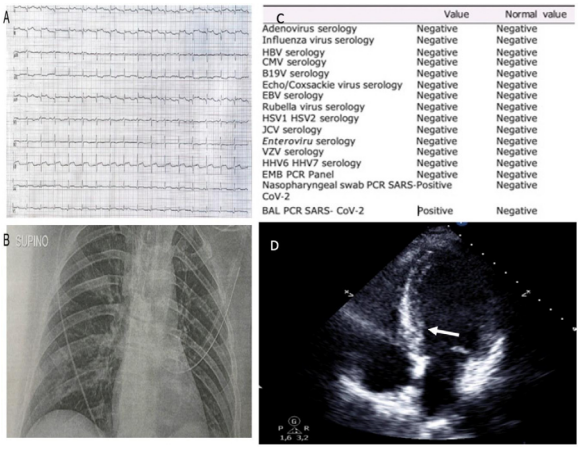
Since January 2020 Elsevier has created a COVID-19 resource centre with free information in English and Mandarin on the novel coronavirus COVID-19. The COVID-19 resource centre is hosted on Elsevier Connect, the company's public news and information website.



	Value	Normal value
Adenovirus serology	Negative	Negative
Influenza virus serology	Negative	Negative
HBV serology	Negative	Negative
CMV serology	Negative	Negative
B19V serology	Negative	Negative
Echo/Coxsackie virus serology	Negative	Negative
EBV serology	Negative	Negative
Rubella virus serology	Negative	Negative
HSV1 HSV2 serology	Negative	Negative
JCV serology	Negative	Negative
Enterovirus serology	Negative	Negative
VZV serology	Negative	Negative
HHV6 HHV7 serology	Negative	Negative
EMB PCR Panel	Negative	Negative
Nasopharyngeal swab PCR SARS-CoV-2	Positive	Negative
BAL PCR SARS- CoV-2	Positive	Negative

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Combined Heart Transplantation and Latissimus Dorsi Myo-Cutaneous Flap as Ultima Ratio Due to Severe Osteomyelitis Following LVAD Implantation and Total Sternectomy

D. Maldonado Gaekel,[1] A. Bernhardt,[1] Y. Al Assar,[1] S. Doll,[2] N. Doll,[2] H. Reichenspurner,[1] and M. Barten.[1] [1]Department of Cardiovascular Surgery, University Heart and Vascular Center Hamburg, Hamburg, Germany; and the [2]Department for Clinical Research, Schüchtermann-Klinik Bad Rothenfelde, Bad Rothenfelde, Germany.

Introduction: Infections in LVAD-patients are common and may lead to life-threatening complications. Although driveline infections are most commonly detected, development of blood stream infections related to LVAD-implantation can also pilot towards mediastinitis and osteomyelitis, thus resulting in extensive bone destruction of the sternum.
Case Report: A 37-year-old patient was transferred to our heart failure unit following complete sternectomy due to severe osteomyelitis, mediastinitis and a pyopericardium three years after an emergent LVAD implantation. An LVAD weaning was not possible due to immediate compromise of hemodynamics. The patient presented a thorax apertum secured in vacuum therapy and persistent wound infection with 3 MRGN positivity. Through intensified antibiotic therapy, continuous wound dressing and renewal of vacuum therapy, the infection was controlled, and a stable status achieved. After excluding contraindications for heart transplantation (HTx), the patient was accepted for a high-urgency transplantation and successfully transplanted one month later. Thereupon, the thorax was surgically reconstructed using an extended, right-sided latissimus-dorsi, myo-cutaneous flap. Relevant hemorrhage and partial repositioning of the flap was surgically approached two weeks after the initial procedure. Antibiotic treatment was continued to prevent superinfection and modified due to postoperative pneumonia and coloproctitis. The latissimus plastic showed continuous serous perfusion without inflammation, which was drained once weekly in an external clinic for two months. Echocardiography showed preserved biventricular function. Myocardial biopsies detected no higher-grade rejection as immunosuppression was established. After achieving full recovery, the patient was successfully discharged.
Summary: Extended and undetected osteomyelitis can rapidly lead to life-threatening mediastinitis and sepsis. Whenever inflammation parameters remain elevated, osteomyelitis should always be considered as a focus of infection on patients following LVAD-implantation. A combined heart transplantation and latissimus-dorsi plastic present a viable option for defect coverage and a possible long-term solution after extensive sternal resection in LVAD patients.

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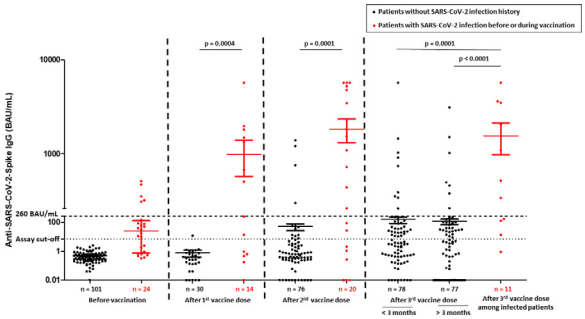
Humoral Response to SARS-CoV-2 mRNA Vaccine in Heart Transplant Recipients up to 4 Months After the Third Vaccine Injection

