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Acute Coronary Syndromes

COMPARISON OF CONVENTIONAL AND HIGH-SENSITIVITY TROPONIN IN PATIENTS PRESENTING TO THE EMERGENCY DEPARTMENT WITH CHEST PAIN: A COLLABORATIVE META-ANALYSIS

Oral Contributions
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Background: Multiple studies have evaluated the diagnostic and prognostic accuracy of conventional and high sensitivity troponin (hs-cTn) with varying results. The standard assay was usually used to define acute myocardial infarction (AMI). We performed a collaborative meta-analysis comparing conventional and hs-cTn for diagnosis of AMI and assessment of prognosis in patients with chest pain.

Methods: MEDLINE/PubMed, Cochrane CENTRAL, and EMBASE were searched for studies assessing both conventional and hs-cTn in patients with chest pain. Study authors were contacted and many provided previously unpublished data. Random-effects methods were used to compare the data for conventional and hs-cTn.

Results: From the 17 included studies, there were 8,644 patients. Mean age was 62 years, 63% were male, and 20.7% were diagnosed with AMI. All but 5 studies utilized the 99th percentile cut-point to define AMI for conventional cTn. Compared with admission conventional Tn, hs-cTn had significantly greater sensitivity (0.88 vs 0.74, $p<0.001$) and negative predictive value (NPV)(0.96 vs 0.93, $p<0.001$) while specificity (0.82 vs 0.94, $p<0.001$) and positive predictive value (PPV)(0.56 vs 0.76, $p<0.001$) were significantly reduced. Based on summary ROC curves, diagnostic accuracy was not significantly different for AMI between conventional and hs-cTn on admission (0.90 [95% CI 0.85-0.95] vs 0.92 [95% CI 0.90-0.94]). In a sub-analysis of 6 studies that alternatively defined AMI based on hs-cTn, conventional cTn had a further reduction in sensitivity and NPV. Additionally, when compared with negative admission biomarkers, an elevated hs-cTn (odds ratio 4.9 [95% CI 2.8-8.7]) and an elevated conventional cTn (odds ratio 4.0 [95% CI 2.6-6.1]) were both associated with increased all-cause mortality during follow-up (mean 12 ± 9 months).

Conclusions: Admission hs-cTn has significantly greater sensitivity and NPV compared with conventional cTn at the cost of specificity and PPV for the diagnosis of AMI. Thus, hs-cTn may enable earlier detection of AMI and help early rule out of AMI in patients with chest pain.