artery disease risk factors, discharge date, stress tests, ECG findings, catheterizations, CABG procedures, and in-hospital mortality. Patients were split into two groups. The first being patients with a discharge diagnosis of NSTEMI and an initial troponin level greater than 0.017. Group two included patients with a discharge diagnosis of NSTEMI and an initial troponin level less than 0.017 but with a subsequent elevated troponin level. Data analysis was performed using Fisher exact test with a P-value <0.05 considered significant.
Results:
There were 1008 patients in the iNSTEMI group, and 69 patients in the ddNSTEMI group. Patients with iNSTEMI and ddNSTEMI for length of stay, in hospital interventions, and mortality. Patients with a ddNSTEMI had a longer length of stay, 10.8 days vs. 5.7 days (p=0.896). The ddNSTEMI group also had a higher rate of in hospital evaluation and interventions with the exception of ECG. The frequency of the following interventions differed between patients with iNSTEMI and ddNSTEMI: stress tests (22% vs. 10%, p=0.008), catheterization (83% vs. 76%, p=0.243), percutaneous coronary intervention (PCI) (52% vs. 34%, p=0.008), advanced cardiac imaging with CT or MRI (9% vs. 4, p=0.068), and CABG (19% vs. 15%, p=0.601). Overall, patients with a ddNSTEMI received more in hospital evaluations and interventions but with a lower in hospital mortality (1.4% vs. 3.6%, p=0.508). However, the findings of statistical significance were differences in stress testing and PCI. Patients with iNSTEMI and ddNSTEMI were also analyzed according to their intervention (or lack there of) and their cardiac risk factors were subdivided within iNSTEMI and ddNSTEMI for those who had normal coronary arteries or non-obstructive coronary arteries on catheterization, those requiring PCI, and those requiring CABG. The only significant difference found was that in the PCI subset, patients with iNSTEMI were more likely to be smokers than those with ddNSTEMI (29% vs. 9%, p=0.013).

Conclusion:
Patients with a ddNSTEMI have similar patient characteristics, rates of CABG, and in-hospital mortality as those with an iNSTEMI. PCI was performed more frequently in patients with ddNSTEMI than those with iNSTEMI.