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associated with death in this population. Given these findings, HF patients should be strongly encouraged to reduce their risk of exposure to infection.

	Alive (n=43)	Dead (n=29)	Univariate logistic regressions, OR
Age, years	63, 46-71	67, 57-79	NS
Gender, % female	32	41	NS
HTN <i>hx</i> , %	77	90	NS
Cardiac <i>Dx</i> <i>hx</i> , %	40	69	3.39, p=0.016
CAD <i>hx</i> , %	21	38	NS
HF <i>hx</i> , %	17	45	4.06, p=0.012
Former Smoker, %	27	24	NS
Diabetes, %	44	31	NS
CKD <i>hx</i> , %	30	34	NS
Cancer <i>hx</i> , %	16	17	NS
Immunologic Disease, %	14	17	NS
Antihypertensive, %	49	55	NS
Diuretic, %	26	48	2.71, p=0.05
ACE/ARB/ARNI, %	35	34	NS
Peak BUN, mg/dL	48, 26-81	55, 42-86	NS
Peak NTproBNP, pg/mL	3422, 664-12328	14390, 3407-30000	NS
Peak Troponin, ng/mL	173, 40-466	211, 89-410	NS
Peak D-Dimer, ng/mL	1884, 866-4000	2296, 1055-4000	NS
LVEF, %	35, 25-49	50, 30-60	NS
Mechanical Support, %	19	17	NS
Inotropic Support, %	65	79	NS

(21)

COVID-19 Impact on Heart Organ Transplantation - New Insights from a Single-Center Experience

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Purpose: During the COVID 19- pandemic, there is no consensus on management strategies for treating infected heart transplant patients. The outcomes of these patients vary by institution. We report our center experience and management strategies to date.

Methods: All patients who received heart transplantation, from January 4th 2018 to September 25th 2020 and were diagnosed with SARS-CoV-2 were included and full chart review was performed.

Results: There were 113 heart transplants at our institution by September 2020. A total of 13 (12%) patients were infected with SARS-CoV-2: 9 (69%) isolated heart, 3 heart -kidney (23%) and 1 heart- lung (8%). The median (IQR) time from transplant to diagnosis was 10 (5-16) months. The mean age was 57 years and 50% were male; 50% were of Hispanic ethnicity. The main presenting symptoms were fever (43%), cough (86%) and SOB (43%). Chest x-ray was abnormal in all patients. We evaluated all patients and 79% were hospitalized and 21% were closely monitored as outpatients. None of our patients were hospitalized at outside institutions. Two (14%) required intubation and none required V-V ECMO support. The immunotherapy was modified in all patients: MMF and prednisone were discontinued, tacrolimus dose was reduced. COVID19 treatment was: 71% received hydroxychloroquine, 50% azithromycin, 15% remdesivir, 7% convalescent plasma. All hospitalized patients received anticoagulation. One patient had 2R/3A rejection within 30 days prior to diagnosis. Graft function was maintained in all patients with median LVEF% 65 (59-65%) except one patient who had received thymoglobulin 2 weeks prior to COVID 19 infection (LVEF 30%). The patient had a prolonged intubation but ultimately recovered and was discharged from the hospital. The one death (7.1%) was a heart - kidney recipient who concomitantly presented with pseudomonas sepsis and severe neutropenia. The remaining patients have all been discharged home.

Conclusion: We present our single center experience in managing COVID 19 infected heart transplant patients. We implemented uniform management strategies by incorporating aggressive reduction of

immunosuppression, frequent scheduled contacts with infected outpatients and making sure all infected patients requiring hospitalization were treated at a transplant center.

(22)

Use of Remdesivir to Treat COVID-19 after Orthotopic Heart Transplant

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Purpose: Guidance for managing orthotopic heart transplant (OHT) recipients with COVID-19 infection is limited. There have been 80 published cases of OHT recipients with COVID-19 infection to date, and they show a higher incidence of infection and greater mortality (26-41%) than that observed in the general population. Remdesivir, an inhibitor of viral RNA-dependent RNA polymerase, decreases median recovery time from infection in the general population, but was not used in any OHT patients. We sought to determine the effectiveness of remdesivir to treat COVID-19 in OHT recipients.

Methods: Out of 400 OHT patients followed at UCSD, 1.8% (n=7) have tested positive for COVID-19. Four of these patients were treated with remdesivir. Three patients with milder symptoms did not require treatment.

