COMPLEX FRACTIONATED ATRIAL ELECTROGRAMS RELATED TO LEFT ATRIAL THICKNESS

Authors: Jin Wi, Hee-Sun Mun, Jae-Sun Uhm, Jaemin Shim, Jong-Youn Kim, Hui-Nam Pak, Moonhyoung Lee, Boyoung Joung, Division of Cardiology, Department of Internal Medicine, Yonsei University College of Medicine, Seoul, South Korea

Background: The mechanism of complex fractionated atrial electrogram (CFAE) in patients with atrial fibrillation (AF) remains controversial. This study investigated the relationship between CFAE and left atrial (LA) thickness.

Methods: We measured CFAE of LA in 31 patients (25 men, 56.8 ± 9.1 years) with paroxysmal (n = 12) or persistent (n = 19) AF before ablation. Using multidetector computed tomography, we measured LA wall thickness at 31 sites of LA. In 15 patients including 13 PeAF, CFAE mapping was performed before and after PV isolation (PVI). CAFE was identified using an automated CFAE algorithm in NavX system.

Results: There was a large range of LA wall thickness (average 2.02 ± 0.29 mm, range 1.55-2.60 mm) between patients. In addition, there were significant regional differences in LA wall thickness. Each patient had average 7.3 ± 3.6 CFAE sites. The thickness of 226 sites with CFAE (2.43 ± 0.65 mm) was thicker than 735 sites without (1.78 ± 0.54 mm, p<0.001). This finding also observed in both PAF (2.58 ± 0.70 vs. 1.70 ± 0.51 mm, p<0.001) and PeAF (2.35 ± 0.61 vs. 1.83 ± 0.56 mm, p<0.001). In 19 (61%) out of 31 patients, including 9 PAF and 10 PeAF patients, LA wall thickness and CFAE area was well matched showing CAFE at thicker LA regions. Among 226 CFAE sites, LA wall was thicker in patients with PAF than in those with PeAF (2.58 ± 0.70 vs. 2.35 ± 0.61 mm, p=0.011). There was a tendency that CFAE sites without change after PVI had thicker LA than those with change (2.55 ± 0.78 vs. 2.28 ± 0.58 mm, p=0.069) in patients with PeAF.

Conclusions: The LA wall thickness and CFAE area were well correlated suggesting that the mechanism of CFAE was related to LA wall thickness.