Abstract: P1012

High density mapping of atrial tachycardias after previous ablation of persistent atrial fibrillation - More learning, better burning?

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Citation:
Introduction: Recurrent atrial tachycardias (AT) after ablation of persistent atrial fibrillation (AF) including substrate modification on top of pulmonary vein isolation (PVI) only, are complex and challenging procedures. Key to an effective reablation is the understanding of the individual pathomechanism and therewith identification of proper ablation targets. The aim of this study was to evaluate the potential of 3-D high density mapping to better define the underlying tachy-mechanism and successful ablation strategy.

Methods: 24 consecutive patients (pts) with stable ATs after previous ablations of AF or left atrial atypical flutter were prospectively included. High density activation mapping with the CARTO 3 System (Biosense Webster) using a Penta Ray mapping catheter (2-6-2 spacing) with the Confidence software module for automated mapping (Tissue proximity indication on, strict to moderate settings for position and local activation time settings) aiming for a minimum of 2000 mapping points with minimum density of 1mm was performed. The maps were analyzed and an ablation strategy developed based on the suspected AT mechanism. Acute success was defined as termination of the arrhythmia during ablation following the initial strategy: in focal AT, termination with =3 ablations in the predefined area. In makroreentry tachycardia, termination during completion of predefined linear target.

Results: 24 pts (13 f/9 m), age 68 ±8 y with ECG diagnosed AT after ablation of persistent AF were included. At baseline patients had undergone a mean of 2.1 (range 1 to 5) ablation procedures for persistent AF with the first procedure performed 1.8 y (range 3- mon- 8 y) earlier. In 88 % of the pts additional ablations (=3 lines and/or rotor ablation) were added to PVI in earlier procedures. 33 ATs (29 LA, 2 CS, 2 RA) in 24 pts with a mean cycle length of 324 ms (range 210 to 580 ms) were analyzed: 45 % macroreentries (15/33) including 2 RA-ATs, 27 %microreentries (9), 15 % focal (5), including 2 at the CS ostium and 3% (1) micro or focal ATs were identified. 4 AT maps were inconclusive (3 after multiple previous ablations and in patient due to multiple alternating ATs, 1 in retrospective analysis defined focal). All 14 ATs with focal / microreentrant pattern were successfully ablated with £3 ablations and 11/15 of the macros with the first attempted approach. Total procedure time was 140 ±40 min (60 to 220 min), fluoroscopy 16 ±9 min.

Conclusion: High density mapping of recurrent ATs after ablation of persistent AF is an effective tool to reveal the pathomechanism of the tachycardia and develop an effective individual ablation strategy in complex substrates with a high acute success rate of the first attempted approach based on this information.
Abstract: High density mapping of atrial tachycardias after previous ablation of persistent atrial fibrillation – a promising tool to better define the underlying tachy-mechanism and successful ablation strategy.

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