Review of “Association of cardiac injury with mortality in hospitalized patients with COVID-19 in Wuhan, China”


One-minute summary

- The authors estimated the association between cardiac injury and mortality in 416 hospitalized patients with confirmed coronavirus disease 2019 (COVID-19) in a hospital in Wuhan, China.
- Patients had a median age of 64 years (range: 21-95) and 211 (51%) were female.
- Compared to 334 patients without cardiac injury, the 82 (20%) patients with cardiac injury:
  - were older (median age of 74 vs. 60 years), had higher cardiac biomarkers, and a higher prevalence of bilateral pneumonia.
  - had more comorbidities, including: hypertension (60% vs. 23%), diabetes (24% vs. 12%), coronary heart disease (29% vs. 6%), cerebrovascular disease (26% vs. 3%), and chronic heart failure (15% vs. 2%).
  - had higher treatment use, including: noninvasive ventilation (47% vs. 4%) and invasive mechanical ventilation (22% vs. 4%), as well as treatment with antibiotics (83% vs. 50%), glucocorticoids (88% vs. 70%), and intravenous immunoglobulin (83% vs. 57%).
  - had a greater number of complications, including: acute respiratory distress syndrome (ARDS) (59% vs. 15%), acute kidney injury (9% vs. 0%), electrolyte disturbances (16% vs. 5%), hypoproteinemia (13% vs. 5%) and coagulation disorders (7% vs. 2%).
- Patient outcomes during follow-up:
  - among those with cardiac injury: 42 deaths (51%), 2 discharged (2%) and 38 (46%) remained hospitalized.
  - among those without cardiac injury: 15 deaths (5%), 38 discharged (23%) and 281 (72%) remained hospitalized.
- Cardiac injury was associated with a higher risk of mortality in hospitalized COVID-19 patients, both during the time from symptom onset (hazard ratio [HR]=4.3, 95% confidence interval [CI] 1.9-9.5) to end point and from admission to end point (HR=3.4, 95% CI 1.6-7.2).

Additional information

- This retrospective cohort study included laboratory confirmed COVID-19 cases from January 20 to February 10, 2020 with follow-up through February 15, 2020.
Cardiac injury was defined as blood level cardiac biomarkers above the 99th percentile upper reference limit.

Mean time from symptom onset (16 vs. 17 days) and from admission (6 vs. 8 days) to mortality was shorter in patients with cardiac injury compared to those without injury, despite a similar median time from symptom onset to hospital admission in both groups (10 vs. 10 days).

The association between cardiac injury and mortality was adjusted for age, pre-existing cardiovascular diseases, cerebrovascular diseases, diabetes, chronic obstructive pulmonary disease, renal failure, cancer, ARDS, creatinine levels and N-terminal pro-B-type natriuretic peptide levels.

- ARDS was also identified as an independent risk factor for mortality.

Limitations of this study included: unknown clinical end points for many patients given many remained in hospital, and missing data which limited the determination of potential mechanisms of cardiac injury in patients with COVID-19.

**PHO reviewer’s comments**

- The results from this study may not be generalizable to all hospital settings, as Renmin Hospital of Wuhan University was assigned with treating the most severe COVID-19 cases in Wuhan.

**Citation**


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