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Heart Failure and Cardiomyopathies

ABSOLUTE REDUCTION IN LEFT VENTRICULAR END DIASTOLIC DIAMETER (GREATER THAN 0.65CM) IN PATIENTS WITH CONTINUOUS FLOW LEFT VENTRICULAR ASSIST DEVICES (CF-LVAD) REFLECTS COMPLETE LV UNLOADING DEFINED BY INVASIVE HEMODYNAMICS

Poster Contributions
Poster Hall B1
Saturday, March 14, 2015, 3:45 p.m.-4:30 p.m.

Session Title: Advances in Heart Failure Therapies: From Diuretics to VADs and Transplant
Abstract Category: 14. Heart Failure and Cardiomyopathies: Clinical
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Background: Despite an improvement in quality of life and long-term survival in patients with CF-LVADs for end stage heart failure (HF) many patients continue to experience significant dyspnea, and recurrent admissions attributable to HF account for significant morbidity post-implant. In this study, we evaluate change in left ventricular end diastolic dimension (LVEDd) as a marker for normal pulmonary capillary wedge pressure (PCWP).

Methods: Simultaneous echocardiography and right heart catheterization were prospectively performed in 50 consecutive patients supported by the HeartMateII CF-LVAD at baseline pump speeds. We reviewed LVEDd pre-implant and at time of echo and calculated change (Δ). ROC curves were constructed to determine the optimal cut-off for distinguishing normal vs elevated LV filling pressures (PCWP ≤ 15 and >15 mmHg).

Results: Mean age was 56 ± 10 years, the majority were male (76%) and caucasian (50%) with ischemic etiology (54%). Average length of support was 1 year and mean baseline pump speed was 9079 ± 410 rpms. ROC curve analysis of the Δ LVEDd to distinguish normal vs elevated PCWP had an AUC of 0.71(CI: 0.55-0.86), p-value=0.01, with a cut-off of 0.65cm, and a specificity and sensitivity of 88% and 56% respectively.

Conclusion: A decrease in LVEDd of more than 0.65cm correlates significantly with normal PCWP and may be performed easily at the bedside. This measurement may be helpful in combination with clinical data to determine optimal LV unloading. Further study is warranted.

Table of characteristics

	All	PCWP ≤15	PCWP >15	p-value
	n=50	n=30	n=20	
Mean age (yrs.)	56 ± 10	54 ± 11	58 ± 9	0.2
Male gender (%)	38 (76)	23 (77)	16 (80)	1
Caucasian race (%)	25 (50)	11 (37)	14 (70)	0.04
Ischemic etiology (%)	27 (54)	14 (47)	13 (65)	0.2
Baseline pump speed (rpm)	9079 ± 410	9043 ± 370	9130 ± 464	0.4
Length of support (days)	316 ± 238	311 ± 226	323 ± 257	0.8
Mean BP (mmHg)	79 ± 7	77 ± 8	78 ± 8	0.4
Pre implant LVEDd (cm)	6.5 ± 1.0	6.5 ± 1.0	6.7 ± 1.0	0.4
Post implant LVEDd (cm)	5.4 ± 1.0	5.1 ± 0.9	5.8 ± 0.9	0.03
Δ LVEDd (cm)	-1.1 ± 0.8	-1.3 ± 0.7	-0.7 ± 0.8	0.01
Mean PCWP (mmHg)	13.5 ± 7.4	8.6 ± 3.8	21 ± 5.0	<0.0001

BP: blood pressure, LVEDd: left ventricular end diastolic dimension, PCWP: pulmonary capillary wedge pressure.