Purpose: Outcome after cardiac transplantation is significantly influenced by pre-operative condition of recipients. Mechanical ventricular assist device therapy (VAD) has revolutionized bridging strategies for transplantation. However, contradictory data exist, if VAD patients deteriorate and high urgent transplantation becomes necessary. The aim of this analysis was to examine outcome of high urgent VAD patients.

Methods: We retrospectively evaluated adult (≥ 16a) patients undergoing cardiac transplantation at out institution between January 2006 and December 2013. Patients were divided into 4 groups (VAD, VAD-high urgent, high urgent and non-high urgent non-VAD). Primary endpoints were primary graft dysfunction (PGD), 30-day and one year survival. Survival was calculated by Kaplan-Meier analysis and differences were tested by log-rank test.

Results: 282 patients (68(24%) female, 214 male (76%) male) older than 16 years underwent cardiac transplantation at our institution between January 2006 and December 2013. Median age was 56±13 years. 65 (23%) patients underwent left ventricular assist device implantation (LVAD) prior cardiac transplantation. A small group of 6 (2.1%) patients required extracorporeal membrane oxygenation (ECMO) support prior to cardiac transplantation. 86 (30.4%) patients had high urgency (HU) status at the time of transplantation. In the HU status patients group non-LVAD vs VAD vs ECMO were 58(20.5%) vs. 22(7.8%) vs. 6(2.1%).

PGD rate was not different between the four groups (HU: 12%, HU-VAD: 17%, VAD: 12%, other: 13%). Overall thirty day and one year mortality was 4% and 13%. HU non-LVAD patients (n=64) vs HU LVAD patients (n=22) had a thirty day and one year mortality of 5% vs. 16% and 9% vs. 18% respectively. (n.s.). Patients who were not on HU status had a 30 day and one year mortality rate of 6% and 16% (non LVAD patients) vs. 5% and 10% (VAD patients) (n.s.).

Conclusion: HU patients seem to have similar early and 1-year survival rates compared to non-HU patients. Numerically VAD-HU patients have a higher mortality compared to non-VAD patients. Future analysis are needed to select those deteriorating VAD patients where HU is associated with good outcome.

Early and Mid-Term Predicted Survival in Transplant Eligible Elderly Patients Is Superior With Transplant Versus Left Ventricular Assist Device Bridge-to-Transplant Therapy

S.K. Singh,1 D.K. Pujara,1 E. Sandoval,2 J. Anand,1 L. Simpson,1 A.B. Civitello,1 H.R. Mallidi,1 Transplant and Assist Devices, Baylor College of Medicine, Houston, TX; 2Transplant and Assist Devices, Texas Heart Institute, Houston, TX.

Purpose: To describe early and mid-term survival in heart transplant listed patients who undergo transplant (TXP) versus continuous flow left ventricular assist device (LVAD) therapy, at > 65 years.

Methods: Retrospective review of all transplant listed patients > 65 years at the time of TXP or LVAD (01/2008-10/2014). Demographics, peri-operative and survival data were collected. Univariate and Cox Proportional Hazards (CoxPH) survival analysis were done.

Results: We found 91 patients > 65 years listed for heart transplant who underwent TXP (n=62) or LVAD (n=29). Comparing pre-operative characteristics of TXP vs LVAD cohorts, they were comparable other than LVAD group more likely requiring preoperative inotrope or intraaortic balloon pump support (P<0.05). 22 of the 62 TXP patients had an LVAD prior to transplant (at age <65 years), while 13 of the 29 LVAD patients subsequently underwent a transplant. Survival curves (figure 1A) of TXP vs LVAD cohorts showed: 77% vs 84% at 1 year, 75% vs 78% at 2 years, and 75% vs 45% at 5 years; p=0.7. CPH regression identified significant independent predictors of mortality to include: body mass index (HR 1.2, 95% CI 1.1-1.3, p=0.02), while TXP (HR 0.1, 95% CI 0.01-0.7, p=0.02) and albumin (HR 0.3, 95% CI 0.1-0.9, p=0.04) were protective. Figure 1B illustrates the CPH predicted survival for TXP vs LVAD patients when adjusted for all other covariates.

Conclusion: Kaplan Meier curves are similar for elderly transplant eligible TXP vs LVAD recipients. However, CPH regression found TXP to be a significant predictor of survival, resulting in improved early and mid-term predicted survival in TXP patients when adjusted for all covariates.

Partial Pressure of End-Tidal Carbon Dioxide Predicts the Complication of Secondary Pulmonary Hypertension in Patients With Advanced Heart Failure

O. Seguchi,1 A. Nakano,2 K. Kurosda,1 E. Hisamatsu,1 T. Sato,1 S. Nakajima,1 T. Sato,1 H. Sunami,1 M. Yanase,1 M. Kitakaze,1 T. Nakatani,1,2 Transplantation, National Cerebral and Cardiovascular Center, Osaka, Japan; 1Development of Clinical Research, National Cerebral and Cardiovascular Center, Osaka, Japan; 2Development of Clinical Research, National Cerebral and Cardiovascular Center, Osaka, Japan.

