What's New in MCS

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Reviews:

Majumder, Kaustav, John R. Spratt, Christopher T. Holley, Samit S. Roy, Rebecca J. Cogswell, Kenneth Liao, and Ranjit John. "Impact of postoperative liver dysfunction on survival after left ventricular assist device implantation." Ann Thorac Surg. 2017 Nov;104(5):1556-1562
https://www.ncbi.nlm.nih.gov/pubmed/?term=28760474

Continuous flow LVAD (CF-LVAD) improves morbidities and mortality in patients with advanced heart failure. CF-LVAD therapy is associated with multiple complications such as pump thrombosis, hemolysis, gastrointestinal bleeding, strokes, right ventricular failure and end organ dysfunction. Pre and post-operative liver dysfunction in patient with advanced heart failure undergoing LVAD implantation due to poor cardiac output, passive hepatic congestion and right ventricular failure is common and is associated with worse outcomes. The aims of this study were to characterize the incidence and different forms of de-novo or isolated post-operative liver dysfunction (PLD) and determine the impact of PLD on complications, survival and rate of cardiac transplant on post LVAD implantation.

In their study, Majumder et al. included all patients undergoing implantation of a HeartMate II (HM II, St. Jude Medical, Inc, Minneapolis, MN) between January 2005 and June 2014. After excluding patients with pre-operative liver dysfunction, the study cohort included 270 patients. PLD was defined by either hypertransaminasemia, hyperbilirubinemia or both, during the hospitalization for LVAD implantation.

One hundred twenty-nine (47.8%) recipients developed PLD. Sixteen (12.4%) had isolated hypertransaminasemia (group I), 76 (58.9%) had isolated hyperbilirubinemia (group II), and 37 (28.7%) had combined hypertransaminasemia and hyperbilirubinemia (group III). Group III had lower albumin and INTERMACS profile. Patients who developed PLD had prolonged ventilator use, vasopressor use, inpatient stay and higher need for renal replacement therapy and transfusions. This trend was observed with group III specifically. Moreover, group III LVAD recipients had significantly greater rates of 30, 90 and 365-day mortality, Furthermore, their mortality risk (hazard ratio, 4.6; 95% confidence interval, 2.1 to 10.1; $p < 0.001$) was significantly higher than that of PLD-free LVAD recipients and had a significantly lower transplant rate (0.03 vs. 0.17 transplant per person-year, $p<0.05$) when compared to HM II with no PLD.

In conclusion, PLD is due to a derangement of hepatic microcirculation that can be precipitated by elevated filling pressure, right ventricular failure and post-operative systemic inflammatory response reaction. Pre-operative optimization of filling pressure, right ventricular systolic function and nutritional status might help to mitigate some of PLD associated complications specifically among Group III.

Nassif, Michael E., John A. Spertus, Philip G. Jones, Timothy J. Fendler, Larry A. Allen, Kathleen L. Grady, and Suzanne V. Arnold. "Changes in Disease-Specific Versus Generic Health Status Measures after Left Ventricular Assist Device Implantation: Insights from INTERMACS." J Heart Lung Transplant. 2017 Nov;36(11):1243-1249
https://www.ncbi.nlm.nih.gov/pubmed/?term=28662987

Left ventricular assist device (LVAD) improved survival and quality of life for patients with advanced heart failure. Quantifying quality of life (QoL) after LVAD remains challenging because of the significant life style changes and multiple complications requiring frequent clinic visits and admissions to the hospital.

Nassif el al. sought to examine and predict discrepancies between the Kansas City Cardiomyopathy Questionnaire, which is a heart failure specific questionnaire, and the EuroQol-5D Visual Analog Scales (VAS), which is a generic QoL scale using the INTERMACS registry. Analysis included 1,888 patients with complete QoL data who underwent CF-LVAD implantation between 2012 and 2014 after excluding patients with right, biventricular assist devices or total artificial heart.

At 6 month follow up post LVAD implantation, both measures showed substantial improvement with mean changes of 32.7 ± 25.0 and 27.6 ± 27.4 for KCCQ and VAS respectively. Among the 1,539 patients (81.5%) with moderate/large improvement in KCCQ, 334 (21.7%) had discordant changes in generic QoL i.e. decline or small improvement with VAS score. Higher baseline VAS score was the strongest predictor of KCCQ-VAS discordance in multivariate logistic regression and there was no association between post LVAD complications and KCCQ - VAS score discordance.

In conclusion, the majority of patient with advanced heart failure post LVAD implantation have concordant improvement in both HF-specific and generic QoL. Discordance in these measures is uncommon and was observed in patients who reported good generic QoL pre LVAD surgery.

Journal of Heart and Lung Transplant

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Rosenthal, David N., Chacy A. Lancaster, Doff B. McElhinney, Sharon Chen, MaryLyn Stein, Aileen Lin, Lan Doan et al. "Impact of a Modified Anti-Thrombotic Guideline On Stroke In Children Supported with A Pediatric Ventricular Assist Device." J Heart Lung Transplant. 2017 Nov;36(11):1243-1249
https://www.ncbi.nlm.nih.gov/pubmed/?term=28662987

Journal of Cardiac Surgery

Jacoby, Adam, John T. Stranix, Oriana Cohen, Eddie Louie, Leora B. Balsam, and Jamie P. Levine. "Flap coverage for the treatment of exposed left ventricular assist device (LVAD) hardware and intractable LVAD infections. J Card Surg. 2017 Nov;32(11):732-737
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Gaffey, Ann C., Carol W. Chen, Jennifer J. Chung, Emily Phillips, Joyce Wald, Matthew L. Williams, David W. Low, Michael A. Acker, and Pavan Atluri. "Improved Approach With Subcostal Exchange of the HeartMate II Left Ventricular Assist Device: Difference in On and Off Pump?" Ann Thorac Surg. 2017 Nov;104(5):1540-1546
https://www.ncbi.nlm.nih.gov/pubmed/?term=28760470

Circulation

No mechanical circulatory support articles in November 2017.

European Heart Journal

No mechanical circulatory support articles in November 2017.

JACC: Heart Failure

No mechanical circulatory support articles in November 2017.