18.3.1 - Biomarkers

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Prognostic value of cardiac troponin in critically ill COVID-19 patients

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Background/Introduction: Among patients with COVID-19, there is a high prevalence of cardiovascular disease and myocardial injury from the infection, especially in critically ill patients.

Purpose: This study sought to investigate the relationship between elevated admission high-sensitive troponin I in COVID-19 patients admitted to an intensive care unit (ICU) and prognosis.

Methods: We retrospectively analyzed patients consecutively admitted to an ICU with COVID-19, with a median follow-up of 10 months. Patients who were diagnosed with acute coronary syndrome, either died or were discharged within 48 hours of admission, and who did not have a cardiac troponin measurement in the first 48 hours, were excluded.

Two groups were identified, with normal troponin and with elevated troponin. Groups were compared, with special interest regarding in-hospital mortality, duration of mechanical ventilation, in-hospital diagnosis of heart failure, and length of hospitalization. Global mortality (in-hospital and during follow up) and re-hospitalization were compared. To compare survival, a Kaplan-Meier curve with log rank test was performed.

Results: From a total of 219 patients, after applying the exclusion criteria, 100 patients were included in the analysis, mean age was 62.9 ±12.5 years, and 74% were male.

Troponin was normal in 77% of patients and elevated in 23%. Median troponin was 11 (IQR=26) ng/L (reference range <34 ng/L).

Patients with elevated troponin were older (66.5 ±12.0 vs 61.6 ±12.5 years, p=0.036). Gender, comorbidities, vasopressor use, and APACHE II score were similar among groups. Patients with elevated troponin presented a higher ICU mortality (16.9% vs 47.8%, p=0.002) and higher global mortality (22.1% vs 47.8%, p=0.016). Re-hospitalization rates, ICU length of stay and duration of mechanical ventilation were similar among groups.

In multivariate analysis, after adjustment for age and APACHE II score, an elevated troponin remained an independent predictor of ICU mortality (OR=3.40, 95% CI 1.08-10.4, p=0.036), but not an independent predictor of global mortality (OR=2.75, 95% CI 0.86-8.80, p=0.087).

Kaplan-Meier analysis (Figures 1 and 2) showed that patients with elevated troponin had higher ICU (p=0.008) and global mortality (p=0.008) when compared to patients with normal admission troponin.

Conclusion(s): The present study shows that elevated high-sensitive cardiac troponin I at admission predicts ICU and global mortality in critically ill COVID-19 patients. Cardiac troponin is as easy-to-use tool that may help to identify patients who benefit from tighter monitoring both during hospitalization and after discharge.