EVALUATION OF ANTIPLATELET AND ANTIHYPERLIPIDEMIC AGENT DOSING ON THROMBOTIC AND BLEEDING EVENTS IN LEFT VENTRICULAR ASSIST DEVICE PATIENTS

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BACKGROUND

- Left Ventricular Assist Devices (LVAD) are utilized to enhance survival and improve hemodynamics in patients with advanced heart failure
- Device therapy comes with high risk of serious side effects including bleeding and thrombotic events due to physiological changes that occur from the continuous-flow pump
- Current guidelines recommend systemic anticoagulation and antiplatelet therapy with warfarin (goal INR of 2-3) in combination with aspirin, however, there is variation in recommended aspirin dosing
- A post hoc analysis of the MOMENTUM 3 trial reviewed aspirin doses in patients with a HeartMate 3 LVAD, comparing aspirin 325 mg to aspirin 81 mg and outcomes were similar between both groups
- HMG-CoA reductase inhibitors (statins) are also commonly used in patients with LVAD and history of ischemic events to prevent recurrence, however, targets for low-density lipoprotein and efficacy of these agents in this population are unknown

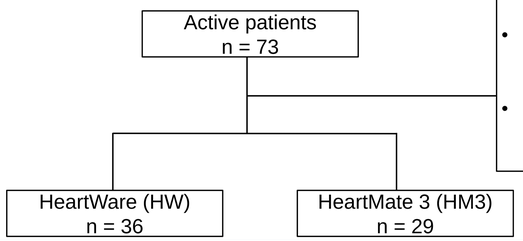
PURPOSE

- Primary Outcome:
  - Incidence of serious bleeding or thrombotic event following index implantation with LVAD
- Secondary Outcomes:
  - Changes in INR goal following event
  - Changes in antiplatelet therapy following event
  - Addition of targeted therapy (statin or somatostatin analog) following event

METHODS

- Retrospective chart review was performed on active patients implanted with an LVAD between 1/1/2015 and 9/1/2020 who were on maintenance warfarin therapy
  - Patients that expired or were transplanted during this time were excluded
  - If a serious bleeding event or ischemic event did occur additional data collected included:
    - Changes in antiplatelet therapy
    - Changes INR goal
    - Additions of targeted therapy

Exclusions:
- 2 patients transferred to another center
- 2 patients not maintained on warfarin
- 4 patients with non-continuous device



RESULTS

Table 1. Baseline Demographics, n (%)

	HW (n=36)	HM3 (n=29)	p-value
Age ± SD	57.6 ± 11.7	56 ± 12	0.586
Male	30 (83)	27 (93)	0.282
Caucasian	25 (69)	21 (72)	0.794
Atrial Fibrillation	17 (47)	12 (41)	0.638
Diabetes mellitus	13 (36)	16 (55)	0.124
Hyperlipidemia	29 (81)	27 (93)	0.172
Hypertension	27 (75)	21 (71)	0.814
Current smoker	10 (28)	8 (28)	0.986
Baseline LDL ± SD	84.1 ± 28.9	84.2 ± 36	0.987
VTE history	7 (19)	4 (14)	0.546
Stroke history	3 (8)	2 (7)	1
GIB history	3 (8)	3 (10)	0.781

Figure 1. Total Bleeding and Thrombotic Events in HW and HM3 Patients

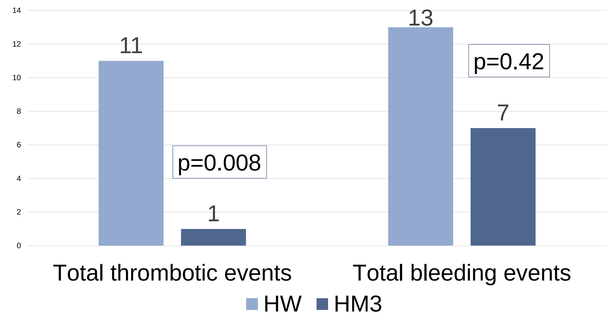


Figure 2. Total Interventions Following Thrombotic Event

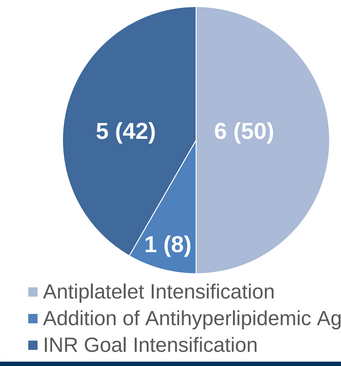
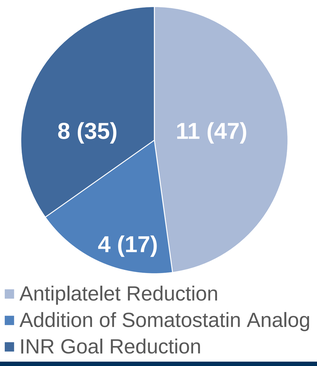


Figure 3. Total Interventions Following Bleeding Event



DISCUSSION

- At baseline, there was no difference in demographics or risk factors prior to implantation between the two groups
- In patients with a HeartWare device and thrombotic event, the most common intervention was antiplatelet therapy intensification(addition of dipyridamole or clopidogrel)
- There are opportunities for continued medical optimization of patients antihyperlipidemic agents as well as support for smoking cessation to decrease risk of thrombotic events

CONCLUSIONS

- Patients implanted with HeartMate3 device had a significantly lower incidence of thrombotic events and similar number of bleeding events when compared to patients with a HeartWare device
- These results suggest decreasing the antiplatelet intensity may balance the risks more effectively as thrombotic risk is low and bleeding risk is sustained throughout the duration of HeartMate3 pump support

FUTURE DIRECTIONS

- Program-level discussion to recommend lowering aspirin dose to 81 mg following index implant with HeartMate 3 device and standardization of management of complications
- Development and implementation of pharmacist-driven statin and smoking cessation management for LVAD patients

STUDY LIMITATIONS

- Small study size
- INR goal following index implantation was changed from 2-3 to 2-2.5 during the study window
- Thrombotic events are from undetermined source
- Variability in management following bleeding and thrombotic events

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