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REVIEW:

Duration of Left Ventricular Assist Device Support Does Not Impact Survival After US Heart Transplantation.

Grimm JC, Magruder T, Crawford TC, Fraser CD, Plum WG, Sciortino CM, Higgins RS, Whitman JR, Shah AS. Annals of Thoracic Surgery 2016;102:1206-1212.

This is a retrospective review of UNOS data examining the effect of duration of LVAD support on 30-day, 6-month, and 1-year post-heart transplant survival.

The study cohort comprised all adult patients treated with durable LVAD therapy as bridge to transplant between January 2011 and December 2012 (n= 1332). Patients on temporary devices or total artificial hearts were excluded. Patients were divided into 3 groups based on duration of LVAD support; (1) <90 days (short) (2) 90-365 days (intermediate), and (3) >365 days (prolonged).

The majority of patients in this study were supported for intermediate and prolonged periods (54.8% and 35.5% respectively) and only 9.8%(130) were supported short term. Patient characteristics of the three groups were collected at the time of transplant, not LVAD implant, which is an important aspect to be considered. Compared to patients supported for intermediate and prolonged time, patients in the short group were younger and had better renal function, but were also more likely to be on inotropes (15.4% vs 6.0% and 6.1% respectively) and to be in ICU (16.9% vs 8.2% and 5.8% respectively). They were also more frequently transplanted at lower volume transplant centers. There was no difference in MELD-XI scores or donor characteristics between the 3 groups.

The authors report no statistically significant difference in actuarial unadjusted 30-day, 6-month, and 1-year survival between the 3 study groups (97.5%, 92.7%, 91.2% in the short group, 96.1%, 92.1%, 88.6% intermediate group, 95.2%, 92.1%, 88.9% prolonged group). Similar results in overall survival were evident after multivariable regression analysis.

Very interestingly however, a high number of patients in all 3 groups had KPS (Karnofsky performance scale) scores categorizing them as requiring complete assistance at the time of transplant listing (40.8%,

35.3%, 33.6% for the short, intermediate, and prolonged groups respectively). Not surprisingly, patients in the intermediate and prolonged groups had more functional improvement at the time of transplant (complete assistance in 43.1%, 24.1%, 26.4% respectively in the short, intermediate and prolonged groups at the time of transplant). Performance status affected survival, but only in the intermediate and prolonged groups and not in the short group (complete assistance 1 year survival 94.2%, 79.7%, 80.5% in the short, intermediate and prolonged groups respectively).

Limitations of the study include the lack of standardization of the follow up functional assessment using the KPS scale and inherent limitations within the UNOS data. The authors state that despite the differences in pre-transplant KPS score amongst the 3 groups, there was no difference in the post transplant KPS scores. One cannot draw this conclusion when the timing of post-transplant assessment is not known or standardized.

In summary, the authors report no short-term post-transplant survival difference based on the duration of pre-transplant LVAD support in a large cohort of patients treated with LVAD as bridge to transplant. Long term (>90days) poor functional status has poor post transplant outcomes and consideration should be given to postponing transplant listing pending functional improvements.

ADDITIONAL ARTICLES OF INTEREST:

1. Rizzi G, Startseva X, Wolfrum M *et al.* Unfavorable Donor Pretransplant APACHE II, SAPS II, and SOFA Scores are not associated with outcome: Implications for heart transplant donor selection. Transplantation Proceedings 2016;48(8):2582-2587

2. Lund L, Edwards L, Dipchand A *et al.* The Registry of the International Society for Heart and Lung Transplantation: Thirty-third Adult Heart Transplantation Report – 2016; Focus Theme: Primary Diagnostic Indications for Transplant. J Heart Lung Transplant 2016;35(10):1158-1169

3. Yeboah J, Rodriguez C, Qureshi W *et al.* Prognosis of Low Normal Left Ventricular Ejection Fraction in an Asymptomatic Population-Based Adult Cohort: The Multiethnic Study of Atherosclerosis. Journal of Cardiac Failure 2016;22(10):763-768

4. Madna S, Fida N, Barman P *et al.* Frailty Assessment in Advanced Heart Failure. Journal of Cardiac Failure 2016;22(10):840-844

5. Vallakati A, Reddy S, Dunlap M, Taylor D Impact of Statin Use After Heart Transplantation. Circulation Heart Failure 2016;9(10)