What's New in MCS January 2015

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Review:

Heart transplantation outcomes in patients with continuous-flow left ventricular assist device-related complications. Quader MA, Wolfe LG, Kasirajan V.
J Heart Lung Transplant. 2015 Jan; 34(1): 75-81. PubMed PMID: 25150620.

The aim of this study was to review device-related complications (DRC) in patients supported with CF-LVAD who later received heart transplant. This was a retrospective analysis of UNOS database from 2006 to 2012. The authors analyzed data for patients listed under status 1A with CF-LVADs at the time of heart transplant. Outcomes were compared between the DRC+ and DRC– groups. The DRC+ group was further analyzed under 5 UNOS categories: B1 to B5 (thromboembolism, device-related infection, device malfunction, recurrent ventricular tachycardia, and other complications).

Of the 6,799 patients who received HTx under 1A listing, 2,113 (31%) were supported with CF-LVADs. The authors found that from 2006 to 2012, patients supported with CF-LVADs under the 1A listing increased from 11.4% to 41.5% ($p = 0.0001$). An important finding was that the DRC+ group (45%) compared with the DRC– group (55%) had longer waiting times (330 ± 323 days vs. 168 ± 298 days), more patients with blood group O (57% vs. 40%), and a higher body mass index (29 ± 5.5 kg/m^2 vs. 27 ± 5 kg/m^2). Most of the DRCs were in the device-related infection category (54%). The most important finding of this study was that post-HTx survival for the DRC+ group was significantly reduced compared with the DRC– group at 1 year (85.6% vs. 89.9%, $p = 0.01$) and at 3 years (78% vs. 82.7%, $p = 0.01$), primarily due to device-related infection category.

This retrospective analysis by Quader, et al further contributes to our understanding of the outcomes of end-stage heart failure patients who are supported with CF-LVAD as a bridge to transplant (under status 1A). The first important observation is that the rate of bridge to transplant with CF-LVAD has exponentially risen from 11.4% in 2006 to 41.5% in 2012. It is not surprising that patients with blood type O and higher BMI had longer wait time with subsequent worse post-HTx outcomes. The most important finding of this study was that only device-related infection had negative impact on post-HTx survival. However, it should be noted that the analysis of device-related infection was limited by the inability to distinguish between trivial and more serious infections (drive line vs pump infection). Additionally, this analysis is limited in that it may have underestimated the DRCs impact on outcomes considering the number of patients who may have been delisted or died (thus were excluded from this analysis) during CF-LVAD support.

Take home messages from this study are:

- More CF-LVAD support is being used as bridge to transplant.
- Blood type O and high BMI are the most common causes of prolonged mechanical support in the bridge to transplant indication.
- Device- related infections remain the "Achilles' heel" of mechanical support. Completely implantable MCS systems will undoubtedly favorably impact outcomes.
- Longer wait time on CF-LVAD is associated with worse post-HTx outcomes, a finding that adds more fuel to the debate of how early in the course of advanced heart failure should BTT mechanical support be implemented.

Journal of Heart and Lung Transplantation:

Outcome of cardiac transplantation in patients requiring prolonged continuous-flow left ventricular assist device support. Takeda K, Takayama H, Kalesan B, Uriel N, Colombo PC, Jorde UP, Yuzefpolskaya M, Mancini DM, Naka Y.
J Heart Lung Transplant. 2015 Jan; 34(1): 89-99. PubMed PMID: 25444372.

In-hospital outcomes of a minimally invasive off-pump left thoracotomy approach using a centrifugal continuous-flow left ventricular assist device. Sileshi B, Haglund NA, Davis ME, Tricarico NM, Stulak JM, Khalpey Z, Danter MR, Deegan R, Kennedy J, Keebler ME, Maltais S.
J Heart Lung Transplant. 2015 Jan; 34(1): 107-12. PubMed PMID: 25447579.

Rotary pump speed modulation for generating pulsatile flow and phasic left ventricular volume unloading in a bovine model of chronic ischemic heart failure. Soucy KG, Giridharan GA, Choi Y, Sobieski MA, Monreal G, Cheng A, Schumer E, Slaughter MS, Koenig SC.
J Heart Lung Transplant. 2015 Jan; 34(1): 122-31. PubMed PMID: 25447573.

Thalidomide for treatment of gastrointestinal angiodysplasia in patients with left ventricular assist devices: case series and treatment protocol. Draper K, Kale P, Martin B, Cordero K, Ha R, Banerjee D.
J Heart Lung Transplant. 2015 Jan; 34(1): 132-4. PubMed PMID: 25447569.

Annals of Thoracic Surgery:

Initial clinical experience with the symphony heart assist system. Cecere R, Dowling RD, Giannetti N.
Ann Thorac Surg. 2015 Jan; 99(1): 298-301. PubMed PMID: 25555946.

Bridge to Removal: A Paradigm Shift for Left Ventricular Assist Device Therapy. Selzman CH, Madden JL, Healy AH, McKellar SH, Koliopoulou A, Stehlik J, Drakos SG.
Ann Thorac Surg. 2015 Jan; 99(1): 360-367. Review. PubMed PMID: 25442985

JACC- Heart Failure:

Effects of left ventricular assist device support on biomarkers of cardiovascular stress, fibrosis, fluid homeostasis, inflammation, and renal injury.
Ahmad T, Wang T, O'Brien EC, Samsky MD, Pura JA, Lokhnygina Y, Rogers JG, Hernandez AF, Craig D, Bowles DE, Milano CA, Shah SH, Januzzi JL, Felker GM, Patel CB. JACC Heart Fail. 2015 Jan; 3(1): 30-9. PubMed PMID: 25447345.

Circulation:

No mechanical support articles

European Heart Journal:

No mechanical support articles

Journal of Cardiac Surgery:

No mechanical support articles