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Spotlight on Special Topics

HIGH-SENSITIVITY CARDIAC TROPONIN T FOR THE DETECTION OF MYOCARDIAL INJURY AND RISK STRATIFICATION IN COVID-19

Poster Contributions

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Background: Limited data exists on the incidence of myocardial injury and acute myocardial infarction (MI) subtypes using high-sensitivity cardiac troponin (hs-cTn) assays, as well as the use of the latter for risk-stratification purposes in COVID-19.

Methods: Retrospective, multicenter (n=20), observational, US-based study of COVID-19 patients undergoing hs-cTnT measurements. For this assay, the limit of quantitation (LoQ) is <6 ng/L and sex-specific 99th percentiles (F 10 ng/L, M 15 ng/L) are used to define myocardial injury. Outcomes included in-hospital and 30-days post discharge mortality, and a composite outcome of major adverse events including respiratory failure requiring mechanical ventilation, cardiac arrest, shock and/or in-hospital or 30-day post-discharge mortality.

Results: Among 367 COVID-19 patients undergoing hs-cTnT measurements, incidence of myocardial injury was 46%. Patients with myocardial injury had a higher incidence of in-hospital (15% vs. 3.5%, p<0.0001) and post-discharge death (8.8% vs. 1.1%, p=0.0013) than patients without myocardial injury. They were more likely to develop adverse events (35% vs. 11%, p<0.0001; adjusted OR 3.84, 95% CI 2.00-7.36, p<0.0001). Both baseline (adjusted OR 1.003, 95% CI 1.00-1.007, p=0.047) and maximum (adjusted OR 1.005, 95% CI 1.001-1.009, p=0.0012) hs-cTnT were independent predictors of major adverse events. Most (95%) hs-cTnT increases were due to isolated myocardial injury, with only 5% (n=8) classified as type 1 or 2 MI. To identify lower risk patients, a single hs-cTnT <6 ng/L identifies 26% of patients without short-term mortality, with a 94.9% (95% CI 87.5-98.6) negative predictive value and 93.1% sensitivity (95% CI 83.3-98.1) for major adverse events in those presenting to the ED.

Conclusion: Myocardial injury is frequent in COVID-19 patients and is associated with adverse outcomes. While most hs-cTnT increases are modest and due to isolated myocardial injury, they have significant prognostic implications. To facilitate triage of COVID-19 patients, a single hs-cTnT <6 ng/L at presentation may help identify patients with a more favorable prognosis.