

Meta-Analysis on Troponin I in Patients With Coronavirus

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Questions: Do troponin levels predict clinical severity of patients with coronavirus disease 2019 (COVID-19) infection?

Methods: The authors performed a meta-analysis of studies in which troponin levels measured in COVID-19 patients are reported, along with severity of disease. Four studies were identified, three of which reported high-sensitivity troponin I, and only one reported conventional troponin I measurements. The primary outcome was severe disease, which was defined differently according to study: admission to the intensive care unit in two studies, onset of acute respiratory distress syndrome in another study, and death in the last study.

Results: All studies were set in China, and encompassed a total of 341 patients, with 123 (36%) having severe disease. The heterogeneity across studies was very high (I_2 , 98%). Patients with severe disease had significantly higher troponin levels compared to those with milder disease (standardized mean difference of 25.6 ng/L; 95% confidence interval, 6.8–44.5 ng/L).

Conclusions: COVID-19 patients with severe disease had higher troponin levels compared to those with milder disease.

Perspective: This meta-analysis has numerous issues, including not accounting for the time of troponin measurements, the variability in defining the outcomes, and the lack of adjustment for numerous confounders. Most importantly, it does not address the question of “predicting” severity of COVID-19, given the troponin measurements did not precede the progression of disease. However, it is no surprise that patients with severe COVID-19 infection are more likely to have evidence of myocardial injury. The mechanisms are likely similar to that of myocardial injury in other severe respiratory illnesses and clinical scenarios in which myocardial oxygen demand is heightened and inflammation is rampant. Troponin measurements in the absence of suspicion for plaque rupture myocardial infarction should be avoided to minimize unnecessary downstream testing.