Outpatient Versus Observation/Inpatient Management of Emergency Department Patients Rapidly Ruled-out for Acute Myocardial Infarction: Findings from the HIGH-US Study


Objectives
• To describe clinical characteristics of the AMI ruled-out patients placed in observation/inpatient beds (OBS/ADM) vs. those with an ED discharge (EDD) using the HIGH-US 0/1h study algorithm.
• To describe the cardiac testing and interventions that were completed in the AMI ruled-out group placed in OBS/ADM.

Methods
• Adults (2113) presenting with suspicious AMI were enrolled (2015–2016) in 29 US medical centers. There were no exclusion criteria. The study included a final count of 2022 adults.
• Baseline and 1-hour plasma samples were analyzed using the Siemens Healthineers Atellica® IM High-Sensitivity Troponin I Assay (99th percentile URL: 45.2 ng/L). AMI diagnosis was independently adjudicated by a combination of cardiologists and ED physicians using local contemporary cTn assays and clinical data.
• All cardiac stress test (CST), coronary angiogram (CA) and coronary revascularization (CR) reports for the OBS/ADM patients were analyzed.

Results
• 1020 (50.4%) individuals were ruled out for AMI at 1 hour (of which 584 [57.3%] were EDD and 436 [42.7%] were placed in OBS/ADM) by contemporary clinical assessment; none had an AMI/death while in hospital. At 30 days, one AMI and one death (2 or 0.5%) had occurred. Cardiac testing was not performed in 176 (40.4%) individuals.
• The cardiac testing and/or interventions completed in some remaining patients were:
  – Of the 85 (19.5%) patients receiving a CA without prior CST, 47 (55.3%) were abnormal.
  – Of AMI ruled out OBS/ADM patients, 26 (6.0%) had a CR procedure (one coronary artery bypass surgery and 25 percutaneous coronary interventions).
  – The mean length of stay was longer in the OBS/ADM group compared to those discharged from the ED (2.0 vs. 0.6 days, p <0.001).
• The 30-day and one-year AMI/death rates in these two groups were low and not significantly different—0.2% for 30-day and <3% for one-year.
• The HIGH-US 0/1h study algorithm—rule-out: 50.4%, NPV: 99.7%, and sensitivity: 98.7%.

Authors’ Conclusions
• “Patients in rapid hs-cTn rule-out AMI zones have very low 30-day adverse outcomes.”
• “In the HIGH-US study 43% of these patients were not ED discharged by the clinicians.”
• “They had more risk factors for AMI and 26 (6%) received coronary revascularization.”
• “One-year AMI/all cause death rates were very low, suggesting all could be discharged.”
• “Recent reports suggest these patients with new/prior CAD can be medically managed.”

Significance
For patients at very low risk for AMI/death within 30 days, those with a history of CAD, stroke, hypertension, or having an abnormal ECG, or a family history of CAD were more likely placed in OBS/ADM than EDD. Decisions to place these patients in OBS/ADM could be reduced based on the excellent prognosis for these patients and the 0/1h rapid algorithm. This would lead to shorter lengths of hospital stay and fewer patients receiving CSTs, CAs, and CR procedures.
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