

To Transplant or Not to Transplant During the SARS-CoV-2 Pandemic? That Is the Question

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ABSTRACT

The novel coronavirus disease 2019 has grown to be a global public health emergency. The rapid spread of the infection has raised many questions in the oncohematological scientific community regarding the appropriateness of high-dose chemotherapy with autologous stem cell transplantation (ASCT). We here report two cases of patients who received ASCT at our Institute during the epidemic in Italy, affected with Hodgkin lymphoma and germ cell tumor, respectively. The two patients underwent a nasopharyngeal swab for

severe acute respiratory syndrome coronavirus 2 (SARS-CoV-2) on hospital admittance and during the period of bone marrow aplasia. They were attended to exclusively by dedicated health care staff who followed specifically implemented protocols for bedside nursing and care. They completed the procedure without unexpected side effect. Our experience demonstrates how ASCT can be performed safely if procedures are reorganized ad hoc to reduce the risk of SARS-CoV-2 infection. *The Oncologist* 2021;26:e336–e337

The novel coronavirus disease 2019 (COVID-19) has grown to be a global public health emergency since patients were first detected in Wuhan, China, in December 2019. Many factors related to this pathogen remain unknown, such as incubation period, rate of asymptomatic infection, and quality of host immune response. High-dose chemotherapy (HDCT) with autologous peripheral blood stem cell transplantation (PBSCT) represents a standard of care for many oncohematological malignancies and for some solid tumors. Individuals who are undergoing HDCT represent a group of patients in whom COVID-19 infection is expected to lead to devastating consequences, given their state of immune suppression; hence, the risk of performing such treatment during a pandemic must be tightly balanced against the expected clinical benefit. The American Society of Hematology recently issued a series of recommendations regarding the administration of high-dose chemotherapy and autologous transplantation. In Italy, a shared document by the Società Italiana di Ematologia and Gruppo Italiano Trapianti Midollo Osseo recommends the institution of protective measures, with the goal of achieving a “COVID-19-free” environment for patients and staff, both in the outpatient setting and in clinical transplant units [1–3]. Regarding Hodgkin lymphoma, a consolidation strategy based on radiotherapy rather than on transplantation is suggested,

especially in late recurrence. No guidelines exist for patients with relapsed refractory germ cell tumors candidate to receive PBSCT during a pandemic.

In September 2018, an 18-year-old girl was admitted to our Institute with a newly diagnosed Hodgkin lymphoma, stage IIB, scleronodular variety. She was treated with chemotherapy according to the ABVD (doxorubicin, bleomycin, vinblastine, dacarbazine) schedule, obtaining partial remission at an interim positron emission tomography (PET) with Deauville score 4. The patient continued chemotherapy according to the eBEACOPP (bleomycin, etoposide, adriamycin, cyclophosphamide, oncovin, procarbazine, and prednisone) schedule [4], obtaining complete metabolic remission after four cycles. In April 2019 a new PET evaluation showed disease progression in multiple supradiaphragmatic lymph nodes. Therefore, she began treatment with brentuximab and vedotin, but a new PET assessment after four cycles demonstrated left lung progression. In December 2019, she started chemotherapy according to the BeGEV (bendamustine, gemcitabine, and vinorelbine) scheme, with harvesting of 5×10^6 CD34+ cells per kilogram body weight after the second cycle. The PET reassessment after four cycles, in March 2020, showed complete metabolic remission. On March 9, 2020, because of the rapid spread of severe acute

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respiratory syndrome coronavirus 2 (SARS-CoV-2) infection, the Italian government extended its emergency coronavirus measures, initially limited to those areas considered epidemic foci, to the entire country, including travel restrictions and a ban on public gatherings. Given the high risk of disease recurrence, we decided to administer the patient high-dose chemotherapy followed by PBSCT. Before starting the conditioning regimen, a SARS-CoV-2 nasopharyngeal swab was performed with a negative result. Therefore, the patient received FEAM (fotemustine, etoposide, cytarabine, and melphalan) chemotherapy and subsequent PBSCT. During aplasia, she presented with grade 2 mucositis and a single febrile episode, promptly resolved with antibiotic treatment with piperacillin and tazobactam. No pathogens were isolated on blood cultures. The patient was kept in isolation in a low-microbial-load room from the day of reinfusion on and was followed by dedicated medical and nursing staff from the beginning of the conditioning therapy. All the dedicated staff also had at least one negative nasopharyngeal swab for SARS-CoV-2. On day 7, the patient was tested again for SARS-CoV-2 with a negative result from her nasopharyngeal swab. During recovery, she received assistance only from her mother, who also maintained domiciliary isolation. Health care workers always wore medical masks, gowns, gloves, and eye protection. During the same period, we administered high-dose chemotherapy to a 25-year-old man diagnosed with a relapsed yolk sac tumor, at high risk for disease recurrence, according to the International Germ Cell Cancer Collaborative Group. This patient was treated taking the same aforementioned prophylactic measures; he did not develop major complications during the aplasia phase. The two patients are now well and without evidence of disease [5, 6].

The SARS-CoV-2 pandemic raised several questions about a possible increase in the risks associated with transplant procedures: COVID-19 is in fact a novel, rapidly changing pandemic, and evidence-based recommendations for PBSCT remain challenging, limited to case reports and expert discussion. Our experience suggests that, during pandemic, PBSCT can be performed safely by implementing specific protocols for both diagnostic procedures and

bedside nursing and care, with the aim to reduce as much as possible the risk of SARS-CoV-2 infection. In particular, performing a nasopharyngeal swab before the start of the conditioning treatment, both for patients and for the dedicated health care staff, and the quarantine prescribed for caregivers, are crucial points for a successful outcome of the transplant.

In addition, since early March at our Institute, before entering the inpatient unit, each patient has undergone SARS-CoV-2 testing by a nasopharyngeal swab; turnaround time is about 12 hours, and only patients with negative tests can proceed to access the unit [7]. Furthermore, all health care professionals have been trained on the correct use of adequate personal protective equipment (PPE): in fact, evidence suggests that, even during this pandemic, health care workers rarely acquire infections during patient care when proper PPE is used, whereas most infections are acquired in the community, where PPE is typically not worn.

To report regarding the level of concern about the risk of acquiring COVID-19 for current stem cell transplant recipients: surely, even during the health emergency, the risk of recurrence of the neoplastic disease was their major concern.

Finally, it should be stressed that the current pandemic has also caused severe shortages of sanitary equipment and limited the availability of health care infrastructure; some authors suggested guidance on resource allocation, to maximize benefits by shifting resources to patients with a better prognosis even if jeopardized by a life-threatening condition. Even though this may seem morally unacceptable, we should consider that avoiding reallocation strategies can cause the development of equally tragic situations, in which curable patients are denied the possibility to fully recover from their disease.

In conclusion, the two cases we described demonstrate how we performed these procedures safely, concentrating the economic and welfare resources to the maximum [8–10].

DISCLOSURES

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