Pulmonary Hypertension Predicts Heart Failure following Acute Myocardial Infarction

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Background: Pulmonary hypertension (PH) is usually perceived as a complication of established heart failure (HF) rather than as a predictor of HF or a marker of subclinical HF. PH frequently develops as a consequence of multiple cardiac alterations that result in increased filling pressures after acute myocardial infarction (AMI), but its association with clinical outcome is unknown. We hypothesized that PH may be a useful marker to predict the risk of HF following AMI.

Methods and Results: We studied 843 patients with AMI. Pulmonary artery systolic pressure (PASP) was determined using echocardiography at the index admission and PH defined as PASP>35 mm Hg. The primary endpoint was readmission for HF. PH was present in 343 of patients (40.7%) and was strongly associated with age, reduced ejection fraction, advanced diastolic dysfunction and moderate/severe mitral regurgitation (All P<0.0001). The area under the receiver-operating characteristic curve was significantly higher for PASP (0.75; 95% CI 0.70–0.80) as compared with other echacardiographic parameters (P=0.02 to 0.001). After adjustments for clinical and echocardiographic variables, PH was associated with a hazard ratio of 3.01 for HF (95% CI 1.85–4.93; P<0.0001). PH was a stronger predictor of HF than left ventricular systolic function, restrictive filling pattern and mitral regurgitation.

Conclusion: PASP integrates the severity of multiple hemodynamic determinants of elevated left atrial pressures that lead to a “passive” increase in pulmonary venous pressure. In AMI, PH at the index admission is a useful marker in unmasking latent subclinical HF and predicting the development of overt HF.