Results: OHT recipients with COVID-19 infection were a median 55 years of age (range 28-62 years), 71% (5/7) were male, and they were a median of 3 years post-transplant (range 2-5 years). All patients were taking tacrolimus, 85% (6/7) were also taking mycophenolate mofetil (MMF) or 14% (1/7) were taking mammalian target of rapamycin (mTOR) inhibitors. All patients had positive nasopharyngeal COVID-19 PCR and were admitted for observation. MMF and mTOR inhibitors were held on admission while tacrolimus was continued. Four patients (57%) developed hypoxia requiring supplemental oxygen or had pulmonary infiltrates on chest x ray and were treated with remdesivir. Patients received an intravenous (IV) infusion of 200 mg loading dose followed by 100 mg IV daily over 4 days (total 5 doses). Two patients were also treated with IV antibiotics for bacterial pneumonia (n=1) or urinary tract infection (n=1). Three of the four patients treated with remdesivir had complete resolution of fevers, hypoxia and symptoms after a 5-day course. The fourth patient had continued hypoxia requiring supplemental O2 therapy and received an additional 5 days of remdesivir 100 mg IV daily (10-day total course) with subsequent resolution of symptoms. No patients were intubated or admitted to intensive care and all 7 patients survived to hospital discharge and had negative COVID-19 PCR at outpatient follow up. No other COVID-19 directed therapies were used.

Conclusion: Compared to 80 patients in prior published cases, our experience suggests that prompt administration of remdesivir improves outcomes in OHT patients with COVID-19 infection.

(23)

Heart Transplant Activity in France during the COVID-19 Outbreak

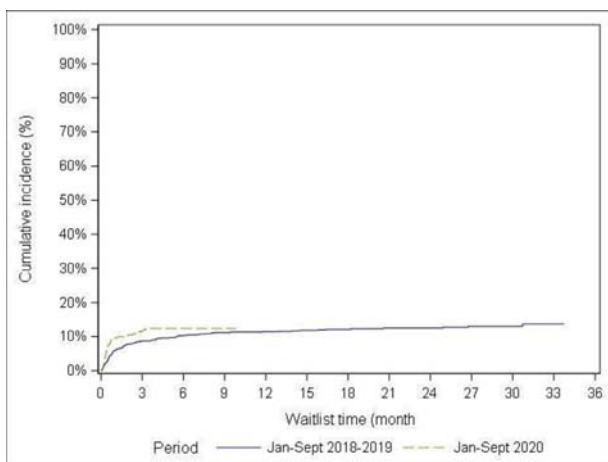
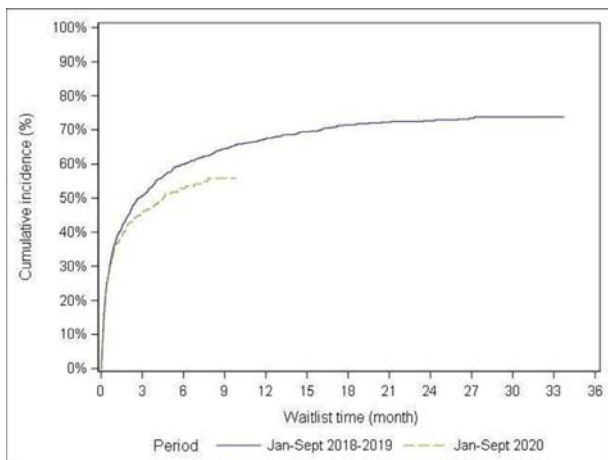
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Purpose: The COVID-19 pandemic has deeply affected organ transplant activity across the world. During the first and second epidemic waves, the Agence de la biomédecine in agreement with the French scientific societies has pursued the heart transplant program where transplant's capacity was ensured. This study aimed to examine the impact of COVID-19 on new listings, waitlist outcomes and transplant activity in France.

Methods: All patients newly registered on the national waiting list for heart transplantation between January and September 2018-2020 were included in the study (n=1 311). The number of new listings and transplants per million population (pmp) in 2018-2019 period and in 2020 COVID era were compared. Cumulative incidence of transplantation and waitlist mortality estimated with the competing risk analysis with transplantation and death or delisting for medical condition as the competing events were compared between the study periods.

