A Case in Which Complex Fractionated Atrial Electrogram Area within Persistent Left Superior Vena Cava Indicates Atrial Fibrillation Driver Site

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Introduction: Definition of a complex fractionated atrial electrogram (CFAE) during atrial fibrillation (AF) vary according to the studies. We are using CFAE mean, a feature of EnSite Velocity System (St. Jude Medical, Minnesota, USA) to define CFAE as follows: fractionated interval (FI) < 50 msec, refractory ≥ 30 msec, sensing voltage ≥ 0.04 mV, recording time = 5 seconds for three times. If the CFAE area is not displayed using this basic CFAE mean setting, the variables are adjusted to display localized CFAE area. We experienced a patient with paroxysmal atrial fibrillation (AF) in which the adjusted CFAE area within the persistent left superior vena cava (PLSVC) indicates the AF driver site.

Methods: N/A

Result: A 67-year-old Japanese female underwent catheter ablation (CA) for paroxysmal AF. Sinus rhythm turned to AF during CA, and this AF continued after pulmonary vein (PV) isolation completion. Electrical defibrillation temporally terminated AF but immediately and repetitively recurred due to the non-PV foci originated from PLSVC. Thus, CFAE mapping within PLSVC was conducted during AF. While the basic CFAE setting did not display any CFAE area, changing FI from 50 to 70 msec showed localized CFAE area within the PLSVC adjacent to the infero-anterior aspect of the left inferior PV (Figure A, B). Radiofrequency ablation to this site (Figure C) terminated AF and rendered AF to non-inducible after that.

Conclusion: The adjusted CFAE setting was useful to display localized abnormal electrical activity within the PLSVC that indicates the location of the AF driver site during AF.