Predictors of Left Ventricular Assist Device Thrombosis

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Introduction

- Scarcity of donor hearts coupled with survival and quality of life benefits provided by left ventricular assist devices (LVAD) has resulted in an increase in LVAD volumes.[1]

- However, LVAD therapy is association with complications including pump thromboses which can be life threatening.[2]

- Our objective was to assess risk factors associated with pump thrombosis to identify patients at high risk for this complication.

Methods

- We retrospectively abstracted charts of all patients implanted with a continuous flow LVAD at a single, large, tertiary care academic center from January 2008 to September 2016.

- Confirmed VAD thrombosis was defined as evidence of thrombus at pump exchange.

- Baseline characteristics of patients with and without confirmed pump thrombosis were confirmed using *t* test for continuous variables and chi square for categorical variables.

- Standard regression techniques were used to examine association between pre implant characteristics and confirmed LVAD thrombosis.

References

1. Khazanie P et al Trends in the Use and Outcomes of Ventricular Assist Devices Among Medicare Beneficiaries, 2006 Through 2011. Journal of American College of Cardiology 2014

2. Yuan N et al. The Spectrum of Complications Following Left Ventricular Assist Device Placement. Journal of Cardiac Surgery 2012

Disclosures

The authors have no relevant disclosures

Results

- A total of 211 patients were included in our analysis and 30 (14.1%) patients had confirmed pump thrombosis. Overall, there were 78% male patients with a mean age of 57 ± 14.8 years.

- There were no significant differences in demographic characteristics of patients with and without confirmed VAD thrombosis.

- In univariate analysis, patients with LVAD thrombosis were more likely to be smokers, have a body mass index >35, pulmonary hypertension, atrial fibrillation, history of stroke and prior venous thrombo-embolic events.

- Table shows factors that remained significantly associated with confirmed LVAD thrombosis in the multivariable logistic regression model.

Table: Factors associated with confirmed LVAD thrombosis

Characteristic	Odds ratio (95% confidence interval)
Body Mass Index >35	10.06 (2.16 – 46.9)
History of smoking	3.64 (1.01 – 13.17)
Atrial fibrillation	5.75 (1.18 – 28.05)
History of stroke	8.57 (1.63 – 45.06)
History of Venous Thrombo-embolism	15.21 (2.00 – 116.14)

Conclusions

- Risk factors associated with confirmed LVAD thrombosis in our study included atrial fibrillation, body mass index >35, history of smoking, history of stroke and history of venous thrombo-embolism.

- Future studies are needed to evaluate whether mitigating these risk factors are associated with reduced rates of LVAD thrombosis.