Abstract: P867

**Echo-derived peak cardiac power output-to-left ventricular mass with cardiopulmonary exercise testing predicts outcome in patients with heart failure and depressed systolic function**

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Background. Peak cardiac power output-to-mass (CPOM) represents a measure of the rate at which cardiac work is delivered with respect to the potential energy stored in left ventricle (LV) mass.

Aim. To investigate the value of peak CPOM and cardiopulmonary exercise test (CPET) in risk stratification of patients with chronic heart failure (HF).

Materials and methods. We studied 137 patients with chronic HF (mean LV ejection fraction 30%) undergoing CPET and exercise stress echocardiography. CPOM was calculated as the product of a constant (K=2.22 × 10⁻¹) with cardiac output (CO) and the mean arterial pressure (MAP), divided by LV mass (M), and expressed in the unit of W/100 g: CPOM = [K × CO (l/min) × MAP (mmHg)] / M(g). Patients were followed-up for the primary end-point, that included all-cause death and VAD implantation and the composite end-point that comprised hospitalization for HF.

Results. In multivariate Cox regression analyses, peak CPOM was selected as the most powerful independent predictor of the end-points (HR: 0.043, 95% CI: 0.004-0.044, p=0.008; HR: 0.011, 95% CI: 0.02-0.66, p=0.016). Five-year survival free from all-cause death or VAD implantation was 92% in those exhibiting VO2 >14 ml/min/kg and peak COPM >0.6 W/100 g (Fig. 1). Peak VO2 = 14 ml/min/kg provided incremental prognostic value over demographic and clinical variables, BNP and resting echocardiographic parameters (chi-square: from 34.2 to 46.1; p=0.005), that was further increased by peak COPM = 0.6 W/100 g (chi square: 52.2; p=0.026).

Conclusion. Peak COPM and peak VO2 showed independent and incremental prognostic values in patients with chronic HF.
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