

## OPEN

# Evaluating Potential Deceased Donor Renal Transplant Recipients for Asymptomatic COVID-19

Quan Yao Ho, MRCP, MMed,<sup>1,2</sup> Shimin Jasmine Chung, MRCP,<sup>2,3</sup> Shoen Choon Seng Low, FRCP, MMed,<sup>4</sup> Robert Chun Chen, MD,<sup>4</sup> Swee Ping Teh, MRCP,<sup>1</sup> Fu Zi Yvonne Chan, MRCP, MMed,<sup>3</sup> Ban Hock Tan, FRCP,<sup>2,3</sup> and Terence Yi Shern Kee, FRCP, FACP<sup>1,2</sup>

**W**e present a case of asymptomatic coronavirus disease 2019 (COVID-19) diagnosed in a hemodialysis patient during deceased donor renal transplantation (DDRT) evaluation and discuss the challenges of excluding COVID-19 before transplantation.

A 50-year-old woman with end-stage renal disease secondary to IgA nephropathy on hemodialysis was called up as first on the waitlist. She was screened for COVID-19 based on our previously published protocol<sup>1</sup> with the addition of a chest computed tomography (CT) scan.

Our patient and her brother, her only household contact, were asymptomatic, had no known contact with COVID-19 cases or suspects, and had not travelled overseas for 3 months. She continued her work as a hawker but wore a cloth mask for all activities outside her home, except during exercise. On admission, she was afebrile, with a respiratory rate of 18 breaths/min and her pulse oximetry reading was 96% on room air. Physical examination revealed bilateral basal lung crepitations without signs of volume overload. She had lymphopenia though her white cell count was normal. Her chest radiograph revealed bilateral mild, ill-defined patchy opacities, while CT of the chest showed bilateral nodular air space consolidation, predominantly

in the posterior and peripheral lower lobes (Figure 1). Nasopharyngeal swab for severe acute respiratory syndrome coronavirus 2 later returned positive on the same day.

Transplantation was held off, and the patient was immediately transferred to an isolation ward. She developed a temperature of 37.6°C the following morning and mild symptoms (eg, cough, myalgia, vomiting, and diarrhea) only from day 3 of admission (D3). She did not require supplemental oxygen, and her symptoms resolved on D10. Repeat respiratory swabs first returned negative on D20.

The optimal strategy to exclude COVID-19 before DDRT is unclear. With significant unlinked community transmission and an incubation period of approximately 2 weeks, COVID-19 cannot be confidently excluded with clinical and epidemiological history. Dialysis patients may have minimal symptoms or present atypically (eg, with predominantly gastrointestinal symptoms).<sup>2</sup> Home isolation is impossible if they require regular hemodialysis in the community. Laboratory findings such as lymphopenia are nonspecific.

Real-time reverse transcriptase polymerase chain reaction for severe acute respiratory syndrome coronavirus 2 on respiratory specimens is used to confirm COVID-19, but its sensitivity may be affected by the patient's functional status, type of respiratory specimen, and collection technique<sup>3</sup> and has been reported to be initially negative, especially in mild or early illness.<sup>4</sup> The sensitivity of respiratory swabs within a short time frame to exclude COVID-19 may be limited.

Chest radiography may be a useful adjunct in the screening of COVID-19 but is not sensitive in mild or early disease. In a recent meta-analysis, CT was suggested to be more sensitive than real-time reverse transcriptase polymerase chain reaction<sup>3</sup> but can be also negative in mild or early disease.<sup>5</sup> CT findings are nonspecific (eg, pulmonary congestion may mimic viral pneumonia) which can add further complexity to patient assessment.

Given the potentially devastating consequences of peritransplant COVID-19, we find it necessary to exclude COVID-19 as best as possible before DDRT, but this will likely remain challenging. A combination of clinical, molecular, and radiological investigations may help detect early COVID-19 but may not eliminate

Received 6 May 2020.

Accepted 7 May 2020.

<sup>1</sup> Department of Renal Medicine, Singapore General Hospital, Singapore.

<sup>2</sup> SingHealth Duke-NUS Transplant Centre, Singapore.

<sup>3</sup> Department of Infectious Diseases, Singapore General Hospital, Singapore.

<sup>4</sup> Department of Diagnostic Radiology, Singapore General Hospital, Singapore.

The authors declare no funding or conflicts of interest.

