Abstract 30

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Title: Two Hour Protocol Using Sensitive Troponin I and Stress Testing in the Emergency Department for the Early Management of Chest Pain

Background:
The introduction of cardiac biomarkers in the emergency department (ED) constituted a milestone in the care of patients with chest pain. Patients presenting with atypical chest pain and non-diagnostic ECG with negative serial cardiac markers may be suitable for early discharge and shorter hospital stays. Since 1992, our chest pain protocol includes using 4-hour serial biomarkers from ED admission in combination with stress testing to evaluate these patients. To determine whether a new accelerated diagnostic protocol using sensitive cardiac troponin I (cTnI) (Mitsubishi PATHFAST) 2 hours after admission to the ED along with stress testing is safe, and whether it can reduce length of stay and overall costs.

Methods:
We conducted a single center randomized trial at Presence St. Francis Hospital in Illinois enrolling 64 consecutive patients with atypical chest pain and non-diagnostic ECG. Sixty patients completed the protocol and were randomized to either a 2-hour or 4-hour protocol using both I-STAT and Mitsubishi PATHFAST cTnI. Troponin I were evaluated at 0 and at 2 hours from ED presentation with and additional draw for patients in the 4-hour rule out-group. Twenty-nine patients were randomized to the 2-hour protocol and 31 patients to the 4-hour protocol.

Patients with normal serial biomarkers were then evaluated with stress testing and qualified for earlier discharge if the stress test was negative, while those with a positive biomarker at any time were admitted.

36 patients had exercise treadmill stress test and 24 patients had either nuclear or Echo stress test.

Results:
53 patients had a normal stress test and were discharged home. One patient in the 4-hour group with normal serial troponins had a cardiac arrest during the recovery period of a regular stress test. The subsequent angiogram showed severe LAD stenosis requiring a stent. The PATHFAST cTnI was positive 45 Min after the arrest, while the I-Stat cTnI was normal. Six patients had a positive PATHFAST cTnI and a normal I-STAT cTnI at 2-hours. Two out of these 6 patients went for coronary angiography. One patient had severe tortuous coronaries but no
significant obstructive lesion and one had a severe CAD who needed CABG. Three of the 6 patients had a normal stress test and one patient left against medical advice. The mean cost difference between the 2 and 4-hour group was $4,431. None of the patients with a normal stress test at six-month follow up had a cardiac event.

**Conclusion:**
Using the sensitive troponin I assay and stress test 2-hours after ED admission is safe and cost effective.