Received: 17 May 2021 | Revised: 22 May 2021 | Accepted: 27 May 2021

DOI: 10.1111/tid.13664

LETTER TO THE EDITOR

WILEY

Heart and liver transplant recipients from donor with positive SARS-CoV-2 RT-PCR at time of transplantation

To the editor

At present, there is unclear evidence on the need for a negative severe acute respiratory syndrome coronovirus-2 (SARS-CoV-2) real time-polymerase chain reaction (RT-PCR) for donors with a history of COVID-19 prior to transplantation.[1,2] We report two cases of heart and liver transplant recipients from a donor with previous documented COVID-19 and positive RT-PCR at time of transplantation.

1.1 | Donor

A 29-year-old woman with confirmed mild COVID-19 infection 2 months earlier was deceased due to subarachnoid hemorrhage. At time of explanting the organs, the patient had a positive SARS-CoV-2 RT-PCR in a nasopharyngeal swab (Ct 30) and serology with a titer of 954 AU/ml of antispike protein. All these tests were done in another institution. At time of organ extraction, a plasma SARS-CoV-2 RT-PCR was performed in our hospital and it was negative.

1.2 | Heart recipient

A 66-year-old man with a dilated cardiomyopathy was admitted for elective heart transplant. Immunosuppression received was basiliximab, methylprednisolone, tacrolimus, and mycophenolate mofetil. On day +8, the patient developed a severe pericardial effusion requiring drainage. A myocardial biopsy was performed on day +14 revealing no rejection signs. At time of transplantation, the recipient had both negative RT-PCR and serology for SARS-CoV-2. Measurements of SARS-CoV-2 RT-PCR in nasopharyngeal swabs, plasma, and pericardial fluid and serology were done in the subsequent days until day +14 and all of them remained negative (Table 1).

1.3 | Liver recipient

A 36-year-old man with cirrhosis due to primary biliary cholangitis-autoimmune hepatitis overlap syndrome was admitted for elective liver transplant. Triple immunosuppression with tacrolimus, mycophenolate mofetil, and corticosteroids were started due to high risk of graft rejection. On day +6 after transplant, an abdominal CT found stenosis at the origin of the left portal vein due to laminar thrombosis and antithrombotic prophylaxis was started. On day +8, a percutaneous liver biopsy reported acute cellular rejection and corticosteroid pulses were prescribed. Before liver transplant, the patient had an asymptomatic COVID-19 infection. The serology performed at transplantation time revealed a titer of 26,066 AU/mL of antispike protein. Measurements of SARS-CoV-2 RT-PCR in nasopharyngeal swabs, plasma, and hepatic biopsy were performed after transplant and were negative. Titers of antispike protein declined until day +14 but remained positive (Table 1).

In a previous series, 31 kidney transplants were done from COVID-19 recovered donors whom presented negative SARS-CoV-2 RT-PCR at time of transplantation and recipients did not develop complications related to COVID-19.[3,4] Similarly, nine cases of living liver donors with previous COVID-19 infection have been reported, but transplantation was delayed until they had two consecutive negative nasopharyngeal RT-PCR.[5] Unlike kidney transplantation, which could be postponed, heart and liver transplantation have a relative urgency and delays could have a negative impact in the recipients. In our series, the donor had a resolved COVID-19 infection with a positive RT-PCR in nasopharyngeal swab at time of transplantation but no donor-acquired SARS-CoV-2 infection occurred. Although guidelines still recommend to avoid using this type of donor in solid organ transplant, having a negative plasma PCR would increase comfort for performing nonlung transplants from donors with recent SARS-CoV-2 infection.

KEYWORDS

COVID-19, donor, heart transplantation, liver transplantation, SARS-CoV-2

DISCLOSURE

The authors report no potential conflicts.

AUTHOR CONTRIBUTION

SV and MV designed the study, coordinated the study, collected the data, analyzed and interpreted the results, and wrote the article. PM and EB designed the study, coordinated the study and critically reviewed the article. MS, COB, ZBB, PC, BP, MR, AP, JALB, JH and RA collected the data and critically reviewed the article.

Abbreviations: COVID-19, coronavirus disease 2019; CT, computed tomography; Ct, cycle threshold; RT-PCR, real time-polymerase chain reaction; SARS-CoV-2, severe acute respiratory syndrome coronovirus-2.

TABLE 1 Microbiological tests of the donor and the two recipients

	Day 0	Day +7	Day +14	Other tests
Donor	NP RT-PCR SARS-COV-2: **POS Ct 30** Plasma RT-PCR SARS-COV-2: **NEG** LB RT-PCR SARS-COV-2: **NEG** IgG SARS-COV-2:**954 AU/ml**			HIV IgG: **NEG** HBc Ab: **NEG** HCV IgG: **NEG** HSV IgG: **POS** EBV IgG: **POS** VZV IgG: **POS** CMV IgG: **POS** HHV-6 IgG: **NEG** TOXO IgG: **NEG** QFT: **NEG**
Heart recipient	NP RT-PCR SARS-COV-2: **NEG** Plasma RT-PCR SARS-COV-2: **NEG** IgG SARS-COV-2: **NEG**	NP RT-PCR SARS-COV-2: **NEG** IgG SARS-COV-2: **NEG**	NP RT-PCR SARS-COV-2: **NEG** PF RT-PCR SARS-COV-2: **NEG** IgG SARS-COV-2: **NEG**	HIV IgG: **NEG** HBc Ab: **NEG** HCV IgG: **POS** VL HCV: **NEG** HSV IgG: **POS** EBV IgG: **POS** VZV IgG: **POS** CMV IgG: **POS** HHV-6 IgG: **NEG** TOXO IgG: **NEG** QFT: **NEG**
Liver recipient	NP RT-PCR SARS-COV-2: **NEG** Plasma RT-PCR SARS-COV-2: **NEG** IgG SARS-COV-2:**26,066 AU/ml**	NP RT-PCR SARS-COV-2: **NEG** LB RT-PCR SARS-COV-2: **NEG**	NP RT-PCR SARS-COV-2: **NEG** IgG SARS-COV-2:**8682 AU/ml**	HIV IgG: **NEG** HBc Ab: **NEG** HCV IgG: **NEG** HSV IgG: **POS** EBV IgG: **POS** VZV IgG: **POS** CMV IgG: **POS** HHV-6 IgG: **POS** TOXO IgG: **POS** QFT: **NEG**

