

Right Ventricular Dysfunction with and without Pulmonary Hypertension in Acute Myocardial Infarction

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Aim: The aim of this study was to assess the prevalence and long term prognostic significance of right ventricular (RV) dysfunction with or without pulmonary hypertension (PH), diagnosed in the early phase of hospitalization, in patients with acute myocardial infarction (AMI).

Methods: We prospectively studied 1826 consecutive patients with AMI who had echocardiographic examination 24 – 48 hours from admission, in which RV function was estimated and pulmonary arterial pressure was measurable. The mean follow-up was 34.6 months. Kaplan Meier and multivariate Cox models were used to assess the impact of RV dysfunction with and without PH on long term survival.

Results: Study population was divided in 4 groups according to RV function and presence of PH. Normal RV function without PH, normal RV function with PH, abnormal RV function without PH and abnormal RV function with PH were diagnosed in 1455 (79.7%), 172 (9.4%), 137 (7.5%) and (3.4%) patients respectively. The long term mortality in the 4 groups was 19.3%, 39.5%, 39.4% and 74.2% respectively ($p < 0.0001$). The hazard ratios for mortality in patients with normal RV function with PH and abnormal RV function without and with PH, as compared with those with normal RV function without PH were: 2.52 (95%CI: 1.93–3.28; $p < 0.0001$), 2.71 (95%CI: 2.03– 3.64; $p < 0.0001$) and 6.22 (95%CI: 4.55–8.50; $p < 0.0001$). After adjusting for age, gender, diabetes mellitus, ST elevation AMI, anterior wall infarction, left ventricular systolic function and creatinine clearance, RV dysfunction without and with PH remained strongly related to long term mortality: HR 1.94 (95%CI: 1.42–2.64; $p < 0.0001$) and 2.14 (95%CI: 1.51–3.04; $p < 0.0001$) respectively. In a Kaplan Meier model, patients with RV dysfunction and PH had the worst prognosis (p log rank < 0.0001).

Conclusion: The presence of RV dysfunction in the early phase of hospitalization due to AMI is strongly related to an adverse long term outcome, with the PH etiology being the worst.