

References

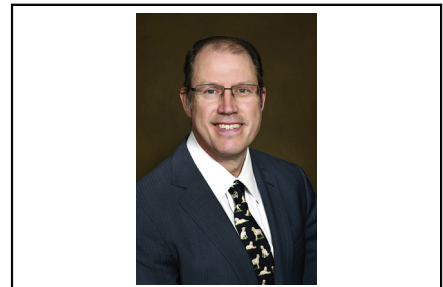
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Commentary: Selecting the right cardiac donor

Joseph C. Cleveland, Jr, MD



Joseph C. Cleveland, Jr, MD

CENTRAL MESSAGE

Undersizing a donor cardiac allograft based on right ventricular mass confers negative survival outcomes in cardiac transplantation.

It is 02:30 and I have just hung up the telephone after a discussion with my on-call heart failure cardiologist. A donor cardiac allograft from a 58-year-old woman who died from a subarachnoid hemorrhage is offered to our transplant center. Her height is 64 in, weight 58 kg, and the donor is 750 miles from our center. The recipient is a 28-year-old woman who is 69 in tall and he weighs 81 kg. The recipient is listed as status 2 with an intra-aortic balloon pump and he is a primary sternotomy. Is this donor cardiac allograft the appropriate allograft for our recipient? Will issues with size and sex mismatch affect short- and longer-term outcomes? Will there be another cardiac donor allograft from a larger male donor available in the next few days? All these questions cycle through my mind as the cardiologist and I weigh the risks versus benefits of accepting this donor cardiac allograft.

Kawabori and colleagues¹ tackle the complex issue of donor cardiac allograft sizing and cardiac transplant recipient outcomes. Their analysis extends the relatively

crude concept of matching donor and recipient body weight (within 70%) as reflected by current guidelines.² This retrospective analysis of the United Network for Organ Sharing Database of Adult Heart Transplants from 1997-2017 yields more than 38,000 donor-recipient pairs for this study. The authors focus on right ventricular mass (RVM) matching between donor and recipient. In particular, when RVM is undersized in the donor cardiac allograft, how this mismatch negatively influences 1-year outcomes.

There are 3 key messages that emerge. Although RVM constitutes a minority of the total ventricular mass, RVM mismatch profoundly negatively influences 1-year survival and functional outcomes in cardiac transplant recipients. RVM calculation includes the variables of age and sex. Both of these variables—older donor age and donor female with male recipient—remain well-described risk factors for poor cardiac allograft function and 1-year survival. Lastly,

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the cardiac transplant community now has another tool: the RVM donor–recipient matching calculator available at www.rvmcalc.com. This tool may indeed help with difficult donor–recipient decisions such as the one I described in my introductory paragraph.

The most recent data from the International Thoracic Organ Transplant Registry of Adult Heart Transplantation³ illustrate the desire and movement to expand the pool of donor cardiac allografts. This expansion of donor cardiac allografts includes those from older age donors with more comorbidities. Accepting a greater number of these donor hearts may prove beneficial in addressing the imbalance of donor heart–recipient supply and demand. However, the use of older donor hearts, with perhaps greater RVM mismatch, needs to be balanced with appropriate outcomes.

The current study by Kawabori and colleagues¹ adds important insights and hopefully will be hypothesis generating to further refine the relationship between right ventricular function and outcomes after cardiac transplantation.

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Commentary: Seriously, it's just math

Ashish S. Shah, MD

Over the last 50 years of clinical heart transplantation practice, the decision to use a particular donor for a particular recipient seems to boil down to the judgment of a clinician in the middle of the night staring at a screen. What has been described in the literature as “standard donors” never seem to be that way over the phone. Moreover, and even with a normal echocardiogram and age <40 years, we worry about “size.” How do we decide when a heart is too small for a particular recipient? The anxiety is real. Too small a heart may be inadequate to manage early postoperative needs and may impact long-term physical functioning. So we use height, weight, and sex.



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CENTRAL MESSAGE

Donor and recipient matching in heart transplantation enters a new era with a focus on myocardial mass and math.

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All this seems quite sensible, except when we consider that there are insufficient hearts to meet the demand. Any unused heart is poor stewardship of a public trust. Even in the modern era of big data where the absolute survival differences between undersized and sex-mismatched hearts seem to be small, our anxieties remain. The article by Kawabori and colleagues¹ in this issue of the *Journal* adds to the growing body of literature suggesting that using