The role of ultra-high density mapping system to unveil hidden signals: A case report

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Abstract

Background: Atypical atrial flutter (AAFL) is often associated with structural heart disease, especially in patients that have undergone cardiac surgery or extensive catheter ablation for the treatment of AF.
Methods: We present the case of a 60-year-old female with history of multiple AF ablations referred to our hospital for symptomatic persistent AAFL that was finally eliminated using a novel ultra-high density (UHD) mapping system. The 3-D atrial geometry was created from the basket mapping catheter IntellaMap ORION™ and the RHYTHMIA™ Mapping System. A trans-septal access was carried out in order to complete the electro-anatomic map of the left atrium.
Results:The activation map revealed an isthmus of slow conduction localized along the inferior part of the left inferior pulmonary vein. Analysis of EGM potentials revealed a concordance with the meso-diastolic activation. Interesting, the appearance of these potentials were detectable only on Orion basket whereas the ablation catheter did not revealed any sign ofatrial activation. A single shot radiofrequency application of less than 60 sec along the critical isthmus channel promptly interrupted the arrhythmia and the sinus rhythm was restored. Patient remained free from AAFL recurrence and symptom after 6-month follow-up.
Conclusions:In this case the small, close, and low-noise mini-electrodes of Orion catheter allow us to identify the critical isthmus of arrhythmia (represented by an extremely low voltage meso-diastolic potential) completely not recognizable by the ablation catheter. UHD mapping seems to be of a primary importance in patients with substrate-related atrial tachycardia and previously failed ablation.

Image

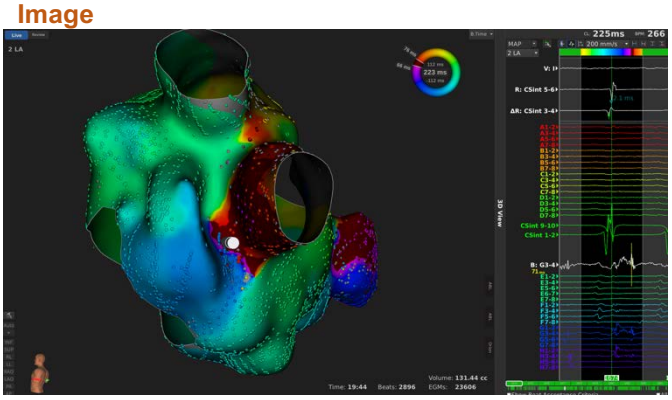


Fig.1 Ablation along the critical isthmus channel

Recent Publications (minimum 5)

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A.Piro, M. Alfarano, C.Lavalle, A. Ciccaglioni, P. Franciosa, G.Giunta, P. Scarparo, M. Vassallo, S. Cimino, M. Mancone, F. Fedele, Abstract 15°Congresso AIAC 2018
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3 “Ablazione di Tachicardia Ventricolare in paziente con trombosi apicale del ventricolo sinistro”A. Piro, C. Lavalle, C. Pandozi, M. Russo, M. Galeazzi, M. Sgueglia, F. Palano, F. Colivicchi. 2014. Poster P106, 75° Congresso Nazionale SIC
4 “Initial experience with three-dimensional anatomical mapping during cardiac pacing lead extraction”BL. Nguyen, A. Persi, S. Poggi, G. Riitano, A. Piro, C. Gaudio, G. Giunta, A. Ciccaglioni, RJ. Siegel, ES. Gang. Cardiology, 2013, vol. 125(suppl 2), p. 66, ISSN: 0008-6312
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BL. Nguyen, A. Persi, S. Poggi, A. Placanica, G. Riitano, A. Piro, G. La Torre, G. Piccirillo, C. Gaudio, ES. Gang, A. Vitarelli, RJ. Siegel. Journal of Arrhythmia, 2013, vol.29, issue 5, P3-072

Photograph



Biography Dott. Agostino Piro

Dr Piro is a research fellow at “Sapienza” University of Rome. He is an ECDS (EHRA Cardiac Device Specialist, certification from EHRA) and conducts activities in the field of cardiac electrophysiology with a specific emphasis on catheter ablation of AVNRT, AVRT, Atrial Tachicardia, Atrial Flutter, Atrial Fibrillation and Ventricular Arrhythmias performed either with conventional technique or with cardiac navigation and mapping system (Carto, Rhythmia,Navx). He also conducts activities in the field of cardiac pacing with emphasis on ICD/CRT in heart failure, leads and devices extractions, management of cardiac arrhythmias.

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