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Multimodality Imaging

IMPACT OF RIGHT VENTRICULAR DYSFUNCTION ON COVID-19 MORALITY

Moderated Poster Contributions

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Background: Emerging research has demonstrated that COVID-19 places the right ventricle at a higher risk of failure; however, the interaction of mechanical ventilation on cardiac hemodynamic function has prognostic significance of current work.

Methods: We performed a retrospective cohort review of COVID-19 patients admitted to any of the 13 Northwell Health acute care hospitals between March 1, 2020 and April 30, 2020 who underwent transthoracic echocardiography. To identify independent risk factors for mortality, we entered clinical risk factors into a bidirectional stepwise logistic regression model selection algorithm using the minimal Akaike Information Criteria (AIC) cutoff for inclusion.

Results: In total, 662 patients were included in our analysis. There were 330 (49.8%) patients admitted to the intensive care unit. Additionally, 226 (40%) of all patients died during their hospitalization. After backwards logistic regression analysis, right ventricular dilatation remained an independent risk factor for mortality (adjusted odd ratio 2.2, 95% confidence interval 1.2-3.8, $p < .001$) after controlling for age greater than 65 years, male gender, peripheral vascular disease, atrial fibrillation, grade II or III diastolic dysfunction. To explore the interaction of right ventricular dysfunction with mechanical ventilation, we performed a sensitivity analysis by adjusting for ventilator status in our model and right ventricular dilatation remained a significant risk (adjusted odd ratio 1.9, 95% confidence interval 1.1-3.5, $p < .001$).

Conclusion: In this analysis, we demonstrate that RV dysfunction is independently associated with increased mortality in COVID-19 patients, after adjustment for mechanical ventilation status. Further research should explore the pathophysiology for this association and early detection may decrease mortality and improve patient outcome.