The Relationship between Internal Cardioversion Threshold or Post-Cardioversion Sinus Node Recovery Time and Atrial Structural or Autonomic Neural Remodeling in Persistent Atrial Fibrillation

Junbeom Park, Hoyoun Won, Hee-Sun Mun, Jin Wee, Jae Min Shim, Jae-Sun Uhm, Hye Jin Hwang, Jong Youn Kim, Boyoung Joung, Moon Houng Lee, Hui-Nam Pak

Yonsei University Health System, Seoul, Korea

Background: We hypothesized that cardioversion (CV) threshold and post-CV sinus node recovery time (PC-SNRT) are related with cardiac autonomic nerve function or atrial structural remodeling in persistent atrial fibrillation (PeAF).

Methods: We included 74 patients with PeAF (62 males, 54.8±10.5 years old) who underwent radiofrequency catheter ablation (RFCA) and maintained sinus rhythm at the time of 3rd month Holter without taking any anti-arrhythmic drug or beta-blocker. At the beginning of RFCA, we delivered internal CV 2, 3, 5, 7, and 10J serially, and measured CV threshold and PC-SNRT.

Results: 1. The patients with CHADS2 score>=1 showed higher CV threshold than those with 0 (8.3±2.1J vs. 6.2±2.5J, p=0.034). 2. CV threshold of the patients with left atrial(LA) volume>=120mL was significantly higher than those of patients with<120mL(8.2±2.2J vs. 6.4±2.7J, p=0.034). 3. PC-SNRT of the patients with LA-AP diameter (>=45mm) by echocardiography were significantly longer than that of the patients with<45mm (1422.2±1031.7ms vs. 1060.2±448.2ms, p=0.05). 4. PC-SNRT was correlated with 3rd month heart rate variability(HRV) including SDNN (R=0.400, p=0.005), HF (R=0.480, p=0.001), but not related with clinical recurrence of AF after RFCA.

Conclusion: Both CV threshold and PC-SNRT were significantly greater in patients with atrial structural remodeling, but were not related with clinical outcome of RFCA in PeAF.

Keywords: cardioversion, persistent atrial fibrillation, sinus recovery time