

Letter to the Editor

Author's Response to Imamura and Colleagues

Re: Letter to the Editor:

We greatly appreciate Dr. Imamura's comments regarding our recent paper, "Comparative Analysis of Established Risk Scores and Novel Hemodynamic Metrics in Predicting Right Ventricular Failure in Left Ventricular Assist Device Patients".¹ We would like to respond to some of the insightful questions raised by Dr. Imamura. He highlights correctly one major limitation confounding risk prediction of right ventricular failure (RVF) post-left ventricular assist device (LVAD) surgery: namely, the general lack of a uniform nomenclature defining RVF in this setting. The plethora of RVF risk models also underscores the complexities of this clinical entity and the diverse pathways contributing to its pathophysiology. With these considerations in mind, we favored the well-established RVF definitions (use of inotropes for >14 days, inhaled pulmonary vasodilators for >48 hours or unplanned need for right ventricular mechanical support postoperatively during the index hospitalization). Admittedly, two of these criteria (use of inotropes >14 days and inhaled pulmonary vasodilators >48 hours) have less rigor and do not precisely specify a unique RVF phenotype. With regard to the central venous pressures (CVP), we are not aware of any published data that specifically used a CVP threshold to define RVF in post-LVAD patients. Nevertheless, an elevated CVP is an established predictor of RVF, even when indexed with pulmonary artery wedge pressure (CVP/PCWP >0.59–0.63).^{2,3} The CRITT risk score is one prominent model that uses a CVP >15 mmHg in its prediction of RVF post-implant.⁴

In our study, we assessed RV function based on independent echocardiographic reads by board certified cardiologists; we acknowledged the inherent limitations of using 2-dimensional imaging modality for assessing the complex RV geometry. The assessment of pre-operative echocardiographic RV function was done prior to the adjudication of the RVF outcome.

We agree with Dr. Imamura that tricuspid annular plane systolic excursion (TAPSE) would have added objective

rigor to RVF prediction. Unfortunately, we were limited by inconsistent measurements of this variable during the time span of our study. Further, based on recent data, we believe that the use of TAPSE when indexed to echo-derived pulmonary artery systolic pressure (TAPSE/PASP), a novel marker for right ventricular-pulmonary artery coupling, could be an even better predictor of RVF than TAPSE alone.⁵

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