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Evaluation of HEAR score to rule-out major adverse cardiac events without troponin test in patients presenting to the emergency department with chest pain

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Abstract

Background and importance Current guidelines for patients presenting to the emergency department with chest pain without ST-segment elevation myocardial infarction (non-STEMI) on electrocardiogram are based on troponin measurement. The HEART score is reportedly a reliable work-up strategy that combines clinical evaluation with troponin value. A clinical rule that could select very low-risk patients without the need for a blood test (HEAR score, being the HEART score without the troponin item) would be of great interest. **Objectives** To prospectively assess the safety of a HEAR score <2 to rule-out non-STEMI without troponin measurement. Secondary objective was to assess the safety of a sequential strategy that combines HEAR score and HEART (defined as two-step HEART strategy). **Design, settings and participants** Prospective observational study in six emergency departments. Patients with nontraumatic chest pain and no alternative diagnosis were included and followed up for 45 day. Patients were considered at low-risk if the HEAR score was <2 or, for the two-step HEART strategy, if the HEART score was <4. **Outcomes measure and analysis** The primary endpoint was the 45-day rate of major adverse cardiac events (MACE) in patients with a HEAR score <2. A HEAR score based strategy was consider safe if the rate of the primary endpoint was below 1%, with an upper margin of the 95% confidence interval (CI) below 3%. **Results** Among 1452 patients included, 1402 were analyzed and 97 (7%) had a MACE during the follow-up period. The HEAR score was <2 in 279 (20%) patients and one presented a MACE [0.4% (95% CI: 0.01-1.98)]. The two-step HEART strategy classified low-risk an additional 476 patients (34%) and one of these 476 patients had a MACE [0.3% (95% CI: 0.03-0.95)]. The two-step HEART strategy would have theoretically avoided 360 troponin measurements (19%). **Conclusions** In our prospective multicenter study, a HEAR based work-up strategy was safe, with a very low risk of MACE at 45 day. We also report that a two-step HEART-based strategy may safely allow significant reduction of troponin measurements in patients presenting to the emergency department with chest pain. © 2021 Lippincott Williams and Wilkins. All rights reserved.

Author Keywords

acute coronary syndrome; chest pain; decision support tool; HEART score; myocardial infarction

Index Keywords

troponin, biological marker; adult, aged, Article, body mass, cerebrovascular accident, clinical practice, coronary artery bypass graft, data analysis, decision making, dyslipidemia, echocardiography, electrocardiogram, emergency ward, female, follow up, general

practitioner, hospitalization, human, hypertension, length of stay, major adverse cardiac event, major clinical study, male, observational study, percutaneous coronary intervention, physician, questionnaire, risk assessment, sensitivity analysis, sensitivity and specificity, smoking, ST segment elevation myocardial infarction, thorax pain, clinical trial, electrocardiography, hospital emergency service, multicenter study, prospective study, risk factor, thorax pain; Biomarkers, Chest Pain, Electrocardiography, Emergency Service, Hospital, Humans, Prospective Studies, Risk Assessment, Risk Factors, Troponin

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