Abstract: P6399

Left atrial function determined by echocardiography predicts incident heart failure in STEMI patients treated with primary percutaneous coronary intervention.

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Topic(s):
Coronary Artery Disease – Epidemiology, Prognosis, Outcome

Citation:
Objectives: To assess the comparative effectiveness of LA functional parameters (LAEF and MinLAVI) with that of LA volume index (LAVI) in predicting HF following STEMI.

Background: Heart failure (HF) is common following STEMI. Enlarged left atrial (LA) volume determined by echocardiography is associated with adverse outcome following STEMI. However, whether echocardiographic parameters of LA function, such as the LA emptying fraction (LAEF) and the minimal LA volume index (MinLAVI), are superior to LAVI for predicting prognosis following STEMI is unknown.

Methods: A total of 369 STEMI patients without atrial fibrillation or heart failure treated with primary percutaneous coronary intervention (pPCI) were prospectively enrolled in the period September 2006 to December 2008. Patients underwent echocardiography shortly after STEMI. The maximal and minimal LA volume were measured using the biplane area-length method. LAVI, MinLAVI (minimal LA volume indexed to body surface area) and LAEF ((maximal LA volume – minimal LA volume) / maximal LA volume) were calculated. End-point was incident HF.

Results: During a median follow-up of 66 months (interquartile-range: 50-73 months), 68 patients (18%) were admitted for HF. In univariable analysis, both reduced LAEF and increased MinLAVI were significantly associated with an increased risk of HF (LAEF: HR 1.18, 95% CI 1.08-1.29, per 5% decrease, p<0.001) (MinLAVI: HR 1.35, 95% CI 1.09-1.67, per 5 mL/m² increase, p=0.006) (Figure). In contrast, LAVI was not significantly associated with the development of HF (HR 1.03, 95% CI 0.87-1.22, per 5 mL/m² increase, p=0.73) (Figure). Following adjustment for clinical, biochemical and echocardiographic variables, LAEF and MinLAVI remained independent predictors of HF, while the lack of association between LAVI and HF persisted (LAEF: HR 1.14, 95% CI 1.02-1.27, per 5% decrease, p=0.019) (MinLAVI: HR 1.31, 95% CI 1.02-1.69, per 5 mL/m² increase, p=0.036) (LAVI: HR 1.05, 95% CI 0.86-1.29, per 5 mL/m² increase, p=0.61). These results were replicated when treating death from all causes as a competing event in competing risk regression.

Conclusion: In STEMI patients treated with pPCI, LAEF and MinLAVI measured by echocardiography shortly after infarction are superior to LAVI for predicting incident HF.
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