

## CASE REPORT

# Severe acute respiratory syndrome coronavirus-2 (SARS-CoV-2) infection after allogeneic stem cell transplantation

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**Abstract**

This is the first report of a case of COVID-19 after allogeneic stem cell transplantation. Our case suggests that COVID-19 may exist without characteristic CT images, especially in immunocompromised hosts, such as patients after transplantation.

**KEYWORDS**

allogeneic transplantation, COVID-19, CT findings, immunocompromised host, malignant lymphoma

## 1 | INTRODUCTION

Severe acute respiratory syndrome coronavirus-2 (SARS-CoV-2) is a novel coronavirus first detected in Wuhan, China. The virus causes coronavirus disease 2019 (COVID-19). Over 1 000 000 cases of COVID-19 have been confirmed worldwide.<sup>1</sup> Here, we report the first case of COVID-19 after allogeneic stem cell transplantation.

## 2 | CASE EXAMINATION

A 61-year-old male with diffuse large B-cell lymphoma transformed from follicular lymphoma underwent peripheral blood stem cell transplantation (PBSCT) from his HLA haploidentical daughter. He underwent de-escalation of immunosuppressant drugs because of early relapse after PBSCT. The duration of chronic graft-vs-host disease (GVHD) was extended, but he did not need additional therapy. At day 205 after PBSCT, he had a fever of 100°F and a wet cough. He visited our hospital because his symptoms persisted for 2 days. He had not travelled to a foreign country nor had contact with anyone with COVID-19. His chest X-ray showed no apparent bacterial pneumonia, and a CT scan showed only small nodules that were diagnosed as scar tissue from past organizing pneumonia

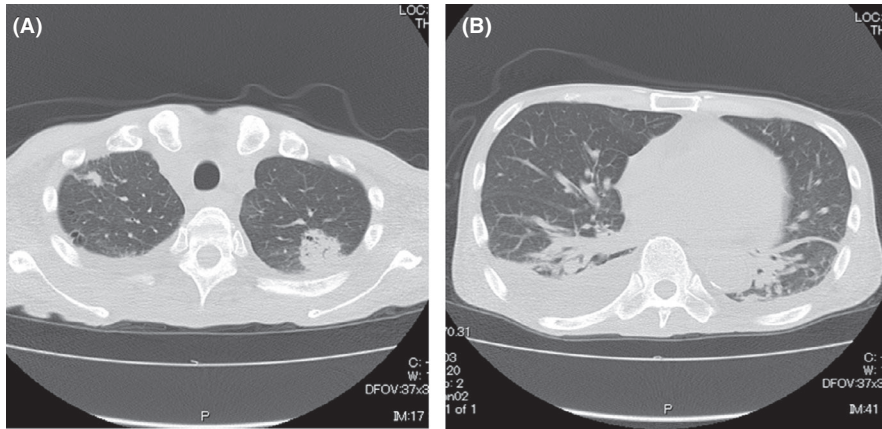
and pleural effusion (Figure 1). Although he was radiographically atypical for COVID-19, a COVID-19 PCR test was performed on a nasopharyngeal swab. Laboratory tests showed leucopenia (WBC 1000/ $\mu$ L), neutropenia (ANC 20/ $\mu$ L), a high procalcitonin level (8.94 ng/mL), and a high CRP level (26.3 mg/dL). He was hospitalized and started taking antibiotics with a diagnosis of community-acquired pneumonia. PCR was positive the day after hospitalization. By the ninth day in the hospital, his respiratory condition had not worsened.

## 3 | DISCUSSION

Currently, COVID-19 is spreading around the world, and typical COVID-19 clinical features and imaging patterns on chest CT have been reported. Although common symptoms of COVID-19 include fever and respiratory symptoms, a report indicated that COVID-19 was diagnosed without showing the typical symptoms.<sup>2</sup> They reported a patient was admitted to their hospital because of a temporary loss of consciousness, and no respiratory symptoms or fever was observed. Furthermore, their report suggested that COVID-19 diagnosis by symptoms alone can be difficult. On the other hand, in the image findings, Chinese researchers revealed bilateral lung opacities on chest CT in COVID-19-infected patients and described lobular and subsegmental areas of consolidation as the most typical

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**FIGURE 1** A, Chest CT findings. Organizing pneumonia was observed in both upper lobes. B, Chest CT findings. Bilateral pleural effusion was present

findings.<sup>3</sup> Another study found that the hallmarks of COVID-19 on imaging were bilateral and peripheral ground-glass and consolidative pulmonary opacities.<sup>4</sup> However, in our patient, we did not find typical findings on CT. This is the first report of a case of COVID-19 after allogeneic stem cell transplantation. The absence of the characteristic imaging features might be related to leucopenia or immunosuppression. Our case suggests that COVID-19 may exist without characteristic CT images, especially in immunocompromised hosts, such as patients after transplantation.

#### 4 | CONCLUSION

Although there are many unclear points about COVID-19, typical features may not be present on images, and it is important to note the possibility of infection, especially in immunocompromised patients.

#### ACKNOWLEDGMENTS

Published with written consent of the patient.

#### CONFLICT OF INTEREST

None declared.

#### AUTHOR CONTRIBUTIONS

TO: managed the patient and wrote the manuscript. FI, AO, and AY: co-ordinated and approved the final version of the manuscript.

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