Received: 11 July 2020 | Revised: 3 August 2020 | Accepted: 4 August 2020

DOI: 10.1111/tid.13445

LETTER TO THE EDITOR

WILEY

Fatal Covid-19 vasoplegic shock in a recipient few hours before double lung transplantation in high emergency

SARS-Cov2 outbreak has deeply impacted French lung transplant programs by the decreased number of lung donors, the scarcity of intensive care unit (ICU) beds, and most importantly, the assumed worse prognosis of Covid-19 in recipients during perioperative period. Despite no evidence has been published to suggest that lung transplant recipients were at high risk of acquiring the virus or developing severe Covid-19, immunosuppression may worsen the prognosis of such infection in patient transplanted for end-staged lung diseases.

We present the case of a 59-year-old patient with pulmonary fibrosis who has been listed for lung transplantation (LTx) in March 2020. Two weeks after listing, the patient presented with severe respiratory compromise without fever. Chest CT did not show signs of SARS-Cov2 pneumonia. Nasal, tracheal, and rectal SARS-Cov2 PCR were repeated three times daily before ICU admission, and all came back negative. No other infectious triggers have been elucidated so far. Patient condition continued to worsen leading to ECMO implantation followed by tracheal intubation. Seven days later, one of the ten French transplant centers had the opportunity to transplant the patient despite ICU beds scarcity. Before referral, Chest X-Ray did not show additional lesions, cardiac function was stable, and no bacterial infection was proved. At arrival, the patient was stable on ECMO and mechanical ventilation. He underwent systematic nasal swab for SARS-Cov2 PCR. After immunosuppressive treatment administration, the patient developed severe vasoplegic shock with bilateral lung consolidations (Figure 1) and 40.5°C temperature. SARS-Cov2 PCR returned positive. The patient died few hours after the onset of the vasoplegic shock and could not be transplanted. The donor lungs were used for a second recipient tested negative for SARS Cov2 with good result despite longer cold ischemic time.

Our case demonstrated the severity of COVID-19 clinical worsening in Phase I disease[1] when nasal swab PCR is positive. It seems mandatory to benefit from recipient SARS Cov2 PCR results as close as possible to acceptance of donor lungs for transplantation. Considering the time needed to run SARS-Cov2 test, improved transplant logistic management, including ex vivo lung perfusion,[2] simultaneous recipients call, rapid SARS-Cov2 testing pathway, or pooling recipients between LTx centers will be undoubtly useful during COVID-19 period. For our deteriorating patient, repeated routine testing would have been a solution to make a prompter diagnosis and better adapt medical management. Obtaining lower respiratory tract specimens such as tracheal aspirates in line with infection control precautions should be considered for intubated patients.[3] Additionally, one should emphasize that COVID-19 symptoms may have overlapped fibrosis worsening symptoms and delayed COVID-19 diagnosis. Chest CT would have been an additional valuable diagnostic tool[4] provided baseline images are available. Indeed, it may be challenging to differentiate lung disease from COVID-19-induced lesions.[5] It is likely that our patient may have contracted the disease during his hospital stay. Asymptomatic SARS-Cov2 carriers[6] may be a source of virus spreading among health workers and patients. Maintaining containment, developing solutions to monitor COVID-19 contacts, and routine screening are questions that should be discussed and regularly reassessed for listed outpatients. At least, we showed that solidarity between LTx programs was feasible and effective.

ACKNOWLEDGEMENTS

None.

DISCLOSURES

None.

AUTHORS CONTRIBUTION

OM and AV conceived of the presented idea. OM wrote the study. FL, LF, HM, VB, DB, LW, and GD collected data for the manuscript. EF and AV supervised the findings of this work. All authors discussed the results and contributed to the final manuscript.

Olaf Mercier[1,2,3]
Florent Laverdure[4]
Laura Filaire[2]
Hervé Mal[5]
Vincent Bunel[5]
Delphine Deblauwe[6]
Lidwine Wemeau[7]
Gaëlle Dauriat[2]
Elie Fadel[1,2,3]
André Vincentelli[8]

[1]*School of Medicine, Université Paris-Saclay, Le Kremlin-Bicêtre, France*
[2]*Department of Thoracic and Vascular Surgery and Heart-Lung Transplantation, Pulmonary Hypertension National Referral Center, Hôpital Marie Lannelongue, Groupe Hospitalier Paris Saint Joseph, Le Plessis Robinson, France*