Purpose: Partial pressure of end-tidal carbon dioxide (PETCO2) monitoring is commonly used for intubated patients receiving mechanical ventilation in the field of anesthesiology and critical care medicine. Recently, both noninvasive and mainstream PETCO2 monitoring technique has become available in several clinical settings and the value of PETCO2 has been reported to be a predictor of prognosis in patients with heart failure (HF). However, the exact mechanisms underlying this association between PETCO2 and HF have not been fully elucidated.

Methods: Thirty patients (mean age 42.2±13.3 years, 20 males) were prospectively examined simultaneous right heart catheterization and PETCO2 monitoring. Echocardiogram, respiratory function test, and arterial blood gas analysis were also examined. Study participants consisted of 23 patients with HF and 7 heart transplant recipients.

Results: Sixteen dilated cardiomyopathy, 3 dilated-phase hypertrophic cardiomyopathy, 8 heart transplant recipients, 2 myocarditis, and 1 ischemic cardiomyopathy were included in this study. The mean PETCO2 of all patients was 31.6±4.5 mmHg. PETCO2 was significantly lower in a stepwise fashion along with patients' New York Heart Association (NYHA) functional class (class I, 34±4.4 mmHg; class II, 31.6±4.2 mmHg; class III or IV, 28.7±2.9 mmHg; p=0.007). Among various clinical parameters that correlated with PETCO2, mean pulmonary arterial pressure (PAP) was most well correlated with PETCO2 (r=0.67, p<0.0001). Receiver operating characteristics analysis revealed that PETCO2 of 28 mmHg could be a cutoff for predicting the presence of pulmonary hypertension (PH, mean PAP ≤25 mmHg) in our patient population.

Conclusion: Among various clinical parameters investigated, PAP, a well-known predictor of poor prognosis in HF patients, was most well correlated...
with PETCO₂. Further, PETCO₂ not greater than 28 mmHg is a potential surrogate marker of secondary PH in HF patients.

492

Should Surveillance Right Heart Catheterization Be Performed in Patients Listed for Heart Transplantation?
M. Ablawalla, A.T. Owens, K.A. Forde-McLean, M. Jessup, R.C. Forde-McLean. Medicine, University of Pennsylvania Perelman School of Medicine, Philadelphia, PA.

Purpose: The 2006 ISHLT guidelines recommend that patients listed for orthotopic heart transplantation (OHT) undergo surveillance right heart catheterization (RHC) every 3-6 months to re-assess hemodynamics (class I, level of evidence C). However, the impact of RHC on management remains unclear. The aim of this study was to determine the utility of both surveillance and clinically prompted RHCs in patients listed for OHT.

Methods: A retrospective study was conducted in adult patients listed for OHT at our hospital from 2011 through 2014. Each patient included had at least one RHC after being listed for OHT. Patients with mechanical circulatory support (MCS) implants were excluded from this study. The primary outcome was management change: hospitalization, surgery (OHT or MCS), change in UNOS status, or initiation/modification of vasoactive drugs or neurohormonal blockade.

Results: Of the 101 patients included, 43 (43%) patients had more than one RHC. The average time between listing and transplantation was 82 days. Of the 187 RHCs performed, 99 (53%) were prompted by clinical change; 88 (47%) were surveillance. There were a total of 126 management changes. In 89.9% of clinically prompted RHCs and 42% of surveillance RHCs, management change was implemented. Initiation/modification of vasoactive drugs and/or placement of MCS occurred in 34 (34%) clinically prompted RHCs and 23 (26%) surveillance RHCs. Multivariable analysis with clustering on patient revealed blood urea nitrogen >19 mg/dL (OR 4.73, CI 1.21-18.5), total bilirubin >1.0 mg/dL (OR 5.36, CI 1.63-17.6) and absence of beta-blocker therapy (OR 30.2, CI 1.16-784.3) were predictors of management change.

Conclusion: In patients awaiting OHT, RHCs prompted by clinical instability or surveillance resulted in frequent management changes. Renal or hepatic insufficiency, or inability to tolerate evidence-based heart failure therapy predicted management change. Our study supports the class I recommendation to perform surveillance RHC in patients listed for OHT and to maintain a low threshold for repeat RHC during the waiting time.

493

Risk of Heart Failure and Death Among Patients With Friedreich Ataxia Admitted for Non-Cardiac Etiologies

Purpose: Friedreich Ataxia (FA) is an autosomal recessive neurosensory disorder with an associated cardiomyopathy. As a rare disorder, little is known about the effect of heart failure (HF) on inpatient hospitalizations in FA patients. We hypothesized that a diagnosis of HF in FA is associated with higher mortality and hospital charges than those without HF.

Methods: A retrospective analysis of the Healthcare Cost and Utilization Project Kids’ Inpatient Database (KID) and Nationwide Inpatient Sample (NIS) was performed for pediatric and adult hospitalizations during the years 2000, 2003, 2006, and 2009. Subjects with the diagnosis of FA were identified using ICD-9 codes. Primary diagnoses were grouped into 18 categories and sorted according to whether HF or death occurred during each hospitalization.

