Commentary: Duration of brain death and heart transplant outcomes: The devil is in the detail

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Disclosures: Dr Kilic is on the Medical Advisory Board for Medtronic Inc.

Received for publication May 19, 2019; accepted for publication May 21, 2019; available ahead of print June 27, 2019.

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J Thorac Cardiovasc Surg 2020;159:1356

0022-5223/\$36.00

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<https://doi.org/10.1016/j.jtcvs.2019.05.023>

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Central Message

This analysis demonstrates no correlation between duration of donor brain death and survival after heart transplant. But how many donors with prolonged duration were declined for transplantation?

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Jawitz and colleagues¹ present an analysis of the United Network for Organ Sharing Registry aiming to evaluate the association between duration of donor brain death and survival after heart transplant. Utilizing the advantages of a multicenter database, the authors demonstrate in 22,960 heart transplants that neither short nor prolonged duration of brain death influences posttransplant survival. The 10-year survival is nearly identical when stratified according to short (<22 hours), reference (22–42 hours) or long (>42 hours) duration of brain death at 61.3%, 61.8%, and 61.1%, respectively.

The physiologic effects of brain death on a potential organ donor are well documented. Increases in intracranial pressure can lead to brain stem herniation and bradycardia with a resultant catecholamine surge.² This cascade can manifest as hemodynamic instability.

So, what are the possible mechanisms by which duration of brain death would have an influence on posttransplant survival? It can be argued that longer periods of brain death can subject the donor to the continued risk of hemodynamic instability with adverse, incremental effect on organ quality. Or, the opposite argument would be that longer periods of time could allow for active management of the donor and correction of any deleterious effects of brain death, in addition to more time to recover from the catecholamine surge.

An essential outcome missing from the current analysis by Jawitz and colleagues¹ is primary graft dysfunction. In multiple prior analyses, longer durations of donor brain death were found to correlate with reduced risk of primary graft failure.^{3,4} Unfortunately, primary graft dysfunction is not recorded in the United Network for Organ Sharing database and the authors were unable to assess this association.

Another important aspect relates to the proportion of potential donors who were declined. Without these data,

the study is subject to selection bias. For example, if only 1% of donor organs with a duration of brain death >42 hours were utilized compared with 50% in the <22-hour duration group, this clearly suggests that the prolonged cohort was much more highly selected. Nonetheless, the current report does add to our understanding of donor selection and suggests that duration of brain death alone should not be used as the sole criteria for acceptance or rejection of a potential donor.

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