

13. Diabetes Mellitus Is an Independent Risk Factor For a Stiff Left Atrial Physiology After Catheter Ablation For Atrial Fibrillation

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Body

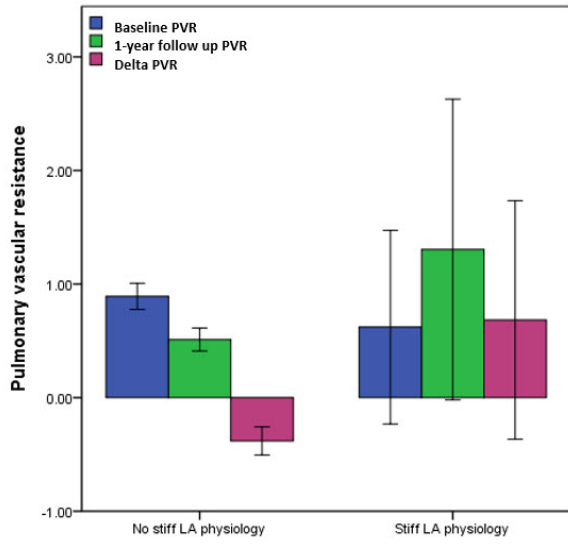
Background: Scar tissue formation after catheter ablation for atrial fibrillation (AF) may adversely affect the diastolic properties of the left atrium (LA), which can result in a stiff LA physiology in a small proportion of patients. In this study, we aimed to explore the relationship between diabetes mellitus and a stiff LA physiology after AF catheter ablation (AFCA).

Methods: A total of 1,326 patients who underwent de novo AFCA, and baseline and 1-year follow-up echocardiographies were enrolled. After 1:3 propensity score (PS) matching for age, sex, and AF type, we compared 211 patients with DM with 633 patients without DM. A stiff LA physiology was defined as estimated pulmonary arterial pressure increase of >10 mmHg and a right ventricular systolic pressure of >35 mmHg at 1-year follow-up echocardiography. Pulmonary vascular resistance (PVR) was estimated using echocardiographic parameters.

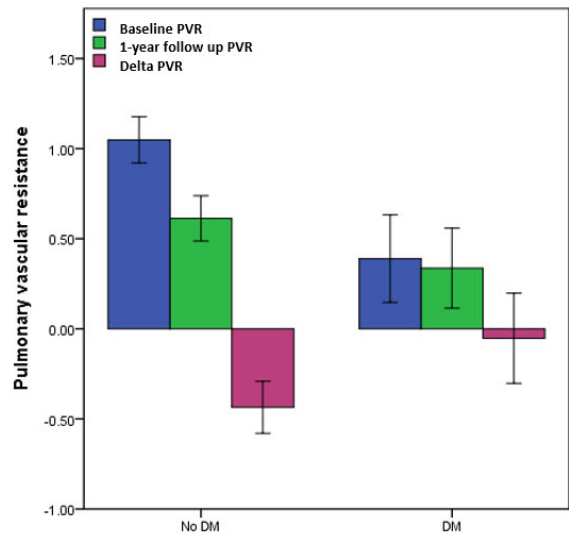
Results: Among the 844 PS-matched patients, a stiff LA physiology was observed in 32 patients (4.1%). The patients with DM showed a higher peak LA pressure ($p < 0.001$) and greater LA wall stress ($p = 0.001$) than did those without. A stiff LA physiology was independently associated with DM (Odds ratio [OR]=2.39, 95% confidence interval [CI] 1.02-5.59, $p = 0.045$), empirical extra-pulmonary vein LA ablation (OR=3.14, 95% CI 1.07-9.3, $p = 0.038$) and the Δ PVR (OR=1.78, 95% CI 1.37-2.31, $p < 0.001$). The Δ PVR was independently associated with DM ($\beta = 0.37$, 95% CI 0.06-0.67, $p = 0.020$) and a stiff LA physiology ($\beta = 1.40$, 95% CI 0.70-2.10, $p < 0.001$). During the 38.8 ± 29.3 months follow-up, the incidence of the clinical recurrence of AF was significantly higher in the patients with a stiff LA physiology than in those without (log rank $p = 0.032$).

Conclusion: A stiff LA physiology was independently associated with DM because of the relatively small decrease in the PVR after AFCA in this population. The patients with a stiff LA physiology had worse rhythm outcomes after AFCA than those without.

(A)



(B)



Clinical Implications: Perform catheter ablation of atrial fibrillation in patients with diabetes mellitus.