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Spatial Distribution of Complex Fractionated Atrial Electrogram and Dominant Frequency Area in Patients with Atrial Fibrillation

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It remains to be determined whether the sites showing complex fractionated atrial electrogram (CFAE) during atrial fibrillation (AF) are closely related to those registered dominant frequency (DF) obtaining by frequency spectrum. We hypothesized that co-localized sites of CFAE and high value of DF indicate a rapidly firing focus in AF, in contrast, sites of CFAE without accompanying DF demonstrate bystander-fibrillatory conduction. We explored the spatial relationship of CFAE with the highest DF and arrhythmogenic foci. Methods Eleven patients [6 paroxysmal AF (PAF), 49경8 yrs old, and 5 chronic AF (CAF), 55경11 yrs old] whose arrhythmogenic foci were reproducibly identified, were included. Color coded CFAE (곑120 ms) map and DF map during AF were generated by contact bipolar electrogram (70~100 points) in the left atrium (LA) and pulmonary veins (PV) obtained during 6 sec-segment of AF using NavX system. CFAE and DF maps were divided into 16 areas (4 quadrants and 4 PVs in anterior posterior view and posterior anterior view, respectively), and each area was classified whether arrhythmogenic focus was included. **Results :** 1. The mean highest DF in PAF (17.5+/-1.6 Hz) was higher than in CAF(15.9+/-2.62Hz). 2. Arrhythmogenic focus matched with the sites co-localized CFAE and DF in all PAF and CAF patients. 3. CFAE was also noted at the interatrial septum in 91%, however, DF did not correspond to CFAE in 3 (27%) patients. 4. The number of DF sites (3.8경0.7) was slightly higher than that of CFAE (3.4경0.8, NS) and each was higher in PAF (DF:4.2경0.7, CFAE:3.8경0.8) than in CAF (DF:3.4경0.8, CFAE:3.0경1.0). Conclusions Co-localized site of CFAE and the highest DF indicated arrhythmogenic foci in patients with focally-initiated PAF and CAF, however, the sites with CFAE not perfectly matched with the highest DF, such as interatrial septum, were more likely due to bystander fibrillatory conduction. Further study is required to clarify whether the incorporation of CFE map and DF analysis enhances to reveal underlying mechanisms of AF and guide more effective therapy.

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The left ventricular systolic dysfunction might be correlated with elevated pro BNP following attack of paroxysmal atrial fibrillation

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Purpose : Plasma pro brain natriuretic peptide (pro-BNP) is elevated in patients with paroxysmal atrial fibrillation (PAF). The aim of this study was to evaluate the determinant to elevate the BNP after attack in patient with PAF. **Methods :** We enrolled 34 patients (62.4±16.7 yrs, male 17(50%)) with paroxysmal attack of AF and terminated spontaneously or by cardioversion within 7 days. We measured the C-reactive protein (CRP), pro-BNP, thyroid function related hormone like thyroid stimulating hormone, T3 and free T4, left ventricular ejection fraction (LVEF), left atrial diameter and heart rate during AF. **Results :** The level of BNP was elevated in most of patients (2593.5±4840.1 pg/mL). There were normal LVEF (57.0±13.0%) and LA diameter 41.2±8.5 mm), rapid heart rate (125.4±22.3 bpm) and elevated CRP level (19.1±29.3 mg/dL). The level of pro-BNP was significantly correlated with LVEF (p=0.13). **Conclusions :** The pro-BNP might be more elevated in patients with low LVEF following paroxysmal attack in AF. However, further study might be needed.