SUMMARY

The best way to diagnose or exclude clinically significant blunt cardiac injury (SBCI) remains elusive. Ideally, monitoring, hospitalization, and advanced diagnostic studies would be restricted to patients with a high likelihood of developing cardiac complications. The aim of this single-center prospective study evaluated whether ECG combined with serum troponin I (TnI) testing can predict or rule out SBCI.

ECG and TnI testing were performed at admission and at 8 hours in 333 consecutive patients who presented with significant blunt thoracic trauma (multiple rib fractures, lung contusion of more than 20%, hemopneumothorax requiring chest tube, sternal or scap fracture, major intrathoracic vascular injury, or significant anterior thoracic seatbelt injury between September 1999 and February 2002. SBCI, defined as requirement for treatment of hypotension presumably due to BCI, cardiac anatomic abnormalities detected by selective echocardiography, or cardiac index <2.5 L/min/m², was diagnosed in 44 patients (13.2%). The positive and negative predictive values were 29% and 98% for ECG, 21% and 94% for TnI, and 34% and 100% for ECG plus TnI. Of patients with normal ECG findings only or abnormal TnI levels only, 22% and 7%, respectively, developed SBCI. Of the 4 patients with SBCI, 43 had abnormal ECG findings on admission, abnormal TnI levels, or both.

Comment: In this study of a particular population with clear-cut blunt chest trauma, the combination of normal ECG findings and TnI levels at admission and at 8 hours excluded the diagnosis of SBCI in all patients. Nearly one third of patients with normal ECG findings and TnI levels could have been discharged after 8 hours, as they had no significant extra-thoracic injuries requiring hospital care. A larger study is needed to exclude the possibility of type II error.

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Published in Journal Watch Emergency Medicine February 12, 2003

Source
