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LOW ATRIAL NATRIURETIC PEPTIDE TO BRAIN NATRIURETIC PEPTIDE RATIO WAS ASSOCIATED WITH LEFT ATRIAL REMODELING AND HOSPITALIZATION DUE TO HEART FAILURE IN PATIENTS WITH ATRIAL FIBRILLATION ABLATION

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Background: Deficiency of atrial natriuretic peptide (ANP) is thought to contribute to hemodynamic deterioration in case with advanced atrial remodeling due to atrial fibrillation (AF). However, little is known about the association between plasma ANP level and severity of left atrial remodeling or prognosis of heart failure in patients with AF.

Objective: The purpose of this study was to investigate the association between ANP and left atrial remodeling or prognosis of heart failure in patients with AF ablation.

Methods: Three hundred and seventy-three consecutive patients who underwent initial ablation for persistent AF (age, 67 ± 10 years; and females, 97 [26%]) were retrospectively enrolled. Plasma ANP and brain natriuretic peptide (BNP) concentration were measured before the procedure and ANP/BNP ratio was calculated. Left atrial appendage emptying velocity (LAAEV), left atrial low voltage areas (LVAs), and left atrial volume index (LAVI) were used as clinical factors of left atrial remodeling.

Results: Median plasma ANP level was 116 (71-178) pg/ml, and median ANP/BNP ratio was 0.65 (0.46-1.00). Plasma ANP levels did not correlated with LAAEV or LVAs. There was significant correlations between ANP/BNP ratio and LAAEV, LVAs, or LAVI. During the 24 months follow-up, freedom from hospitalization due to heart failure was significantly lower in patients with a ANP/BNP ratio <0.65 than in those with a ANP/BNP ratio >0.65 (94.3% versus 99.5%, P<0.01).

Conclusion: The secretion of ANP relative to BNP decrease along with progression of left atrial remodeling in patients with AF ablation. Additionally, hospitalization due to heart failure frequently occurred in patients with low secretion of ANP relative to BNP.

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NONLINEAR HEART RATE DYNAMICS IN PAROXYSMAL AF PATIENTS WITH AND WITHOUT RECURRENCE AFTER PULMONARY VEIN ISOLATION

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Background: Pulmonary vein isolation (PVI) is a cornerstone therapy for paroxysmal atrial fibrillation (PAF). Nonlinear heart rate variability (HRV) parameters have been shown to alter after PVI, however the differences between those with and without recurrences remain unclear.

Objective: We aimed to characterize the HRV before and after PVI in patients with and without recurrence.

Methods: 25 drug-refractory symptomatic PAF patients who received PVI were enrolled. Holter monitoring were done before, 1, 3, and 6 ~ 12 months after PVI, respectively. Patients were classified into: late recurrence group (n=9) and non-recurrence group (n=16). Linear and nonlinear HRV variables, including Poincaré Plot analysis and Detrended fluctuation analysis (DFA), were analyzed.

Results: Both groups showed significant reductions in LF after PVI, when compared to those before PVI, respectively. RMSSD, HF, LF/HF, and SD1 decreased significantly in the non-recurrence group following PVI, whereas same parameters did not alter in the recurrence group, when compared to before ablation, respectively. DFA_slope2 increased significantly after PVI compared to before PVI in the non-recurrence group, but not in the recurrence group. Detailed parameters are shown in the Table 1.

Conclusion: Fractal correlation properties increased (DFA_slope2) significantly only in the non-recurrence group after PVI. Both vagal (RMSSD, HF, and SD1) and sympathetic activities (LF/HF) decreased significantly after PVI in the non-recurrence group, whereas sympathovagal imbalance (LF) decreased significantly in both groups. These findings suggested that neuromodulation and heart rate dynamics play crucial roles in AF recurrence following PVI.