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.

a more restrictive pattern. The prevalence of CLAD did not change after COVID-19 infection. Further follow-up is required to obtain more detailed information about CLAD.

Table 1 Transplant function pre- and post-COVID-19 infection

	Pre-COVID-19	3 months post-COVID-19	p-value	6 months post-COVID-19	p-value
Number of patients	59	45		34	
FEV1, L	2.62 ± 0.80	2.49 ± 0.86	0.005	2.51 ± 0.75	0.077
FVC, L	3.68 ± 1.06	3.44 ± 1.17	0.002	3.52 ± 1.00	0.033
FEV1/FVC ratio	72 ± 13	73 ± 15	0.084	72 ± 13	0.876
CLAD, n (%)	22 (37)			13 (38)	

Continuous variables are expressed as mean and standard deviation. CLAD = chronic lung allograft dysfunction.

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SARS−CoV−2 Vaccine Response in Lung Transplant Recipients: A French Multicenter Study

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Purpose: Many scientific societies recommend SARS−CoV−2 vaccination for solid-organ transplant recipients. The immunogenicity of two or three vaccine doses in lung transplant (LTx) recipients is unclear. The aim of this study was to evaluate the humoral response to the vaccine in LTx and heart-lung transplant (HLTx) recipients.

Methods: We conducted a prospective study of LTx and HLTx recipients at seven centers in France. Anti-spike-protein antibody titers after two or three SARS−CoV−2 vaccine injections were measured.

Results: We studied 2186 patients (1091 [51%] males) with a median age of 49 [45-55] years. Double LTx was performed in 1792 (82%) patients. The main reasons for LTx were chronic obstructive pulmonary disease (n=656, 30%), fibrosis (n=459, 21%), and cystic fibrosis (n=350, 16 %). Median time from LTx to vaccination was 59 [29-108] months and mean time from the last vaccine dose to serological testing was 3 months [1.5-3.8]. We used WHO definitions to classify antibody titers as negative (&lt. 30 BAU/mL), suboptimal (30-260 BAU/mL), or protective (&gt 260 BAU/mL). Of the first 1081 patients, 270 (25%) were partially vaccinated and 649 (60%) fully vaccinated (three doses or history of COVID-19 then two doses); Among these patients,133 (12%) were infected by covid. Of the 649 fully vaccinated patients, 461 (71%), 84 (13%), and 97 (15%) had negative, suboptimal, and protective antibody titers, respectively. The proportion of patients with protective titers was 8% vs. 18% in patients vaccinated within 5 years vs. 5 or more years after LTx, respectively. Among covid-infected patients, 48% developed a protective rate, whether fully or partially vaccinated.

Conclusion: LTx recipients usually fail to develop protective antibody titers in response to SARS-CoV-2 vaccination. Once further data are collected, we will seek to identify risk factors for a poor antibody response.

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TTV Load is Associated with SARS-CoV-2 Vaccination Response in Lung Transplant Recipients

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Purpose: Although the currently approved COVID-19 vaccines are highly effective, SARS-CoV-2-specific immune responses are diminished in lung transplant recipients (LTR), probably due to immunosuppression (IS). There is currently no marker of IS that can be used to predict vaccination responses. Here, we study if torque tenovirus (TTV) can be used as a predictive marker.

Methods: The humoral response to the mRNA-1273 vaccine was assessed in 103 LTR, who were vaccinated 4 to 237 months after Lung transplantation. Spike (S)-specific IgG levels were measured at baseline, 28 days after first, and 28 days after the second vaccination. TTV loads were determined by RT-PCR and Pearson's correlation coefficient was calculated to correlate serological responses to TTV load.

Results: Humoral responses to the vaccine COVID-19 vaccination were found in 41/103 (40%) LTR at 28 days after the second vaccination. 62 /103 (60%) had no detectable antibodies. TTV loads at baseline correlated with S-specific antibodies and the percentage of responders (=<0.001) (Fig 1). TTV loads also strongly correlated with the time since transplantation, indicating that participants with lower TTV loads were longer after transplantation.

Conclusion: This study shows an association between baseline TTV load and mRNA-1273-induced S-specific antibodies. If the TTV load is indeed a predictor of vaccination responses, this can be used in the future as a potential guidance for optimizing vaccination regimens. Therefore, we recommend that TTV load measurements are included in further vaccination efficacy studies in immunocompromised cohorts.

Table 1

	TTV ≥ 6.5 log copies/ml (n=26)	TTV 5.13 -6.5 log copies/ml (n=25)	TTV 3.78-5.13 log copies/ml (n=26)	TTV < 3.78 log copies/ml (n=26)	P value
% (low) responders	7.6 % (n=2)	40% (n=10)	53.8% (n=14)	57.7% (n=15)	P=0.0007
Age (median IQR)	61.5 (51-65)	59 (38.5-63.5)	61 (39.5-66.3)	61 (50.5-67.5)	P=0.70
Time from transplant (median, IQR)	17.5 (11-57.5)	41 (22.8-71)	81 (50.3-170.8)	97 (57-159)	P=0.0001
MMF-free treatment (n=13)	11.5% (n=3)	16% (n=4)	7.7% (n=2)	15.4% (n=4)	NS