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Long COVID-19 in Heart Transplant Recipients

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Purpose: The goal of this study was to assess the frequency and common symptoms of post-acute COVID-19 syndrome (Long COVID-19) in heart transplant recipients (HTR).

Methods: After obtaining IRB approval, we conducted telephone surveys of HTR (n=30) who had tested positive for SARS-CoV-2 to evaluate their experience with acute COVID-19 illness and assess symptoms of Long COVID-19. Symptoms at onset and also beyond 6, 12, and 24 weeks of the initial diagnosis were recorded. Additionally, medical charts were reviewed for detailed information regarding transplant history, immuno-suppression, COVID-19 management and hospitalization, and COVID-19 vaccination status.

Results: As noted in Table 1, among the 30 participants, 10 (33%) had symptoms consistent with Long COVID-19. Those with Long COVID-19 were more symptomatic during acute illness, with 40% of patients reporting cough, fevers or chills, and headaches, compared with 15%, 25%, and 20% respectively in those without Long COVID-19. Emergency department visits at initial illness (80% vs. 20%) and admission to the intensive care unit were more frequent (60% vs. 5%) in the Long COVID-19. Symptoms of Long COVID-19 lasted for a median of 9 weeks with 30% reporting ongoing symptoms at week 24. The most common persistent symptoms were depression, confusion, and difficulty concentrating.

Conclusion: This study is an early investigation of a complex syndrome of Long COVID-19 in transplant patients. Long COVID-19 is not well described in the transplant setting. HTR at our center with Long COVID-19 were sicker at their initial COVID-19 diagnosis and had more emergency room visits, hospital admissions, and longer hospital stays than those without subsequent Long COVID-19. Although, recall bias could affect participants' ability to remember details and symptoms, this would have impacted both groups similarly as the time since COVID-19 diagnosis to study enrollment was similar between the two groups. These are pre-liminary findings and the study is currently ongoing.

Table I. Demorraphics			COVID-19 variantes history				
	Limited COVID-19 in Heart Transplants (N-20)	Long COVID-19 in Heart Transplants (N-18)	Vaccination status at time of COVID-19	Unraccinated - 16 (80%) Unvaccinated -7 (70%)		Unvaccinated -7 (20%)	
Age, years	Median 56.5 (RQR 48.5-67.3)	Median 35.3 (828.63.5-69.5)	diagnosis	*Breakthrough -2 (20%) Partial vaccination - 1 (19%)		*Broakthrough -2 (20%) Partial vaccination 1 (10%)	
Grader	Male- 18 (90%)	Male- 5 (50%)	Days from COVID-19 diagnosis to subsequent	16 subsequently vaccinated		4 subsequently vacainated	
	Female- 2 (10%)	Femde- 4 (80%)	vaccination	Modian 166 (DQR 82-25	6	Median 167 (JQR 105-229)	
Device	Non-Histopic, 9 (#95)	Non-Westerley, 1 (1975)	Long COVID Parlines (N=14)				
	Hammiry 11 (1995)	Hopenic-4 (49%) Prefer not to identify: 1 (19%)	Paratise of comptone (Molice 8 VM 6-31)		Anade 1		
	Prefer not to identify-0		communication (communication)		3 months-2	3 months- 2	
Race	Diack-2 (10%)	Black-2 (20%)			6 months - 3	6 memba - 3	
	White-8 (40%)	White-3 (50%)	Symptoms at 6 works (Samber of patients reporting)		Shormess of breach -3		
	Parties and to identify & (40%)	Preserves an advantage of Charles			Cough-2		
Transplant History					Headache-3		
Ricard alone	16 (895)	9 (98%)	Serv throat 0				
Eleart hidary	1(20)	1099	Mysigian 3				
Time from transplant to COMD	Moline 1679-1008 ATL 14111	Median 1348 (ESE 664.1718)	Congistion-2				
infection (days)			Loss		Loss of Lots and	all of annual to the	
COVID-29 Area Infertion						Causes romang uns et appente- o	
Symptomatic or Asymptomatic	Symptomatic- 17 (82%)	Symphomatic - 10 (100%)			Confusion- 2		
Down (Down)	Anteplematic 3 (15%)	3.0040			Ek/flewity concentrating: 2		
Service of Frence	a fead	2 (2010)			Anxioy-2		
Cough	203%	4 (40%)			news role . 1		
Fermichills	5 (25%)	4(40%)	Symptoms at 12 works (Number of patients reporting)		Shormon of breath -1		
Finadaches	4 (20%)	4 (40%)		Coupi-1 Econsibilited			
Toticar	8(425)	4(85)	Bodete 1				
Other Could symptomy	(Kathour 2 (18%)	Loss of tasts and annell all (1963)			Sera throat -2		
	Multiser 1(19%)	Medicine: 4 (89%)				Myulgias- 0	
		Veniting or Dianhea = 3 (30%)			Loss of tests mell. 0		
Emergency Department visit	4(20%)	8 (99%)			Nauara'somiting lass of appetite-0		
Hespital Administra	4 (20%)	8 (80%)			Depression -1		
BCU admission	1.0%	61950			Difficulty concentrating- 0		
Elegated deration	57. Ann = 7.(19%)	17.dexx = 5.(50%)			Assisty 0 Shormess of breach -0 Cough-1 Ecumerichilts-0		
	1-2 weeks - 2 (10%)	1-2 weeks = 1 (19%) >2 weeks = 2 (29%)	Symptoms at 24 weeks (Number of patients reporting)				
	>2 weeks = 0						
Symptom duration	< or equal to 4 weeks = 16 (80%)	< or equal to 4 weeks= 5 (50%)			Headache-I		
	4.8 works = 1 (2%)	of made a 1/2000			Sore throat -0 Myulgias- 0		
	Never had comptoms = 3 (22%)						
Days from COVID-19 diagnosis to study	Median 258 days (RQR 258-392)	Median 204 days (8QR 60-296)			Congestion-0	-7.0	
encolment					Napata Vomiting	a been of apporting- 0	
COVID-19 management and outcomes	The second second	I de constante de constant			Depression -1		
Immunosoppression at COVID-19 Eugnosis	s incloands is (60%)		4		Confusion-1		
	Mucohendate 18 (10%)	Messehendate 3 (2012)				Difficulty concentrating-1	
	Similmus -8 (40%)	Similarus-4 (40%)			Assony, a		
	Ciclisporine-2 (19%)		New enset symptoms 4 weeks after COVID-19 (Number of patients		Preume crem part -		
COVID-19 specific treatment	Renderivie 3 (19%)	Rendesivir-7 (70%)	NONLINE)		Brain for.7		
	Management antibactics & (1971)	Manufact (20%) Manufactured antibacture 7 (20%)			Myalgins 1		
*Ersalchrough infuction (fully vaccinated prior to 2 (10%)		5 (505)	Severity (Number of patients reporting)	Severity (Number of patients reporting)		Mid-3	
COVIDI		- ()			Modenne-4		
BioMbcare utilization	Hospital days -1.5 (3QR 0-8)	Hospital days- median 3 (RpR 2.5-8.25)			Severo-1		
	KU days-0	ICU days-modian 1 (IQR 0-5.25)					
Charles and Control of States of States of States	Chipatarei vada-median 1 (KOK 1-125)	Outputent visite-median 1 (304.0-2)					