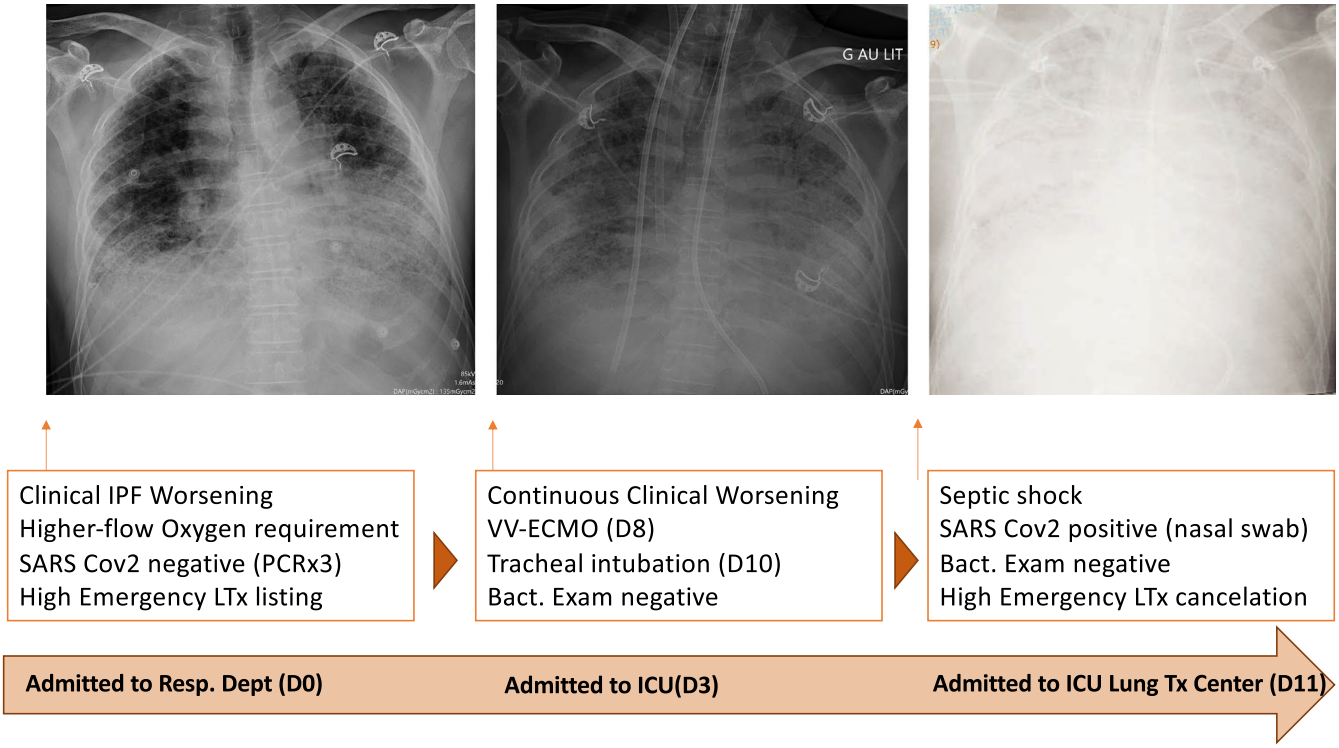

FIGURE 1 Sequential chest X-Ray pictures with clinical correlation and timeline showing Idiopathic fibrosis patient history from high-emergency double lung transplantation listing to Covid-19 septic shock preventing him from the transplant procedure. All infectious exam but SARS-Cov2 PCR were negative. Bilateral lung complete consolidation was found at the time of septic shock

[3]*INSERM UMR_S 999, Hôpital Marie Lannelongue, Le Plessis Robinson, France*
[4]*Department of Anesthesiology and Intensive Care, Hôpital Marie Lannelongue, Groupe Hospitalier Paris Saint Joseph, Le Plessis Robinson, France*
[5]*Service de Pneumologie B et Transplantation Pulmonaire, Centre Hospitalier Universitaire Bichat-Claude Bernard, Assistance Publique-Hôpitaux de Paris, Paris, France*
[6]*Intensive Care Unit, CHU Lille, Lille, France*
[7]*Department of Respirology, CHU Lille, Lille, France*
[8]*Department of Cardiac Surgery, CHU Lille, Lille, France*

Correspondence
Olaf Mercier, Department of Thoracic and Vascular Surgery and Heart-Lung Transplantation, Hôpital Marie Lannelongue, 133 Av de la Résistance, 92350 Le Plessis Robinson, France
Email: o.mercier@ghpsj.fr

ORCID
Olaf Mercier https://orcid.org/0000-0002-4760-6267

REFERENCES

1. Siddiqi HK, Mehra MR. COVID-19 illness in native and immunosuppressed states: a clinical-therapeutic staging proposal. *J Heart Lung Transplant*. 2020;39(5):405-407.
2. De Wolf J, Puyo P, Bonnette P, et al. Logistic ex vivo lung perfusion for hyperimmunized patients. *Ann Thorac Surg*. 2016;102(3):e205-e206.
3. Wang W, Xu Y, Gao R, et al. Detection of SARS-CoV-2 in different types of clinical specimens. *JAMA*. 2020;323(18):1843-1844.
4. Fang Y, Zhang H, Xie J, et al. Sensitivity of chest CT for COVID-19: Comparison to RT-PCR. *Radiology*. 2020;296(2):E115-E117.
5. Peng S, Huang L, Zhao BO, et al. Clinical course of coronavirus disease 2019 in 11 patients after thoracic surgery and challenges in diagnosis. *J Thorac Cardiovasc Surg*. 2020;160(2):585-592.e2.
6. Bai Y, Yao L, Wei T, et al. Presumed asymptomatic carrier transmission of COVID-19. *JAMA*. 2020;323(14):1406-1407.

How to cite this article: Mercier O, Laverdure F, Filaire L, et al. Fatal Covid-19 vasoplegic shock in a recipient few hours before double lung transplantation in high emergency. *Transpl Infect Dis*. 2021;23:e13445. https://doi.org/10.1111/tid.13445