Successful ablation of atypical atrial flutter originating in left atrium with diffuse low-voltage activity by using an ultra-high density mapping system

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Introduction: Ablation therapy for atypical left atrial flutter is a challenge and time-consuming procedure because of anatomical abnormalities, variable reentrant circuit, and difficulty in identifying the ablation target. A new ultra-high density mapping system (Rhythmia) has reported enabling fast acquisition of cardiac electrocardiograms and low voltage signals might be beneficial for mapping and ablation of atypical atrial flutter.

Methods: A 52-year-old female experienced palpitation with dyspnea for one month. ECG showed atrial flutter with 4:1 atrioventricular conduction. The amplitude of the P waves was significantly low in the 12 leads of surface ECG. An ultra-high density mapping system was used for mapping of the atrial flutter.

Result: Diffused low-voltage was detected in the left atrium (LA). The activation mapping demonstrated the atrial flutter wavelets propagated throughout the anterior wall then the posterior wall of LA. A slow conductive isthmus of the atrial flutter reentry circuit located in the anterolateral wall of LA was identified by the ultra-high density mapping system. Successful ablation was achieved by delivery of radiofrequency energy over the slow conductive isthmus.

Conclusion: The ultra-high density mapping system is useful for rapidly determining the detailed reentry circuit and ablation target for atypical flutter originating in the LA with diffused low-voltage activity.