A Potential Predictor in Reverse Remodeling after Ablation in Long-Persistent Atrial Fibrillation

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Long-persistent atrial fibrillation (CAF) causes structural remodeling. Ablation for CAF can contribute to reversing CAF-mediated remodeling. However, the extents of the reverse atrial remodeling (RAR) remain unpredictable before ablation. We attempted to determine a predictor for RAR.

Methods: For 20 consecutive CAF (>1 year) patients, left atrial volume index (LAVI) was calculated on echocardiograms. We sought to restore sinus rhythm by pulmonary vein-isolation and ablation targeting complex fractionated atrial electroactivities with or without DC. Catheterization study was performed during the ablation. LAVI and Velocity in atrial wave in trans-mitral valve flow (ATMF) was measured serially.

Results: Cardiac index (CI) significantly increased after the defibrillation (p<0.01). For 19 cases, sinus rhythm was maintained for 19.0±9.5 months. LAVI significantly reduced from 30.3±8.4 to 22.8±4.5ml/m² (6months after the procedure, p<0.01) and ATMF increased from 0.45±0.23 (7days after the procedure) to 0.52±0.15m/s (6months after the procedure, p<0.01). CI before the defibrillation had a tendency to inversely correlate with reduction in LAVI at 6months after the procedure (p=0.06). Patient with smaller LAVI had a greater reduction in LAVI and a greater increase in ATMF (r=-0.71, 0.52, respectively, p<0.01). Lower ATMF 7days after the procedure predicted greater reduction in LAVI during the follow up.

Conclusion: Hemodynamic parameters during the procedure and ATMF immediately after defibrillation may be a predictor of RAR.

Keywords: AF ablation, reverse remodeling