Abbreviations: LB, liver biopsy; MB, myocardial biopsy; NEG, negative; NP, nasopharyngeal swab; PF, pericardial fluid; POS, positive; QFT, QuantiFERON TB-Plus™; RT-PCR, real-time PCR; TOXO, toxoplasma; VL, viral load.

DATA AVAILABILITY STATEMENT

The data that support the findings of this study are available on request from the corresponding author. The data are not publicly available due to privacy or ethical restrictions.

Sofía de la Villa[1]
Maricela Valerio[1,2,3]
Magdalena Salcedo[2,3,4]
Carlos Ortiz-Bautista[5]
Pilar Catalán[1]
Belén Padilla[1]
Mario Romero[4]
Zorba Blázquez-Bermejo[5]
Álvaro Pedraz[6]
José Ángel López-Baena[7]
Javier Hortal[8]
Emilio Bouza[1,2,3,9]
Roberto Alonso[1]
Patricia Muñoz[1,2,3,9]

[1]*Servicio de Microbiología Clínica y Enfermedades Infecciosas, Hospital General Universitario Gregorio Marañón, Madrid, Spain*
[2]*Instituto de Investigación Sanitaria Gregorio Marañón, Madrid, Spain*
[3]*Facultad de Medicina, Universidad Complutense de Madrid, Madrid, Spain*
[4]*Servicio de Digestivo, Hospital General Universitario Gregorio Marañón, Madrid, Spain*
[5]*Servicio de Cardiología, Hospital General Universitario Gregorio Marañón, Madrid, Spain*
[6]*Servicio de Cirugía Cardiaca, Hospital General Universitario Gregorio Marañón, Madrid, Spain*
[7]*Servicio de Cirugía General, Hospital General Universitario Gregorio Marañón, Madrid, Spain*
[8]*Servicio de Anestesiología, Hospital General Universitario Gregorio Marañón, Madrid, Spain*
[9]*CIBER Enfermedades Respiratorias-CIBERES (CB06/06/0058), Facultad de Medicina, Universidad Complutense de Madrid, Madrid, Spain*

Correspondence
Sofia de la Villa, Servicio de Microbiología Clínica y Enfermedades Infecciosas, Hospital General Universitario Gregorio Marañón, Doctor Esquerdo 46. 28007 Madrid, Spain.
Email: sofiadlvilla@gmail.com

Maricela Valerio, Servicio de Microbiología Clínica y Enfermedades Infecciosas, Hospital General Universitario Gregorio Marañón, Doctor Esquerdo 46. 28007 Madrid, Spain.
Email: mavami_valerio@yahoo.com.mx

ORCID

Sofía de la Villa https://orcid.org/0000-0002-1371-6417
Maricela Valerio https://orcid.org/0000-0001-6394-2861
Carlos Ortiz-Bautista https://orcid.org/0000-0002-4874-715X
Mario Romero https://orcid.org/0000-0003-1633-2862
Zorba Blázquez-Bermejo https://orcid.org/0000-0001-7372-2950
Patricia Muñoz https://orcid.org/0000-0001-5706-5583

REFERENCES

1. National Health Service Blood and Transplant. SARS-CoV-2 assessment and screening in organ donors and recipients. In: *Organ Donation and Transplantation*. 2020. National Health Service Blood and Transplant. Summary of Current Evidence and Infromation: Donor SARS-CoV-2 Testing %26 Organ Recovery from Donors with a History of COVID-19 (hrsa.gov). Accessed April 26, 2021.
2. Statement on Organ Donation and Transplantation and the COVID-19 pandemic of the EU National Competent Authorities on Organ donation and transplantation. 2021. organs_ncastatement_covid19_en.pdf (europa.eu). Accessed May 5, 2021.
3. Kute VB, Godara S, Guleria S, et al. Is it safe to be transplanted from living donors who recovered from COVID-19? Experience of 31 kidney transplants in a multicenter cohort study from India. *Transplantation*. 2021;105(4):842-850.
4. Yoshinaga K, Araki M, Wada K, et al. Successful deceased donor kidney transplantation to a recipient with a history of COVID-19 treatment. *J Infect Chemother*. 2021;27(7):1097-1101.
5. Malleeswaran S, Mohanka R, Yalakanti RB, et al. Living donor hepatectomy after proven SARS-CoV-2 infection: first report of 9 cases from 3 centers. *Transplantation*. 2021;105(7):e70-e71.

How to cite this article: de la Villa S, Valerio M, Salcedo M, et al. Heart and liver transplant recipients from donor with positive SARS-CoV-2 RT-PCR at time of transplantation. *Transpl Infect Dis*. 2021;23:e13664. https://doi.org/10.1111/tid.13664