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Spotlight on Special Topics

HYPERDYNAMIC LEFT VENTRICULAR EJECTION FRACTION IS A POOR PROGNOSTIC SIGN IN COVID-19 INFECTION

Poster Contributions
Sunday, May 16, 2021, 2:45 p.m.-3:30 p.m.

Session Title: Spotlight on Special Topics: COVID 6
Abstract Category: 61. Spotlight on Special Topics: Coronavirus Disease (COVID-19)

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Background: While early studies on echocardiography in COVID-19 have compared those with preserved versus reduced left ventricular ejection fraction (LVEF), the significance of hyperdynamic left ventricular ejection fraction (HLVEF) is less well described.

Methods: From March to June 2020, data from adult patients with confirmed COVID-19 admitted in Rush University System for Health (RUSH) was analyzed. Those with preserved LVEF $\geq 55\%$ were included. HLVEF was defined as ejection fraction $\geq 70\%$. Multivariable logistic regression models adjusting for age and history of coronary artery disease were done to determine independent risk association with COVID-19 illness severity.

Results: Of 198 patients examined, 172 (87%) had normal LVEF while 26 (13%) had HLVEF. Those with HLVEF were more likely to have a prior history of deep venous thrombosis or pulmonary embolism (57.7% vs. 28.9%, $p < 0.01$); no other significant differences in baseline characteristics/comorbidities were noted. In adjusted multivariable models, HLVEF was a significant predictor of in-hospital mortality (OR 3.68 [CI 1.53 - 8.84]; $p < 0.01$) and 60-day mortality (OR 3.47 [CI 1.44 - 8.47]; $p < 0.01$).

Conclusion: Among COVID-19 patients with preserved LVEF, patients with hyperdynamic LVEF had at least 3 times more risk for in-hospital and 60-day mortality than their normal counterparts. Closer monitoring and aggressive management in this high-risk population is warranted.

Table 1. Baseline characteristics and comorbidities by ejection fraction group

	Normal EF (55-70%)	HLVEF (>70%)	p-value
n	172	26	
Age (mean (SD))	60.42 (15.31)	58.50 (14.00)	0.55
Male (%)	100 (58.1)	19 (73.1)	0.22
BMI (mean (SD))	29.19 (7.43)	29.27 (7.13)	0.96
Current Smoker (%)	12 (8.2)	1 (5.9)	1.00
Race (%)			0.14
White	47 (29.7)	5 (19.2)	
Other	63 (39.9)	8 (30.8)	
Black or African American	48 (30.4)	13 (50.0)	
Comorbidities			
Atrial Fibrillation (%)	54 (31.4)	5 (19.2)	0.30
Coronary Artery Disease (%)	69 (40.1)	9 (34.6)	0.75
Hypertension (%)	123 (71.5)	19 (73.1)	1.00
Chronic Kidney Disease (%)	62 (36.0)	10 (38.5)	0.98
COPD (%)	12 (7.0)	4 (15.4)	0.28
Diabetes Mellitus (%)	93 (54.1)	16 (61.5)	0.62
Asthma (%)	17 (9.9)	3 (11.5)	1.00
Cancer (%)	18 (10.5)	3 (11.5)	1.00
Stroke (%)	37 (21.5)	5 (19.2)	0.99
Acute Myocardial Infarction (%)	51 (29.7)	9 (34.6)	0.78
DVT or PE (%)	48 (27.9)	15 (57.7)	0.01

EF = ejection fraction; BMI = body mass index; COPD = chronic obstructive pulmonary disease; DVT = deep vein thrombosis; PE = pulmonary embolism