use O blood type donors for non-O recipients if IT is expected to last more than 4 hours.

Because blood type O donors represent half of the donor pool and because they are universal donors whose organs can be allocated to recipients with any blood type, these findings might have a tremendous influence on cardiac donor selection. As suggested by the authors, blood type O donors should be used with caution in clinical conditions with an expected prolonged allograft ischemic time. Further studies are needed to confirm these results and we look forward to seeing a complementary analysis using IT as a continuous variable.

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Commentary: Donor selection in heart transplantation: It's a match!

Alvise Guariento, MD,^a David Blitzer, MD,^b and Vladimiro Vida, MD, PhD^c

In the field of heart transplantation, hyperacute rejection, commonly resulting from transplantation between a donor and recipient of different ABO blood groups, is a catastrophic complication and is ideally avoided by careful and deliberate blood group matching. Although blood group O donors are known as universal donors, transplantation of hearts from this blood group has been associated with reduced survival.¹

From the ^aDivision of Cardiovascular Surgery, The Labatt Family Heart Centre, The Hospital for Sick Children, University of Toronto, Toronto, Ontario, Canada; ^bDepartment of Surgery, Columbia University Medical Center, New York, NY; and ^cPaediatric and Congenital Cardiac Surgery Unit, Department of Cardiac, Thoracic and Vascular Sciences, University of Padua, Padua, Italy.

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Address for reprints: Alvise Guariento, MD, Division of Cardiovascular Surgery, The Hospital for Sick Children, 555 University Ave, Toronto, Ontario, Canada, M5G 1X8 (E-mail: alvise.guariento@sickkids.ca).

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Heart transplantation outcomes strongly rely on the algorithm applied to organ selection.

CENTRAL MESSAGE

A more in-depth study of donor-recipient blood group-dependent immune mechanisms in heart transplantation is needed.

In the current issue of the *Journal*, Tang and colleagues² investigated the impact of organ ischemic time on donor-recipient blood group compatibility. In their paper, the authors elegantly analyzed data from the United Network for Organ Sharing database with a propensity score-matching technique, thus accounting for covariates that may otherwise bias the results. Their conclusions showed that transplantation with type O donor hearts and an ischemia time >4 hours may lead to lower survival due to primary

FIGURE 1. Heart transplantation outcomes strongly rely on the algorithm applied to organ selection.

graft dysfunction and chronic allograft rejection at mid- and long-term follow-up.

Tang and colleagues are to be commended on this insightful work, but there are some questions that remain unanswered. The authors interestingly hypothesize a role of inflammatory mediators on cardiac hypertrophy and allograft vasculopathy, demonstrating specific pathways that are likely to be overexpressed in the case of blood group O hearts after prolonged ischemic time. However, the current study failed to prove this hypothesis with real data obtained from the United Network for Organ

Sharing registry. Furthermore, it is not entirely clear how a relatively acute proinflammatory state due to prolonged ischemia time generates such a profound impact on an organ 15 years after implantation. Additional studies should focus on the impact of ischemic time as a continuous variable to better define the true cut-off of these results.

In previous reports, others have shown that ABO-incompatible heart transplantation can be safely performed in infancy before the onset of isohemagglutinin production.³ After those initial reports, ABO nonidentical and ABO-noncompatible heart transplantation has become increasingly used in the pediatric population. A more in-depth study of the mechanisms leading to acute and chronic age-related immune reactions, along with the impact of ischemic time, would deepen our understanding of this topic in a population with probably the longest available follow-up time.

There is no doubt that there are still areas of controversy in selecting the appropriate heart donor to ensure optimal outcomes. Heart transplantation is a unique cardiac procedure that is more dependent on the algorithm applied on organ selection than on surgical technique (Figure 1). For this reason, we must always keep in mind that this decision is of fundamental importance for its final success.

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