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Time to shift from contemporary to high-sensitivity cardiac troponin in diagnosis of acute coronary syndromes.

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Abstract

Early rule-in and rule-out of non-ST-segment elevation myocardial infarction (NSTEMI) is a challenge. In patients with inconclusive findings on ECG, cardiac biomarkers play a crucial role in the diagnosis. The introduction of the new high-sensitive cardiac troponin test (hs-TnI assay) has changed the landscape of NSTEMI diagnosis. The new hs-TnI assay can detect troponin values at a lower level compared with a contemporary cardiac troponin (cTn) assay. The hs-cTnI assay has a coefficient of variation of ≤10%, well below the 99th percentile value. It reduces the time to diagnose acute myocardial infarction from 6h to 3h. A recent study has demonstrated that hs-cTnI can further reduce the time to 1h in 70% of all patients with chest pain. The European Society of Cardiology 2015 guidelines recommend including a second sample of hs-cTnI within 3h of presentation This increases the sensitivity of the hs-TnI assay from 82.3% (at admission) to 98.2% and negative predictive value from 94.7% (at admission) to 99.4%. Combining the 99th percentile at admission with serial changes in troponin increases the positive predictive value to rule in acute

coronary syndrome from 75.1% at admission to 95.8% after 3h. The 2015 ESC Guidelines recommend the use of a rapid rule out protocol (0h and 1h) when hs-cTnI with a validated 0 to1h algorithm is available. Training and displaying the clinical algorithm depicting the role of hs-TnI assay in acute cardiac care units and in EDs are an efficient way to deliver the new standard of care to patients. Compared with contemporary troponin assays, the hs-cTn assay accelerates the diagnostic pathway to 0-1h, thus reducing the time for diagnosis of NSTEMI and hence, its management.

KEYWORDS: ACS; Biomarkers; STEMI; Troponin; hs Troponin

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