Insights regarding in-hospital outcomes of COVID-19 hospitalisations and co-existing premature ventricular contractions: from national inpatient sample 2020

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Funding Acknowledgements: None.

Introduction: Since the emergence of the COVID-19 pandemic, several reports have highlighted COVID-19 infection's arrhythmogenic consequences on the cardiac conduction system (1). SARS-CoV-2 has a well-established predilection to cardiomyocytes and is associated with myocardial injury with worse predicted outcomes. A wide range of electrocardiographic findings was significantly associated with COVID-19 infection (2). However, literature is scarce on the outcomes of such ECG findings, and its implications are yet to be understood.

Purpose: We sought to illustrate the significant outcomes of patients hospitalised for COVID-19 infection and premature ventricular contractions.

Methods: The National Inpatient Sample database (NIS) - 2020 was analysed to identify adult hospitalisations with a primary diagnosis of COVID-19 with or without co-existing premature ventricular contractions (PVC) using International Classification of Diseases – 10 Clinical Modification (ICD-10-CM) codes. The primary outcome was inpatient mortality, while secondary outcomes included inpatient morbidity, mean length of stay (LOS), and mean total hospital charge (THC). Multivariate logistic regression and linear regression analyses were used to adjust for possible confounders.

Results: Out of 1,050,045 COVID-19 hospitalisations, 7,729 (0.73%) had PVCs. Encounters with COVID-19 and co-existing PVCs had higher adjusted odds of inpatient mortality (Adjusted odds ratio [aOR]: 1.18, 95% confidence interval [CI]: 1.014-1.38, p=0.033), longer mean LOS of 1.8 days (95% CI: 1.4-2.3, p <0.001), and higher mean THC of $21,869 (95% CI: $13,902-$29,835, p <0.001) than those without co-existing PVCs. Figure 1 shows a forest plot illustrating the multivariate analysis of in-hospital morbidities when adjusted for patient demographics, comorbidities, and hospital characteristics.

Conclusion: Among patients hospitalised with COVID-19 infection, those with premature ventricular contractions had worse outcomes regarding in-hospital mortality, sepsis, need for endotracheal intubation, mechanical ventilation, and vasopressors use, in addition to the longer length of hospital stay, and higher total hospital charges. Although PVCs are commonly encountered in hospitalised patients and often require no medical interventions in most cases, they are associated with poor prognosis in patients with COVID-19 infection.

Forest plot for adjusted outcomes