Timing of Atrial Fibrillation Recurrence Following Pulmonary Vein Isolation and Serial Changes of P-Wave Duration

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Background: The terminal portion of the P-wave was correlated to the activation of pulmonary vein muscle and the shortening of P wave duration could predict successful outcomes after atrial fibrillation (AF) ablation. However, the mechanism of early recurrence of AF and late recurrence of AF are not clear. We investigated the relation between serial changes of P-wave duration and timing of AF recurrence.

Method: Twenty-nine patients (66 ± 7 years, 18 male) with recurrence of AF who underwent circumferential pulmonary vein isolation (CPVI) alone for drug resistant AF and received P-wave signal averaged electrocardiogram (P-SAECG) at 2 days, 2 weeks, and 4 weeks following CPVI were enrolled in this study. By using P-SAECG, the serial changes of the filtered P-wave duration (FPD) (ΔFPD 2 weeks = FPD 2 weeks - FPD 2 days, ΔFPD 4 weeks = FPD 4 weeks - FPD 2 days) were calculated. AF recurrence within 2 months post CPVI was defined as early recurrence. Results: ΔFPD 2 weeks in early recurrence of AF (ERA group, n=21) was significantly longer than that in late recurrence of AF (LRAF, n=8), (4.2±9 vs. -6.6±11.7, p=0.04). However, ΔFPD 4 weeks in LRAF group was significantly longer than that in ERAF (14.2±7.6 vs. 6.8±9.5, p=0.02). Conclusion: The timing of recurrence of AF affected the serial changes of P-wave duration after CPVI.

Keywords: atrial fibrillation, P-wave duration, SAE