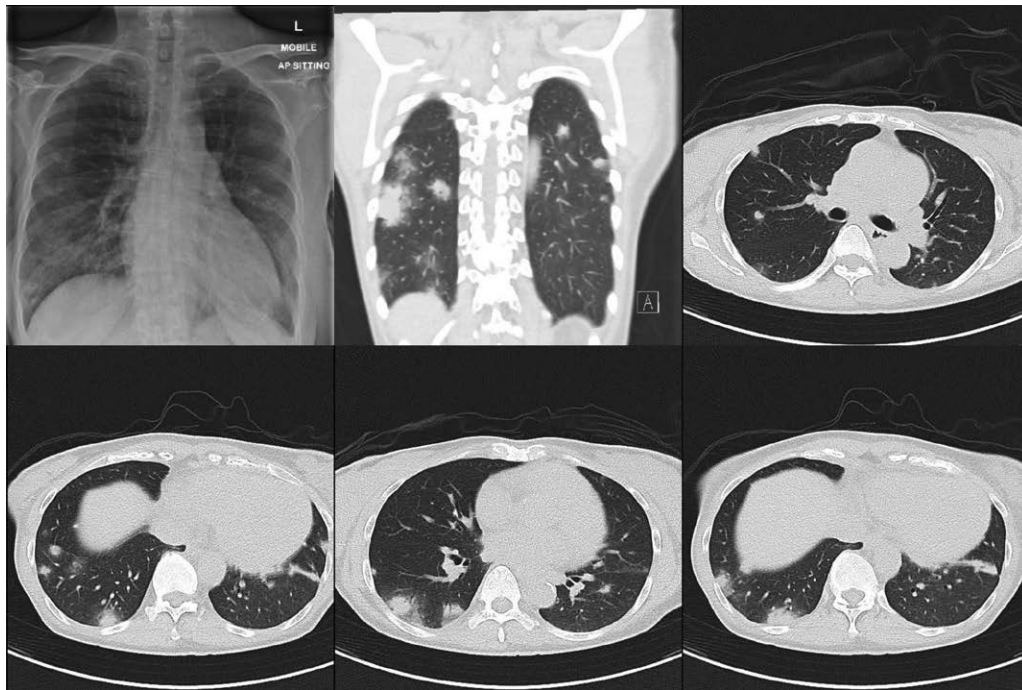
All authors participated in the care of the patient and the writing of the paper.

Correspondence: Quan Yao Ho, MRCP, MMed, Department of Renal Medicine, Singapore General Hospital, Outram Rd, Singapore 169608. (ho.quan.yao@singhealth.com.sg).

Copyright © 2020 The Author(s). Transplantation Direct. Published by Wolters Kluwer Health, Inc. This is an open-access article distributed under the terms of the Creative Commons Attribution-Non Commercial-No Derivatives License 4.0 (CCBY-NC-ND), where it is permissible to download and share the work provided it is properly cited. The work cannot be changed in any way or used commercially without permission from the journal.

ISSN: 2373-8731

Transplantation Direct 2020;6: e559; doi: 10.1097/TXD.0000000000001010.  
Published online 22 May, 2020.



**FIGURE 1.** Chest radiograph and computer tomography images (on admission).

the risk of COVID-19 especially given the time sensitivity of DDRT. The risks and benefits of proceeding with transplantation during this pandemic needs to be carefully considered and also discussed with the patient.

## REFERENCES

1. Chung SJ, Tan EK, Kee T, et al. Practical considerations for solid organ transplantation during the COVID-19 global outbreak: the experience from Singapore. *Transplant Direct*. 2020;6:e554.
2. Wang R, Liao C, He H, et al. COVID-19 in hemodialysis patients: a report of 5 cases. *Am J Kidney Dis*. 2020. pii: S0272-6386(20)30612-0. [Epub ahead of print].
3. Kim H, Hong H, Yoon SH. Diagnostic performance of CT and reverse transcriptase-polymerase chain reaction for coronavirus disease 2019: a meta-analysis. *Radiology*. 2020:201343. [Epub ahead of print].
4. Young BE, Ong SWX, Kalimuddin S, et al. Epidemiologic features and clinical course of patients infected with SARS-CoV-2 in Singapore. *JAMA*. 2020;323:1488–1494.
5. Bernheim A, Mei X, Huang M, et al. Chest CT findings in coronavirus disease-19 (COVID-19): relationship to duration of infection. *Radiology*. 2020:200463. [Epub ahead of print].