ELECTROGRAM ORGANIZATION PREDICTS THE LEFT ATRIAL REVERSE REMODELING AFTER
RESTORATION OF SINUS RHYTHM BY CATHETER ABLATION IN PATIENTS WITH PERSISTENT ATRIAL
FIBRILLATION

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Background: Left atrial (LA) size has been established as a prognostic marker of cardiovascular morbidity and stroke. The purpose of this study is to identify predictors of the structural reverse remodeling of the LA after restoration of sinus rhythm by catheter ablation in patients with persistent atrial fibrillation (AF).

Methods: This study included 64 patients with enlarged LA caused from persistent AF (LA volume indexed to body surface area; LAVi ≥32 mL/m2). Echocardiography was used to measure the LAVi before ablation and 12 months after restoration of sinus rhythm. Fifty one patients free from recurrence of AF without antiarrhythmic drugs (80%) were divided into 2 groups: responders with reduction in LAVi ≥20% (N=29) and nonresponders with that of <20% (N=22). Serological testing and electrophysiological characteristics on electrocardiogram (ECG) and magnetocardiogram (MCG) were analyzed.

Results: The LAVi significantly decreased from 40±11 to 30±8 mL/m2 (p<0.0001). Lower age (58±8 vs 63±8 years old, p=0.04), higher LAVi at baseline (43±13 vs 36±7 mL/m2, p=0.02), and higher serum atrial natriuretic peptide (ANP) at baseline (median=71, IQR=68 vs median=51, IQR=43, p=0.01) were significantly associated with reverse remodeling. More importantly, there was a significant linear correlation between organization index (OI) of AF signals and % reduction in LAVi (R=−0.64, p<0.0001). In multiple linear regression analysis, the significant relationships were found in age (beta=0.328, t=3.096, p=0.003) and OI on MCG (beta=−0.501, t=−4.433, p<0.0001).

Conclusions: AF organization was the strongest predictor for reverse remodeling of the LA after restoration of sinus rhythm by catheter ablation in patients with persistent AF.