Results: There were 1094 FA hospitalizations identified during the years studied, with a mean age of 39 ± 19 years. Most patients with FA are hospitalized for non-cardiac etiologies (cardiac 188, non-cardiac 906). Most common non-cardiac reasons for hospitalization are infectious (193), neurologic (127), GI (116), and musculoskeletal (107). 84 (9%) of admissions with a non-cardiac primary diagnosis were complicated by HF; patients with and without HF were of similar age. HF patients with a non-cardiac primary diagnosis had similar length of stay (7.8 vs 6.5 days) and hospital charges ($37971 vs $29897), but greater mortality (14% vs 4%, OR 3.96 95%CI 1.96-8.01, p<0.001).

Conclusion: 9% of non-cardiac admissions in FA patients are complicated by heart failure. Heart failure is associated with 4 fold increase in the risk of death in these patients. Further study is needed to identify effective means of cardiac surveillance and treatment in this high risk population.

494

The Independent Predictive Value of Peak Oxygen Consumption, Left Ventricular Strain and Atrial Remodelling in Patients With Dilated Cardiomyopathy

Purpose: Multiple studies have assessed the prognostic value of peak oxygen consumption (VO2max) and LV function separately in dilated cardiomyopathy (DCM) but none have incorporated metrics for both LV strain and peak VO2. The aim of the study is to evaluate the added prognostic information of LV strain combined with cardipulmonary exercise testing (CPET) responses in patients with DCM.

Methods: 207 consecutive patients with DCM undergoing CPET and echocardiography within 1 month of each other were included in the study. Medical charts were reviewed and the recently validated MAGGIC-score (age, sex, BMI, NYHA, EF; creatinine, smoking, diabetes, COPD, medication, duration of disease) was calculated. Comprehensive echocardiographic evaluations were performed including measures of both right and left global longitudinal strain. A composite outcome of including death, heart transplant, LVAD and heart failure hospitalization was the primary endpoint.

Results: The sample was 65% male, mean age 47 ±13 yo, NYHA Class 2.4 ±0.9, LVEF 33%±13 and LV longitudinal strain was 10.6% ±4.5. Peak VO2 was 20.1 ±10 mL/kg/min, the VE/VCO2 slope was 30.3±6.1 and the MAGGIC-score was of 16.2 ± 6.8. Peak VO2 was significantly correlated with age (r=0.46), sex (female r=-0.31), LV longitudinal strain (r=0.4), resting heart rate (r=-0.19) and Beta-blockers (r=0.2). The VE/VCO2 slope was significantly correlated with age (r=0.13) LV longitudinal strain (r=-0.3) and indexed right atrial size (r=0.34). Seven patients were lost to FU and a total of 48 events occurred. In a model including MAGGIC-score, the predictive variables for cardiac events were: MAGGIC-score, p=0.003, Peak VO2, p=0.001 and indexed right atrium area, p=0.005. In a model excluding the MAGGIC-score predictors of events were: Peak VO2, p=0.04, indexed RAA, p=0.001, LV longitudinal strain, p=0.005 and creatinine clearance, p=0.02.

Conclusion: Peak VO2 and RAA add incremental prognostic value to the MAGGIC-score for predicting events in DCM.

495

Management of Chagas Cardiomyopathy Patients Following Cardiac Transplantation: Implications From the Unos Database

Purpose: Chagasic cardiomyopathy remains a rare indication for heart transplantation in the United States and carries a risk for re-activation in presence of immunosuppressive therapy. Due to its low prevalence at any transplant center, management and outcomes of this population in the post-transplant period is not well defined. We sought to investigate post-transplant management and outcomes of this cohort using the UNOS registry.

Methods: A retrospective review of the UNOS registry was performed to identify patients with the primary diagnosis of Chagas Disease receiving a heart transplant between 1987 and 2014. 17 patients were identified and the effect of induction therapy on their outcomes was assessed.

Results: 17 patients between 1989 and 2014 were transplanted with primary diagnosis listed as Chagas disease. 16 of 17 were listed of Hispanic/Latino ethnicity (1 not reported). Mean patient age was 51.2±7.2 years, mean BMI 23.8±3.3, with 7 of 17 patients female (41.2%). Patients were transplanted in UNOS regions 1 (n=4), 2 (n=1), 5 (n=7), 6 (n=2) and 9 (n=3). Mean survival was 87.4% at 2 years, 57.9% at 10 years, comparable to overall survival in heart transplant patients (Figure A). 16 of 17 patients underwent standard triple maintenance therapy, with use of calcineurin inhibitor (CN1), anti-metabolite, and steroids. 5 of 17 received induction therapy at the time of transplant using OKT3 (n=1), anti-thymocyte globulin (n=2) and daclizumab (n=2). Induction therapy was associated with similar infection rates (Figure B), and a trend towards early protection from rejection (Figure C).

Conclusion: Although data on Chagas reactivation post-transplant is not available through the UNOS database, we demonstrate that patients with Chagasic cardiomyopathy have comparable post-transplant infection,