Acute Chest Pain: Rapid Identification of Low-Risk Patients Safe for Discharge

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BACKGROUND

Chest pain in the emergency room (ED) is associated with acute coronary syndrome (ACS) in only about 5% of patients (1). High sensitivity troponin I assays (hsTnI) recorded at presentation and 1 hour later (0/1 hr) have been reported to rapidly rule out ACS and identify individuals safe for early discharge from the ED (2-4). We initiated a quality assurance project to confirm the safety of the 0/1 hr clinical decision pathway (CDP). LVHN IRB deemed this project not research.

METHODS

We identified all patient's with hsTnI measurements obtained during the first month of implementing a new assay with either a Beckman or Siemens Vista analyzer. We performed a retrospective review assessing the 30-day outcome of patients categorized as low risk using only hsTnI patterns as shown in Table I and II. We recorded the incidence of extended observation, hospital admissions, ordered stress tests and length of stay (LOS). During 30 day follow up, we recorded repeat ED presentations, PCI, CABG, and major adverse cardiac events (MACE) including acute myocardial infarction (MI), hospitalization with acute heart failure and cardiac related death.

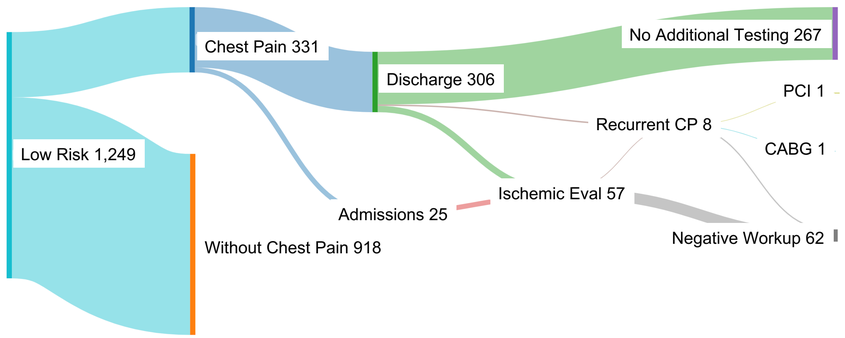
Table I

Low Risk Patients (Siemens)	
If symptom onset <3 hours	**If symptoms onset >3 hours**
Zero hr hsTnI <6 ng/L and 1 hr delta <6 ng/L	**Zero hour hsTnI <5 ng/L**

Table II

Low Risk Patients (Beckman)	
If symptom onset <3 hours	**If symptoms onset >3 hours**
Zero hr hsTnI <5 ng/L and 1 hr delta <4 ng/L	**Zero hour hsTnI <4 ng/L**

Figure I



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RESULTS

We identified 331 patients with a chief complain of CP, no ST-segment elevation and a low-risk hsTnI pattern (Figure I). The average ED length of stay was 4 hours with 25 (8%) patients being placed in observation or admitted for extended evaluations with an average LOS of 35 hours. Pre discharge cardiac stress testing was performed in 56 (17%) of the low-risk patients all of which were negative. During 30-day follow-up there were no MACE events. Two patients (0.6%) re-presented to the ED with chest pain and underwent left heart catheterization and coronary artery re-vascularization.

CONCLUSION

Our observations are consistent with large observational studies documenting the value of using a hsTnI assay in a 0/1 hr CDP to identify low risk patients safe for early discharge. Our observations support the national guideline recommendations (5-6) on the evaluation of chest pain. We have implemented a digital registry for monitoring the outcomes of all CP patients presenting to our network's ED's.

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