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LETTER TO THE EDITOR

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Haploidentical hematopoietic cell transplantation is even more advantageous during the COVID-19 pandemic

To the Editor

The SARS-CoV-2 has overwhelmed healthcare systems worldwide. Hematopoietic cell transplantation (HCT) has been uniquely affected as this virus may not only severely impact the immunocompromised recipient but also the potential stem cell donor.[1] A recent review of SARS-CoV-2 reported that 15% of allogeneic HCT recipients developed severe disease requiring mechanical ventilation.[2] The coronavirus disease-19 (COVID-19) pandemic has also disrupted donor availability, as some prospective unrelated donors have been infected prior to donation or others are less likely to volunteer due to fear of contracting the virus. Moreover, COVID-19 has exhausted hospital resources restricting in some cases access to bone marrow and peripheral stem cell collections. Consequently, HCT donor registries have recommended cryopreservation after stem cell collection to safeguard against these disruptions. Under these circumstances, use of haploidentical (haplo)-related donors has become even more advantageous.

We report a successful haplo-HCT after both the donor and the recipient had been infected and recovered from SARS-CoV-2. The recipient was a 17-year-old Hispanic boy with high-risk pre-B acute lymphocytic leukemia. He was diagnosed with SARS-CoV-2 during interim maintenance as his nasopharyngeal (NP) swab was positive for SARS-CoV-2 viral RNA and remained positive for a month (Figure 1). He developed mild respiratory symptoms and low-grade fever therefore required no specific therapy while his chemotherapy was delayed for two weeks. Serology performed 4 weeks after his infection demonstrated positive SARS-CoV-2 IgG. He developed a bone marrow relapse two months after acquiring SARS-CoV-2 infection. As his relapse occurred on therapy and within 10 months from his original diagnosis, he was considered for a HCT after achieving a second complete remission with no measurable residual disease following a two-week chemotherapy induction and a four-week blinatumomab infusion.[3] The donor was his 26-year-old sister, whom during screening was found to be positive for SARS-CoV-2 viral RNA by RT-PCR of her NP swab and serology revealed SARS-CoV-2 IgG positivity (Figure 1). She remained asymptomatic with NP RT-PCR converting to negative after 18 days. Haplo-HCT was therefore delayed for a month while the patient was bridged with a second course of blinatumomab. The donor uneventfully underwent a bone marrow harvest, and her brother received a non-cryopreserved T-replete haploidentical bone marrow transplant (haplo-BMT) following conditioning with fractionated total body irradiation (200 cGy × 6) and fludarabine.[4,5] Post-transplant cyclophosphamide was given on days +3 and +4. The patient is now 45 days following his haplo-BMT and remains in remission with no evidence of infection while interestingly his serology remained positive for SARS-CoV-2 IgG on day +32.

As the COVID-19 continues to spread globally, non-urgent transplants have been placed on hold or delayed. Guidelines on when to transplant are situational as delay for hematologic malignancies may be detrimental to the patient.[1] The logistics of securing an unrelated donor have become even more complicated especially

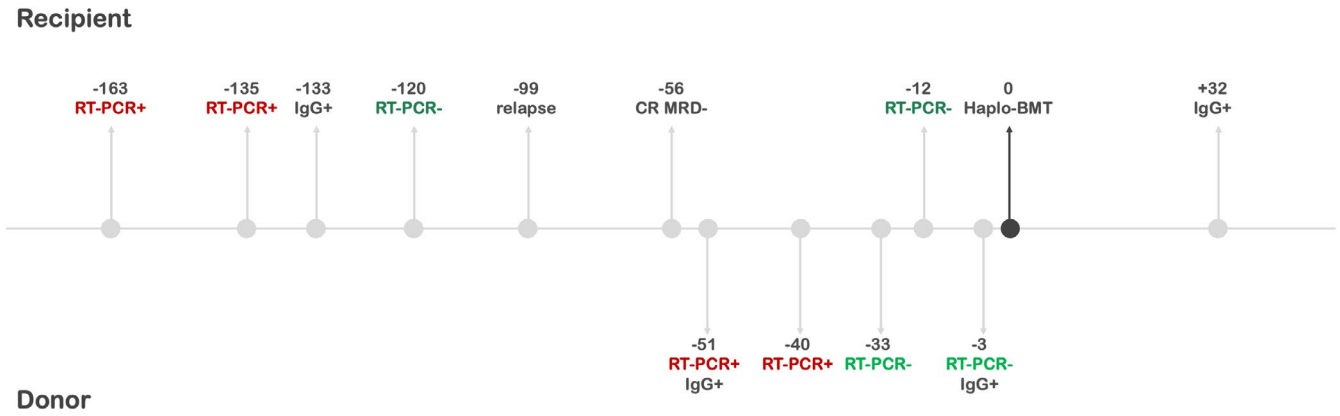

FIGURE 1 Time course of SARS-CoV-2 viral monitoring of donor and recipient and disease course

when the optimal donor is not a domestic one. The emergence and success of haplo-HCT has increased opportunity for patients to receive HCT who may not have an available matched donor which has become even more true during this pandemic. Our case illustrates that haplo-HCT can be lifesaving and may be considered even after both the donor and the recipient have recovered from a SARS-CoV-2 infection.

DATA AVAILABILITY STATEMENT

Data sharing is not applicable to this article as no new data were created or analyzed in this study.

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