What's New in MCS

May 2014 MCS Journal Review

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REVIEWS

1) Jorde UP, Kushwaha SS, Tatooles AJ, Naka Y, Bhat G, Long JW, et al. Results of the Destination Therapy Post-Food and Drug Administration Approval Study With a Continuous Flow Left Ventricular Assist Device: A Prospective Study Using the INTERMACS Registry (Interagency Registry for Mechanically Assisted Circulatory Support). J Am Coll Cardiol. 2014 May 6;63(17):1751–7.

http://www.ncbi.nlm.nih.gov/pubmed/24613333

Jorde et al report the FDA post-Destination Therapy approval study with the HeartMate II continuous flow device. The authors examined outcomes in the first 247 US patients who received the HM II LVAD as DT in commercial practice following FDA approval. These outcomes were compared to those achieved in the initial clinical trial cohort.

Principle findings were (1) post-approval HMII DT LVAD use is associated with 1 and 2 year survival of 74 and 61%, which was similar to the initial trial, (2) continued decreases in bleeding episodes post-approval, and (3) improved survival when used in INTERMACS profiles 4 to 7 recipients.

2) Loyaga-Rendon RY, Pamboukian SV, Tallaj JA, Acharya D, Cantor R, Starling RC, et al. Outcomes of patients with peripartum cardiomyopathy who received mechanical circulatory support. Data from the Interagency Registry for Mechanically Assisted Circulatory Support. Circ Heart Fail. 2014 Mar 1;7(2):300–9.

http://www.ncbi.nlm.nih.gov/pubmed/24443515

Loyaga-Rendon et al analyzed outcomes in women with and without peripartum cardiomyopathy (PPCMP) supported on durable mechanical circulatory support who were registered in INTERMACS between 2006 and 2012. 99 women had PPCMP and 1159 had non-PPCMP as the primary diagnosis. PPCMP patients were younger, more likely to be black, and had less comorbidities than non-PPCMP patients. PPCMP women had better survival than non-PPCMP women (p=0.01) with a 2-year survival of 83%. Multifactorial analysis show that improved survival was likely because of the younger age and less comorbidity. Interestingly, at 36 months, only 48% had received a heart transplant. Myocardial recovery was uncommon in the either group. This is the largest study of durable MCS support in PPCMP women. Given the rapidity and severity at which these patients can present, it is comforting to see this excellent 2-

year survival. It is somewhat disconcerting that less than half of these largely otherwise healthy women are transplanted within two years.

3) Jorde UP, Uriel N, Nahumi N, Bejar D, Gonzalez-Costello J, Thomas SS, et al. Prevalence, significance, and management of aortic insufficiency in continuous flow left ventricular assist device recipients. Circ Heart Fail. 2014 Mar 1;7(2):310–9.

http://www.ncbi.nlm.nih.gov/pubmed/24415682

Jorde et al present the Columbia experience with the development and management of aortic insufficiency after continuous flow LVAD implantation. This is an important paper because of the controversy surrounding this topic as well as the frequency at which we all deal with AI in MCS patients. **The findings are significant and suggest that ensuring opening of the aortic valve at initial discharge can possibly decrease the complications associated with this entity.**

The study is the largest study of this type to date and is very comprehensive. They analyzed aortic insufficiency in 181 patients who had no aortic valve surgery and 43 patients who had aortic valve surgery at the time of LVAD implantation. In the former group, they divided this into a early and late group – in the late group, 35 patients had their pump speeds optimized to attempt to ensure aortic valve opening at discharge (interesting this was not possible in about half the patients).

The key findings are summarized nicely in the discussion.

1. The risk of AI development is cumulative over time, with moderate or worse AI expected to develop in about 30% of patients on device support for 3 years or longer absent preventative measures.

2. Nonopening of the aortic valve at the time of discharge from initial implantation is strongly associated with future development of AI. **I think this is a KEY finding of this study.**

3. Only 1 of 35 patients with prospective speed optimization developed mild to moderate AI during a mean follow up of 241 days, despite the fact that half of these patients did not open the AV at the optimized speed

4. Symptomatic heart failure attributable to AI requiring surgical intervention occurred in 7 of 21 patients who developed at least moderate AI

5. Symptomatic heart failure symptoms can be alleviated and hemodynamics improved by increasing the pump speed, despite simultaneously worsening AI

6. After stitch repair of the aortic valve in those patients who already have AI at the time of LVAD implant, prevalence of AI is comparable to those without AI at implant.

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