

Hematopoietic stem cell transplantation (HSCT) in the COVID-19 pandemic era

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Abstract

The pandemic of coronavirus infectious disease-2019 (COVID-19) caused by the severe acute respiratory syndrome coronavirus-2 (SARS-CoV-2) is a threat to global health. This has become an obstacle for the practice of hematology, mostly in low-middle income countries. For those hematologist and oncologists who perform hematopoietic stem cell transplantation HSCT the usual challenges of this kind of medical procedures have increased because of the COVID-19 pandemic. The importance of find the best route for performing HSCT avoiding excessive COVID-19 risk is of great importance. By doing so, we have been able to conduct 170 hematopoietic stem cell transplants during the COVID-19 pandemia.

KEY WORDS: COVID-19. SARS-CoV-2. Stem cell. Transplants. Transplantation.

Trasplante de células progenitoras hematopoyéticas (TCPH) en la era del COVID-19

Resumen

La pandemia de COVID-19 ha causado daños graves a la práctica de la medicina y se ha convertido en un obstáculo para la práctica de algunas especialidades. Los trasplantes de células hematopoyéticas han sufrido las consecuencias de la pandemia y muchos centros de trasplante hematopoyético en todo el mundo suspendieron sus labores. Gracias a la implementación de medidas de escrutinio y aislamiento de los pacientes sometidos a trasplante hematopoyético, hemos podido trasplantar a 170 pacientes en la época del COVID-19.

PALABRAS CLAVE: COVID-19. SARS-CoV-2. Trasplante. Células progenitoras.

Introduction

The pandemic of coronavirus infectious disease-2019 (COVID-19) caused by the severe acute respiratory syndrome coronavirus-2 (SARS-CoV-2) is a threat to global health. This has become an obstacle for the practice of hematology, mostly in low-middle income

countries. For those hematologist and oncologists who perform hematopoietic stem cell transplantation HSCT the usual challenges of this kind of medical procedures have increased because of the COVID-19 pandemic. The importance of find the best route for performing HSCT avoiding excessive COVID-19 risk is of great importance.

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HSCT is the result of great and collaborative efforts. The transplant team is usually working closely with a lot of people involved like nurses, physicians, patients and patients' relatives. COVID-19 pandemic brought new and unexpected challenges for the HSCT team, especially in a low resource's environment. It is important to note that every effort must be welcome in the transplant center in order to obtain the best prevention for COVID-19 infection due to the immune status of these kind of patients^{1,2}. In the International Society of Hematology (ISH) we have made some recommendations (*vide infra*).

ISH updated recommendations to prevent COVID-19 infections

- 1) All recipients should have COVID-19 RT-PCR tested negative one or two days before starting conditioning regimen irrespective of symptoms.
- 2) All recipients who are supposed to be admitted for HSCT must advised for isolation 14 days before starting the transplant conditioning. The HSCT team must avoid the non-necessary clinic visits to reduce the risk to a minimum. This is now easy by using telemedicine visits in place of in-person visits. This option could be difficult in low resources environment; therefore, telephone conversations could also use.
- 3) If a recipient has a close contact with COVID-19 confirmed case:
All transplant usual procedures (PBSC mobilization, BM harvesting, and conditioning) must be avoided for at least 14-21 days of contact and the recipient should be closely monitored for COVID-19 symptoms
- 4) If necessary, in some cases COVID-19 RT-PCR negativity should be confirmed before any transplant procedure is undertaken.
- 5) If a recipient gets a COVID-19 disease: We must deferral the HSCT based on the risk of dying during the procedure.
- 6) If the patient has a high-risk cancer disease and COVID-19: Wait until the recipient is asymptomatic and has two repeated virus PCR negativity at least 1 week apart (deferral of 14 days minimum). Low-risk cancer disease: Deferral for 1-2 months.²⁻⁴

Mexican experience with HSCT during the COVID-19 era

Between June 2015 and December 2020, we have autografted 1000 persons with multiple sclerosis (MS)

using a conditioning regimen of cyclophosphamide, 200 mg/kg and rituximab, 1 g. The first case of COVID-19 in México was diagnosed on February 28, 2020. To determine any interaction between SARS-CoV-2-infection and our program we studied 131 subjects autografted March-December 2020 during the pandemic in México who had negative results of qualitative reverse transcription-polymerase chain reaction (qRT-PCR) tests for SARS-CoV-2 before and after their transplant. We also sent a questionnaire to 894 consecutive transplant recipients 377 (42%) of whom responded. 5 indicated they were infected with the SARS-CoV-2 and developed COVID-19, 6 to 31 months posttransplant only 1 of whom was hospitalized for 2 days, not in an intensive care unit. None were treated for COVID-19. Our data suggest, but do not prove, a low risk of developing COVID-19 in autotransplant recipients with MS. We cannot comment on risk of SARS-CoV-2-infection as most respondents were not tested by qRT-PCR or for anti- SARS-CoV-2 antibodies. Also, there may be a selection bias of respondents.²⁻⁴

ISH “pearls” to conduct HSCT during COVID-19 pandemic

- Do the transplantations on an outpatient basis; this will decrease the risk of infection due to a hospital environment.
- Consider patients comorbidities before induction, if it is a high-risk patient and there is option for deferral, wait 1-2 months.
- Use reduced intensity conditioning regimens, it will decrease recovery time and complications.
- Avoid unnecessary hospitalizations, solve as much as possible on an outpatient facility.
- Isolate the patient during the whole procedure to reduce infections risk, do not allow visitors in the facilities.
- Staff should be tested against SARS-CoV2 before the patient arrives to the facilities.
- Follow all the necessary precautions such as hand washing and social distancing in order to restrict the exposure to infected individuals.

Here are some frequent questions and answers for donors

- As a donor, Do I need to do some different from general population?
- Donors do not need to add any different behavior respect general population. To practice social

distancing to protect yourself and your loved ones is as important as washing your hands. If is possible we encourage to practice isolation 14 days before bone marrow transplant.

- As a donor, I am in a higher risk to get COVID-19?

The answer is no, in general, donors are healthy people, and frequently are young people, so, donors are in a low risk of a severe symptoms for COVID-19.

Where can I find more information related COVID-19?

- We recommend the CDC web page <https://www.cdc.gov/coronavirus/2019-ncov/index.html>, in this webpage, you can find updated information related to how to protect yourself.

When do I need to perform a diagnosis test for COVID-19?

- We recommend performing to all donors a COVID-19 RT-PCR test, one or two days before starting conditioning regimen irrespective of symptoms.

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Conflict of interests

The authors declare that they have no conflicts of interest with the subject of the publication.

Ethical disclosures

Protection of human and animal subjects. The authors declare that no experiments were performed on humans or animals for this study.

Confidentiality of data. The authors declare that no patient data appear in this article.

Right to privacy and informed consent. The authors declare that no patient data appear in this article.

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