Results: In 2020 compared with the 2018-2019 period, the total number of patients newly registered on the waiting list declined 11%, from 6.8 to 5.9 pmp and the number of transplants performed decreased 22%, from 4.6 to 3.5 pmp. While 3-month cumulative incidence of transplantation (Figure 1) decreased from 51% [47-54] to 45% [40-50], a non-significant increase in cumulative incidence of death or delisting for medical condition (9% [7-11] versus 12% [9-15]) (Figure 2) was observed.

Conclusion: In 2020 COVID era, the waitlist and transplant access significantly declined in France without significant change in waitlist mortality.



(24)

The Case Number Changes in Adult Heart Transplantation and Waitlist Addition Due to COVID-19

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Purpose: To understand the long term effect of COVID-19 on 1) heart transplant waitlist trends and on 2) heart transplant case numbers in the United States.

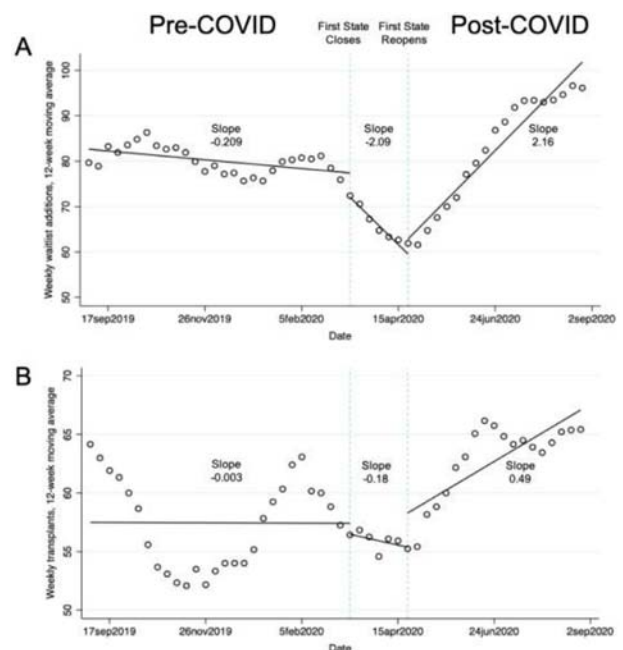
Methods: The number of new adult heart transplant waitlist additions and transplant procedures were obtained from the UNOS database. Our time frame includes the 52 weeks between September 3, 2019 and September 4,

2020. Temporal changes in waitlist additions and heart transplants were analyzed using interrupted time series analyses with two transition periods. The first transition from the pre-COVID to the post-COVID era was determined as the week of March 11, 2020, when the first state imposed stay-at-home orders. The second transition period was determined as the first state re-opening during the week of April 22, 2020.

Results: Weekly waitlist additions were decreasing at -0.19 additions per week (95% CI: -0.35 to -0.03, p=0.018) prior to the COVID-19 era, defined as before the week of March 11, 2020, with a significant decrease in weekly waitlist additions of -2.09 (95% CI: -2.44 to -1.73, p<0.001) during the post-COVID-19 era and prior to the first state re-opening the week of April 22, 2020 (Figure A). Weekly waitlist additions increased at 2.16 additions per week (95% CI: 1.81 to 2.51, p<0.001) following the first state announcing re-opening the week of April 22, 2020.

Weekly transplants were relatively unstable, although decreasing at -0.003 transplants per week (95% CI: -0.279 to 0.273, p=0.984) in the pre-COVID era, and were trending downward at -0.18 transplants per week (95% CI: -0.3702 to 0.0036, p=0.054) thereafter (Figure B). The number of transplants rebounded and increased significantly at 0.49 transplants per week (95% CI: 0.26 to 0.72, p<0.001) after April 22, 2020.

Conclusion: The number of heart transplants and waitlist additions decreased significantly due to COVID-19 and rebounded following the first US state reopening the week of April 22, 2020. Waitlist additions continue to rise past levels observed during the pre-COVID era.



(25)

The Impact of COVID-19 on the Cardiopulmonary Transplant Journey

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Purpose: The effect of the COVID 19 pandemic had the potential to have a major impact on patients during their journey through transplant assessment and heart or lung transplantation. Patients awaiting cardiopulmonary transplantation form a vulnerable group at increased risk because of their end stage cardiovascular or respiratory disease. We evaluated the impact of COVID pandemic on our transplant program.

Methods: We retrospectively reviewed our adult and paediatric heart and lung transplant activity from 2015. We assessed deaths on the active waiting list between Jan - 27th May for each yearly period and compared our