

Challenges and Adaptations in Heart Transplantation during the COVID-19 Pandemic: A Comprehensive Review

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Abstract: *This article delves into the intricate landscape of heart transplantation during the COVID-19 pandemic, where heightened inflammation, cardiopulmonary distress, and global healthcare strain have impeded transplant programs. Through a thorough literature review and comparative analysis, the article establishes a compelling connection between the pandemic and heart transplant outcomes. It addresses the multifactorial reduction in donors and transplants due to factors like social distancing, hospital capacity, and donor infections. Moreover, the article highlights the intricate decision-making process for cardiac surgeons and cardiologists amidst competing risks. It emphasizes the significance of diagnostic testing, resource planning, post-transplant surveillance, and awareness campaigns to mitigate the pandemic's impact on heart transplantation.*

Keywords: Heart transplantation, COVID-19 pandemic, Donor shortage, Decision-making, Diagnostic testing

1. Introduction

The COVID-19 pandemic, characterized by a heightened inflammatory response, cardiopulmonary and multisystem failure, has significantly restricted transplant programs worldwide. The complexity of cases and imprecision about effective treatments have overwhelmed health systems worldwide. The intense use of resources to combat the pandemic has raised concern throughout the transplant community, as in addition to physical limitations, such as ICU beds, the lack of homogeneous treatment protocols and uncertainties about the effects of immunosuppression have a significant impact on transplant surgeries.

Description applied methods

A literature review was carried out after analyzing scientific articles and comparative methods to establish a relationship between the COVID-19 pandemic and the performance of heart transplants.

2. Main Results

The reduction in the number of donors and transplants during the SARS-COV-2 pandemic is multifactorial, being related to social distancing, hospital capacity, the reallocation of beds and mechanical ventilators, and the decrease in available health professionals. The results point to an important reduction in the number of potential donors immediately after the declaration of the COVID-19 pandemic. In Brazil, in the first half of 2020 alone, there was a reduction of about 25% in heart transplants. Infection of potential donors contributed to an even greater reduction in effective donors. Potential donors with active COVID-19, positive RT-PCR test or severe acute respiratory syndrome without defined etiology or with undefined laboratory test, receive absolute contraindication to donation. Therefore, transplant centers reserved procedures for serious and urgent situations, and adopted more conservative measures for the use of borderline donors.

In transplantation, several competing issues merge to determine optimal decision-making. Cardiac surgeons and cardiologists faced adversities in making decisions to treat surgical patients in this period, since it is necessary to balance the risk of cardiovascular death due to late intervention, the risk of operating on a patient in the asymptomatic period of COVID-19 infection and risk of infection during hospital stay after cardiac surgery. In order to reduce such problems, it is essential in the first place that a highly sensitive diagnostic test is available for testing donors and potential recipients. Next, there needs to be planning about available resources, medical equipment, health professionals, availability of intensive care beds in the hospital and personal protective equipment for medical transplant teams. After transplantation, surveillance for COVID-19 should continue into the recipient's post-transplant phase.

In the face of the unprecedented challenges posed by the COVID-19 pandemic, the landscape of heart transplantation has been profoundly reshaped. The reduction in donors, complicated decision-making, and stringent resource allocation underscore the need for adaptable strategies. By ensuring sensitive diagnostic tests, meticulous resource planning, and continuous post-transplant surveillance, the transplantation community can navigate these challenges. The imperative of awareness campaigns and infrastructure maintenance cannot be understated in preserving the integrity of heart transplantation beyond the pandemic. This pivotal moment demands collaborative efforts and innovative solutions to uphold the critical lifeline of heart transplantation.

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