S4_6

Pulmonary Arterial Capacitance and Mortality in Heart Failure Patients with Pulmonary Hypertension

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Background:
Development of pulmonary hypertension (PH) in patients with heart failure (HF) represents an advanced stage of the disease. The prediction of the prognosis of these patients remains difficult despite knowledge of clinical and hemodynamic parameters.

Aim:
To determine if pulmonary arterial capacitance (PAC) predicts survival in patients with post-capillary PH

Methods:
In 117 patients with PH due to HF who underwent right heart catheterization, pulmonary arterial capacitance was defined as stroke volume (SV) divided by pulmonary pulse pressure (PP). The mean follow-up period was 34 months. Multivariate Cox models were used to assess the relationship between PAC and long term mortality.

Results:
During the follow-up period 37 (31.6%) patients died. The PAC was 1.28±0.72 ml/mmHg in the alive group, and 0.88±0.39 ml/mmHg in the deceased group (p=0.002). In quartile analysis, the highest PAC quartile had a mortality of 6.7% as compared with 37.9% in the lowest capacitance quartile (p=0.006). In multivariate analysis, after adjusting for age, gender and right atrial pressure, the hazard ratios for long term mortality in the highest PAC quartile group was 0.20 (95%CI 0.04-0.9, p=0.04) as compared with the lowest quartile.

Conclusions:
The results of our study suggest that pulmonary arterial capacitance is a strong predictor for long term mortality in patients with HF and PH.