CARDIAC POWER INDEX IN ADVANCED DECOMPENSATED HEART FAILURE: INSIGHTS FROM THE ESCAPE TRIAL

Poster Contributions
Poster Hall B1
Saturday, March 14, 2015, 10:00 a.m.-10:45 a.m.

Session Title: Many Faces of Heart Failure
Abstract Category: 14. Heart Failure and Cardiomyopathies: Clinical
Presentation Number: 1113-199

Authors: Justin Lee Grodin, Wai Hong Tang, Cleveland Clinic Foundation, Cleveland, OH, USA

Background: Cardiac power (CP) is the rate of hydraulic work done by the heart. It is prognostic in acute ischemia, but its role advanced decompensated heart failure (ADHF) is unclear.

Methods: We analyzed the Evaluation Study of Congestive Heart Failure and Pulmonary Artery Catheterization Effectiveness (ESCAPE) trial database. CP index (CPI) was calculated by: CPI W/m² = ((MAP mm Hg - RAP mm Hg) x CO L/min x K) / (BSA m²) where K = 0.0022. Cox models tested the association of CPI with 180-day death, cardiac hospitalization, or transplantation adjusting for age, MAP, BUN, and sex.

Results: In subjects with measured hemodynamics (N=196, age 56 ± 14 y, 73% male, 58% with ischemic heart disease, median BUN 29 mg/dL and median LVEF 19%, the median baseline CPI was 0.28 W/m² [0.21, 0.36], there were 40 deaths, 79 cardiac hospitalizations, and 16 transplants by 180 days. Low CPI was associated with higher RAP and PCWP (p<.001 for both). Baseline CPI and VO2 (9.9 ml/kg·min) were not correlated (ρ 0.26, p=0.07); but catheter-removal CPI and discharge VO2 (11.1 ml/kg·min) were correlated (ρ 0.30, p=0.03). Low CPI was associated with higher composite outcome risk after multivariate adjustment at both baseline (Figure, Δ std, HR 1.3, 95% CI 1.01-1.7, p=0.04) and catheter removal (Δ std, HR 1.5, 95% CI 1.2-2.0, p=0.002).

Conclusion: Lower CPI is associated with higher cardiac filling pressures and provided independent, incremental prediction for adverse outcomes in ADHF. These findings support the prognostic utility of CPI in ADHF.