V.M. Ferré,[1] Z. Brouk,[2] H. Flament,[3] C. Kerneis,[4] C. Charpentier,[5] C. Verdonk,[4] E. Vicaut,[6] L. De Chaisemartin,[7] D. Descamps,[5] N. Houhou-Fidouh,[8] and R. Dorent.[4] [1]Virology, Université de Paris, IAME, UMR1137, INSERM, F-75018 Paris, France; AP-HP, Hôpital Bichat-Claude Bernard, Virologie, Paris, France; [2]Cardiothoracic Surgery, AP-HP, Hôpital Bichat-Claude Bernard, Cadiologie, Paris, France; [3]Université de Paris, CRI, INSERM U1149, INSERM, F-75018 Paris, France; AP-HP, Hôpital Bichat-Claude Bernard, Immunologie, Paris, France; [4]AP-HP, Hôpital Bichat-Claude Bernard, Cardiologie, Paris, France; [5]Université de Paris, IAME, UMR1137, INSERM, F-75018 Paris, France; AP-HP, Hôpital Bichat-Claude Bernard, Virologie, Paris, France; [6]Université de Paris, Paris, France; AP-HP, Hôpital Lariboisière, Biostatistics and Clinical Research Department, Paris, France; [7]Université Paris-Saclay, Inflammation, Microbiota and Immunopathology, INSERM UMR996, Chatenay-Malabry, France; AP-HP, Hôpital Bichat-Claude Bernard, Immunologie, Paris, France; and the [8]AP-HP, Hôpital Bichat-Claude Bernard, Virologie, Paris, France.

Purpose: Recent studies reported poor to moderate humoral response after 2 vaccine doses in heart transplant recipients (HTR). Currently, French authorities recommend 2 and 3 vaccine injections for transplant recipients with and without prior SARS-CoV-2 infection, respectively. This study aimed to evaluate level and durability of humoral immunity with this vaccination strategy.
Methods: This single-center cohort study included HTR followed at Paris Bichat hospital between January 2020 and September 2021. Analyses were performed using automated immunoassays (Abbot) to quantify anti-spike IgG (cut-off $\geq$ 7.1 BAU/mL) and anti-nucleocapsid IgG (cut-off index > 0.49). Categorical variables were described as number (%) and continuous variables with median (IQR).
Results: A total of 181 HTR (75.7% males, age 58 y [47-66]) transplanted between June 1990 and June 2021 were included. Median time from transplantation to first vaccine dose was 4.2 y [1.8-6.6]. 143 HTR (79%) had no SARS-CoV-2 infection history (HTRn) and 38 (21%) contracted the infection (HTRi) (56% before and 42% after vaccination initiation). After 2 vaccine doses, anti-S IgG seroconversion was observed for only 16% (n=12/76) of HTRn. Overall, anti-S IgG titers were lower in HTRn than in HTRi (0.5 [0.2-2.6] vs 578 [1.4-4449] BAU/mL, respectively, p=0.0001). The 3rd vaccine dose enabled to obtain 42% (n=33/72) of seroconversion among HTRn with median anti-S titers of 3.2 BAU/mL [0.4-35.0]. Only half seroconverters HTRn reached the 260 BAU/mL cut-off chosen by French authorities to define vaccination efficacy. Interestingly, these patients seem to have a sustained humoral response 4 months after the 3rd dose.
Conclusion: This study gives new insights on the effect of the 3rd vaccine dose in HTR with low rate of seroconversion and low titers of anti-S IgG but sustained humoral response when seroconversion occurs. Studies on vaccine efficacy against SARS-CoV-2 variants and cell-mediated immune response in this cohort are ongoing.



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Long COVID-19 in Heart Transplant Recipients

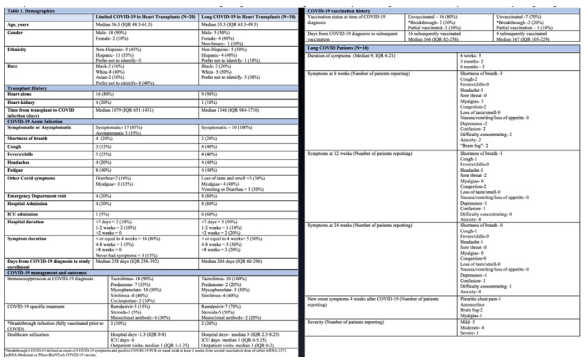
R. Sigler, B. Chen, A. Bharti and S. Aslam. University of California, San Diego, San Diego, CA.

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, immunosuppression, 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 preliminary findings and the study is currently ongoing.



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

A. Goyal,[1] S.M. Hockney,[1] R.N. Kumar,[2] R.S. Harap,[3] J.E. Wilcox,[4] D.T. Pham,[5] and V. Stosor.[6] [1]Northwestern University Feinberg School of Medicine, Chicago, IL; [2]Division of Infectious Diseases, MedStar Georgetown University Hospital, Washington, DC; [3]Bluhm Cardiovascular Institute, Northwestern Memorial Hospital, Chicago, IL; [4]Division of Cardiology, Northwestern University Feinberg School of Medicine, Chicago, IL; [5]Division of Cardiac Surgery, Northwestern University Feinberg School of Medicine, Chicago, IL; and the [6]Divisions of Infectious Diseases and Organ Transplantation, Northwestern University Feinberg School of Medicine, Chicago, IL.

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

B.J. Gardiner,[1] J. Bailey,[2] B.A. Morgan,[1] M.A. Percival,[2] V.M. Warner,[2] S.J. Lee,[1] O. Morrissey,[1] A.Y. Peleg,[1] and A.J. Taylor.[3] [1]Department of Infectious Disease, Alfred Health, Melbourne, Australia; [2]Pharmacy Department, Alfred Health, Melbourne, Australia; and the [3]Heart Center, Alfred Health, Melbourne, Australia.

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