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Spotlight on Special Topics

HEART RATE VARIABILITY IS REDUCED 3- AND 6-MONTHS AFTER HOSPITALIZATION FOR COVID-19 INFECTION

Poster Contributions
Saturday, May 15, 2021, 9:45 a.m.-10:30 a.m.

Session Title: Spotlight on Special Topics: COVID 1
Abstract Category: 61. Spotlight on Special Topics: Coronavirus Disease (COVID-19)

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Background: Given that SARS-CoV-2 is neuroinvasive, we hypothesized that patients recovering from COVID-19 hospitalization would have persistent abnormalities in autonomic cardiovascular regulation.

Methods: We assessed resting heart rate variability (HRV) and blood pressure (BP) responses to orthostatic stress (3-min active standing) in 18 patients (50±16 yrs; 5F;13M) at 3- and 6-months post-discharge for COVID-19 infection and 7 matched controls (50±14 yrs; 2F;5M). HRV was tested for 1 min during supine paced breathing. We assessed for 1) orthostatic hypotension (>20/10 mmHg fall in BP); 2) orthostatic hypertension (systolic BP increase (SBP) >20 mmHg or SBP>140 mmHg); and 3) postural orthostatic tachycardia syndrome (POTS, HR increase >30 bpm without orthostatic hypotension). Recruitment is ongoing; data will be updated for presentation.

Results: HRV was lower in post-COVID patients vs controls at 3 mos post-discharge (Figure) and at 6 mos. HRV was not correlated with spirometric forced vital capacity, p=0.5, or left ventricular ejection fraction, p=0.6. SBP change with standing was similar between patients and controls (5±10 vs -3±8 mmHg, p=.08). 2 post-COVID patients had orthostatic hypertension. None had orthostatic hypotension or POTS.

Conclusion: COVID-19 infection was associated with impaired parasympathetic modulation of HRV, through 6 mos post-discharge. This shift in autonomic balance may indicate increased cardiovascular risk among survivors of severe COVID-19 infection.

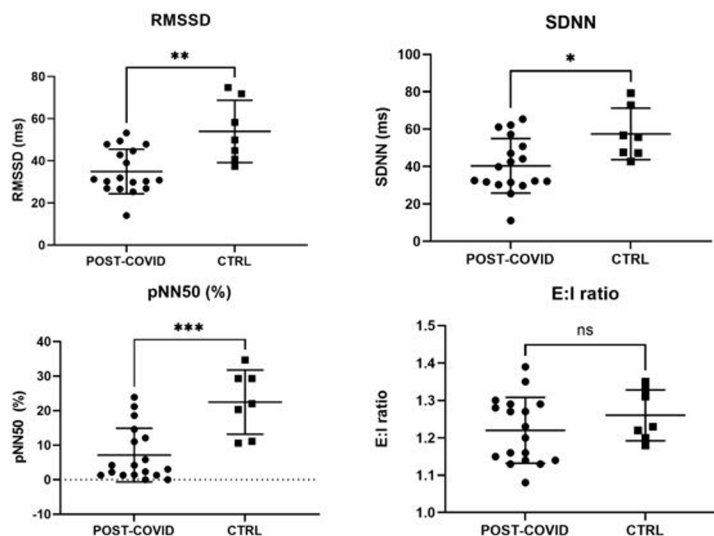


Figure: Heart variability measurements at 3 months post-discharge for COVID-19 vs controls. Groups: post-COVID, n=18; control, n=7. RMSSD, Root mean square of successive differences of RR intervals. SDNN, standard deviation of RR intervals. pNN50, proportion of RR intervals that differ by more than 50 ms from the previous RR interval relative to the total time. E:I ratio, expiratory to inspiratory ratio. * P < 0.05