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ICD Therapy Confers No Survival Advantage in a Global LVAD Population: Insights from the Trans-Atlantic Registry on VAD and Transplant (TRAViATA)

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Purpose: There are conflicting data related to the use of implantable cardioverter-defibrillators (ICDs) in patients supported with continuous-flow ventricular assist devices (LVADs). Several US studies have shown a neutral effect on mortality, whereas a recent European study suggested better outcomes in LVAD patients who have an ICD. We aimed to investigate the benefit of ICDs in patients bridged to transplant with a LVAD in the Trans-Atlantic registry on VAD and Transplant (TRAViATA).

Methods: Data from consecutive patients that received a LVAD as a bridge to transplantation between January 2008 and April 2017 were collected in 7 EU (n=299) and 3 US centers (n=225). Survival analysis was performed using Kaplan-Meier and Cox proportion hazard regression analysis. Patients were censored at time of transplantation.

Results: Patients with an ICD at the time of LVAD (n=350) implantation were older (56 vs. 53 years, p<0.05), less likely to be female (13% vs. 21%, p<0.05) and to have ischemic cardiomyopathy (39% vs. 52%, p<0.05) compared to patients without an ICD (n=174). The proportion of patients with an ICD/LVAD was 66% in the EU and 68% in the US (p=0.49). Overall survival after LVAD was 86% at one year and 76% at two years. There was no difference in survival in patients with and without an ICD (Figure). These results were consistent when analyzing patients from each continent separately (Figure). In univariate Cox-regression age at time of implant and INTERMACS profile were associated with mortality (p<0.05) whereas presence of ICD was not. Sensitivity analysis excluding patients who received their ICD (n=25) after LVAD confirmed the results.

Conclusion: In this retrospective study of LVAD patients from the EU and US ICD therapy conferred no survival advantage irrespective of geographic location. A prospective, randomized, trial of LVAD patients who have an existing ICD randomized to tachyarrhythmia therapy discontinuation is needed to validate these findings.

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Effect of Granulocyte Colony-Stimulating Factor on Acute Cellular Rejection in Lung Transplant Recipients

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Purpose: Neutropenia is a known complication after lung transplantation either related to infection or as a side effect of medication. Granulocyte colony-stimulating factor (G-CSF) is an option for treating neutropenia in lung transplant recipients. Acute cellular rejection (ACR) is a common complication after lung transplantation, especially in the first year post-transplantation. The purpose of this study was to assess whether there is an association between the use of G-CSF and the incidence of ACR.

Methods: Data on lung transplant recipients from May 2007 to November 2018 was reviewed. Patients who received at least one dose of G-CSF were identified and compared with patients without a history of therapy. Baseline characteristics, episodes of G-CSF administration, and biopsy proven rejections were collected. The rates of ACR in the study groups were calculated and compared. Multivariate Poisson regression was used to adjust for confounding variables which included the number of immunosuppressive agents, presence of respiratory viral infections, and presence of donor specific antibodies.

Results: Eighty-two patients were studied. 19 (23%) received G-CSF. There were no significant differences in baseline characteristics between the study groups. The rate of ACR for the G-CSF group was 0.12 event/month in the 3 months after G-CSF administration (95% CI, 0.06 - 0.24) and 0.06 event/month all other times (95% CI, 0.02 - 0.14). The rate of ACR for the control group was 0.05 event/month (95% CI, 0.04 - 0.08). There was a significant difference between the rates of ACR in the G-CSF group in the 3 months after G-CSF administration versus the control group (P=0.033), but not for the other time periods (P=0.897).

Conclusion: G-CSF administration was found to be associated with a significant short-term increased risk of ACR in lung transplant recipients.

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Molecular Assessment of Single-Piece Mucosal Biopsies is Highly Reproducible Compared to Transbronchial Biopsies in Lung Transplantation

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Purpose: Histologic assessment for rejection on transbronchial biopsies (TBB) has poor reproducibility. Mucosal biopsies are safer than TBBs but their histologic assessment has not been systematically studied or standardized. We developed molecular platforms to assess TBBs and mucosal biopsies from the third airway bifurcation (3BMB). We examined the reproducibility of scores assigned by molecular assessment of both biopsy types in lung transplant patients from 9 international centers.

Methods: We trained machine learning models (archetype analysis, principal component analysis) on microarray data from 457 TBBs and 243 3BMBs. We processed 14 pairs of TBB pieces (28 total) taken during the same procedure and 13 pairs of 3BMBs (26 total). The models assigned each biopsy sets of archetype scores (denoted by "R") and principal component scores (denoted by "PC") describing injury and rejection