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High Mean Pulmonary Pressures are the Strongest Hemodynamic Parameter for Mortality Prediction in Patients with Heart Failure and Preserved Systolic Function and Associated Pulmonary Hypertension

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Background:
Pulmonary hypertension (PH) is associated with poor prognosis in patients with systolic heart failure.
In recent years, the clinical importance of PH in patients with heart failure and preserved systolic function (HFPSF) is increasingly recognized.

Aim:
The aim of the current study was to evaluate the prognostic implications of parameters derived from invasive hemodynamic study performed via right heart catheterization (RHC) and mortality.

Results:
A total of 85 symptomatic HFPSF patients underwent RHC for evaluation of PH {mean age 67.8± 10.7, males 32 (37.6%); mean LVEF (%) 59.4±3.3}. In each patient we recorded the following hemodynamic parameters: mean right atrial pressure, wedge pressure, cardiac index (estimated Fick method), cardiac power index, right ventricular stroke volume index, pulmonary and systemic vascular resistances, mean pulmonary pressure and trans-pulmonary gradients. We recorded in our patients' mortality rates over a mean follow-up period of 29.5±16.5 months, in which high mortality was noted and 37 (43%) patients died. No significant differences were observed between the dead and the live patients in regard to age, gender or LVEF. As for the hemodynamic parameters; we performed statistical analysis using univariate and multivariate tests. The only significant hemodynamic parameter for mortality prediction, was found to be high mean pulmonary pressure with an Odds Ratio for mortality of 3.1 (CI 95% 1.2-7.6; p=0.01). The Kaplan Mayer survival curves for mean pulmonary pressure and mortality are presented in figure-1.

Conclusions:
Patients with HFPSF and associated pulmonary hypertension have significantly high mortality rates as almost half of them will die in three years duration. Of all the traditional and more sophisticated hemodynamic parameters we evaluated in the current study, the single most important parameter for mortality prediction was mean pulmonary pressure. Having high mean pulmonary pressures more than tripled the risk for death in patients with HFPSF and associated PHT.