Driveline Infection after HeartMate II Associated with Lower Rates of Cardiac Transplantation and Increased Incidence of Sepsis in Bridge-to-Transplant Population

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Driveline infections are common after left ventricular assist device (LVAD) implantation and have been associated with increased mortality. We analyzed data from a large single-center LVAD database to assess the impact of driveline infections on clinical outcomes after LVAD placement.

Methods
Our cohort consisted of 239 patients who had HeartMate II LVADs implanted between June 2005 and June 2013. Standard Interagency Registry for Mechanically Assisted Circulatory Support (INTERMACS) definitions were used for driveline infection and sepsis. Baseline characteristics were assessed to determine risk factors for subsequent driveline infection. A multivariable cox regression analysis was then performed to assess the effect of driveline infections on the rate of cardiac transplantation.

Results
Over a follow-up period of 364 person-years, 62 patients who received LVADs developed driveline infections for an event rate of 0.17 infections per year. Patients who developed driveline infections were younger (53 vs. 58 years, \( P < 0.05 \)) and had higher pre-op BMIs (31 vs. 28 kg/m\(^2\), \( P < 0.01 \)). Although women comprised 15% of the cohort, they contracted 26% of the infections (\( P = 0.13 \)). There was no statistical difference in the risk of infection with regard to several other variables including pre-op bridge to transplant or destination status, INTERMACS profile or presence of diabetes or chronic kidney disease. In the bridge-to-transplant (BTT) population, development of a driveline infection was associated with a 51% reduction in the rate of transplantation (rate ratio 0.49, \( P < 0.01 \)), which remained significant after adjusting for age and BMI (HR 0.53, \( P < 0.05 \)). Driveline infections were also associated with longer median times to cardiac transplantation (409 vs. 232 days, \( P < 0.05 \)). Subsequent sepsis was common in patients with driveline infections (11 of 62 patients, 18%).

Conclusion
In this large single-center study, BTT LVAD patients who developed driveline infections experienced overall lower rates of cardiac transplantation even after adjusting for age and BMI. The longer wait times combined with higher rates of sepsis may explain the previously observed increase in mortality in this population. Continued strategies to decrease the risk of driveline infections along with development of totally implantable pumps will improve clinical outcomes for these patients.

REFERENCE