

HYPERTENSION AND BASIC SCIENCE

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Prognostic impact of invasive hemodynamic evaluation in patients with pulmonary arterial hypertension

I. Aguiar-Ricardo, R. Placido, I. Goncalves, J. Agostinho, G. Lima Da Silva, M. Nobre-Menezes, A.R. Francisco, R. Santos, A. Ferreira, T. Guimaraes, S. Robalo Martins, J. Fauto Pinto. *Hospital Universitário de Santa Maria/CHLN, CAML, CCUL, Faculdade de Medicina, Universidade de Lisboa, Cardiology, Lisbon, Portugal*

Introduction: Invasive hemodynamic evaluation is a fundamental diagnostic method in patients with pulmonary hypertension (PH). However, its prognostic value in this group of patients is not fully established.

Purpose: To assess the prognostic impact of hemodynamic parameters of right catheterization in patients with PH.

Methods: Prospective observational study of patients with PH undergoing right and left catheterization for diagnostic confirmation and functional evaluation during vasoreactivity test. Only patients with mean pulmonary arterial pressure (PAP) >25 mmHg considered not secondary to left heart disease were included. A basal evaluation of the conventional hemodynamic parameters, left and right ventricular function indexes, pulmonary and systemic vascular resistance indexes were performed and they were re-evaluated during vasoreactivity test. The parameters were analysed and related with overall mortality and with cardiac death or hospitalization during clinical follow-up by Multivariate regression analysis of Cox.

Results: A total of 68 patients were included (71% females, mean age 53±17 years), 81% of whom were from group I (NICE) and 15% from group IV. The mean value of mean pulmonary artery pressure was 47±16mmHg and mean right atrial pressure was 11±7mmHg. During a median follow-up of 34 months, 7 patients (10%) died and 25 (37%) were hospitalized for heart failure. Of all hemodynamic parameters, the only independent predictor of mortality was the mean right atrial pressure, for each 1mmHg rise, mortality risk increased by 12% (hazard ratio (HR): 1, 12; 95% CI 1.02–1.23; p=0.018) and the risk of death or hospitalization for cardiac causes was 17% (HR: 1.17, 95% CI: 1.00–1.37, P=0.050). The prognosis was not influenced by the demonstration of pulmonary arterial vasoreactivity, magnitude of PAP elevation or pulmonary vascular resistance.

Conclusion: In patients with PH, invasive hemodynamic evaluation offers an additional value in prognostic stratification. In particular, measurement of mean right atrial pressure has been shown to be an independent predictor of mortality. On the other hand, other parameters such as pulmonary arterial vasoreactivity, although important in the definition of the therapeutic strategy, did not have an impact on the risk of death or hospitalization.