Left atrial anatomy and P-wave duration as predictors for single procedure success after pulmonary vein isolation

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Background: Many studies discussed factors for atrial fibrillation (AF) recurrence after pulmonary vein isolation (PVI), but the relationship anatomical, electrical behavior and AF recurrence is still uncertain.

Method: This study consisted of 127 patients (age 62.7 ± 11.3, 30 female, Paroxysmal atrial fibrillation 92 patients) whose follow-up period 312 ± 253 days. P-wave duration (PWD) in lead II, P-wave dispersion and P-wave terminal force were measured on the 12-lead electrocardiogram after the procedure. Anatomical measurements such as left atrial diameter (LAD), left atrial volume (LAV), left atrial volume index (LAVi) were collected from echocardiography.

Result: The recurrence rate was significantly higher in patients with longer PWD in lead II (127.5 ± 16.4 vs 117.5 ± 17.2, p=0.005), with an index LA volume (48.1 ± 17.7 vs 38.0 ± 15.2, p=0.003). In multivariate analysis, a prolonged PWD (Hazard ratio:1.03, 95%CI 1.01-1.06, p=0.008) and an indexed LA volume >37.6 ml/m² (HR:3.1, 95%CI 1.22-7.95, p=0.01) were identified as significant predictors for AF recurrence.

Conclusion: In our cohort of patients with AF, P-wave duration in lead II and the anatomical parameter revealed to be independent predictors for AF recurrence after PVI.