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Left Ventricular Diastolic Dysfunction as a Predictor of New-Onset Atrial Fibrillation After Acute Myocardial Infarction

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Background: The role of factors that increase left atrial pressure or is frequently emphasized in the pathogenesis of atrial fibrillation (AF) in patients with acute myocardial infarction (AMI). Diastolic dysfunction occurring after AMI may promote the development of AF. However, there is no information concerning the role of diastolic dysfunction in the development of new-onset AF in patients with AMI.

Methods: 1422 patients with AMI underwent echocardiographic examination while in sinus rhythm during the index hospitalization. Impaired relaxation and advanced diastolic dysfunction (either pseudonormal filling pattern or restrictive filling pattern) were defined according to standard criteria. Patients with previous AF were excluded. The relationship between diastolic dysfunction and new-onset AF occurring during the hospital course and at 1-year was analyzed using multivariable Cox model, adjusting for age, gender, previous infarction, hypertension, diabetes, ST-elevation, coronary revascularization, anterior infarction, left ventricular systolic function and mitral regurgitation.

Results: AF developed in 35 of 860 (4.1%), 12 of 136 (8.8) and 49 of 456 (10.7%) patient with normal diastolic function, impaired relaxation, and advanced diastolic function, respectively (P < 0.0001). Kaplan-Meier curves for the development of AF in the 3 study groups are shown in the Figure. After adjustments in a Cox model, compared with patients with normal diastolic function, the adjusted hazard ratio for AF was 1.6 in patients with impaired relaxation (95% CI 0.8-3.1; P = 0.17), and 2.6 (95% CI 1.6-4.1; p < 0.0001) in patients with advanced diastolic dysfunction.

Conclusions: In a large cohort of patients with AMI, the presence of advanced diastolic dysfunction was independently predictive of new-onset AF.