Predictors of Long-Term Survival in Destination Therapy Left Ventricular Assist Device Patients

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As the use of long-term, destination therapy (DT) left ventricular assist devices (LVADs) expands, appropriate patient selection becomes critical to achieving improved outcomes in survival and adverse event rates. Limited analyses exist on the correlation of preoperative clinical parameters with short or intermediate outcomes post-DT LVAD placement. In this study, we sought to determine predictors of long-term survival in patients supported with an LVAD for DT.

A retrospective analysis was undertaken of all DT patients from the highest DT volume center in the United States. All patients received HeartMate VE or XVE (Thoratec Corporation, Pleasanton, CA) LVADs. Ongoing patients with less than one year of support were excluded. Fifty preoperative risk factors including demographics, past cardiac surgical history, blood chemistries and gases, and hemodynamics were statistically analyzed using Fisher Exact Tests for categorical data and Independent Sample t Tests for continuous data. Statistically significant risk factors were then analyzed using odds ratios, which were converted to a scaled score. These scores were summed for each patient. Patients were stratified by their total score into three groups. The low-risk group (n=18) had a score of 0–5, the medium-risk group (n=9) had a score of 6–10, and the high-risk group (n=4) had a score of 11–17.

Thirty-one patients were analyzed, all of which presented with New York Heart Association class IV heart failure symptoms and severity of illness similar to patients in the Randomized Evaluation of Mechanical Assist Device Treatment for Congestive Heart Failure (REMATCH) trial. Of the fifty risk factors analyzed, four were statistically significant preoperative predictors of mortality at one year of LVAD support: intubation (p=0.010), the need for a concomitant procedure at the time of LVAD placement (p=0.002), age (p=0.012), and platelet count (p=0.003). Patients at high-, intermediate-, and low-risk for mortality could be predictably stratified by the risk scoring system in a highly significant manner (p<0.0001).

Survival in DT patients is strongly influenced by the degree of illness at the time of LVAD implant. This easy-to-use scoring system appears to be an objective means to better outcomes through improved patient selection facilitating intervention before developing excessive risk.