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Do VAD Infections Predict Post-Heart Transplant Infections or Mortality?

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Purpose: Infections are common after ventricular assist device (VAD) implantation but how these infections impact post-heart transplant (HT) course in patients (pts) supported with short-term (ST) VADs is not fully defined. We investigated whether VAD infections had any impact on post-HT outcomes, such as development of post-HT infections or mortality.

Methods: We performed a retrospective cohort study of 185 HT recipients (HTRs) supported with ST-VADs from 4/2006-10/2020. VAD-specific and -related infections were characterized according to 2011 ISHLT definitions. Statistics were performed using IBM[®] SPSS Statistics version 25.0.

Results: Prior to HT, 41 (22.2%) pts had VAD infections involving the bloodstream (n=17), pump (n=8), pocket (n=2) and driveline (n=22); gram-positive and -negative organisms were responsible for 55.3% and 44.7% of infections, respectively. Pts with VAD infections were predominantly male (68.2%, p=0.19), Caucasian (60.9 %, p=0.59), had non-ischemic cardiomyopathy (61%, p=0.67), and a mean age of 52.6 (p=0.351) at VAD implantation. Those with VAD infections had no significant difference in underlying lung disease (26.8% vs 22.9%, p=0.60), hypertension (41.5% vs 33.3%, p=0.33), diabetes mellitus (29.3% vs 21.5%, p=0.30), or chronic kidney disease (53.7% vs 62.5%, p=0.76). Pts with VAD infections had longer duration of VAD support (513.3 d vs. 290.7 d, p=0.001), but were similar to those without VAD infection in terms of HT hospitalization length of stay (26 d vs 24 d, p=0.28), need for re-operation (19.4% vs 16.7%, p= 0.67), thymoglobulin induction (19.5% v. 21.5%, =0.78), cellular-rejection (12.2% vs 19.4%, p= 0.29), and antibody-mediated rejection (31.7% vs 27.8%, p=0.62). HTRs with prior VAD infections had more post-HT infections, but this did not reach statistical significance (53.6% vs 43.1%, p=0.23), with more bacterial (43.9% v. 30.6%, p=0.11), fungal (14.6% vs 8.3%, p=0.23), and C. difficile (9.8% vs 3.5%, p=0.11) infections. In those with and without pre-HT VAD infections, 1-year all-cause mortality was 14.6% vs 6.9% (p=0.12), and 1-year infection-related mortality was 4.8% vs 3.5% (p=0.65).

Conclusion: In this single center study, there were non-significant increases in post-HT infections and mortality in HTRs with prior VAD infections. Larger studies are needed to further investigate the impact of VAD infections on post-HT outcomes.

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Incidence and Severity of Cytomegalovirus Infection in Seropositive Heart Transplant Recipients

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Purpose: Cytomegalovirus (CMV) infection contributes to morbidity and mortality in heart transplant recipients (HTR). Donor positive, recipient negative (D+/R-) patients are high risk and generally receive antiviral prophylaxis. The burden of CMV infection in recipient seropositive (R+) HTR is less clear, with preventative recommendations mostly extrapolated from other solid organ transplant groups. The aim of this retrospective cohort study was to define the incidence, severity of & risk factors for CMV infection in R+ HTR.

Methods: CMV seropositive HTR were included (2010-2019). Antiviral prophylaxis was not routinely used, with clinical monitoring the local