New System for Rapid, High-Resolution Automated Mapping in Patients with Macroreentrant Atrial Tachycardia

Hiroshi Nakagawa
Heart Rhythm Institute, University of Oklahoma, Oklahoma City, OK, USA

Introduction: We tested a new mapping system (Rhythmia Medical) for high resolution automated electro-anatomical mapping (HRAM) in patients with macroreentrant atrial tachycardia (Macro-AT). Methods: The system uses an 8F deflectable catheter with basket array (1.6 cm diam) of 8 splines of 8 electrodes (2.5 mm spacing), totaling 64 electrodes. The system automatically generates chamber geometry and a HR activation map using all electrograms (EGMs) recorded within 5mm of the chamber surface. The system automatically acquires EGM and location information based on EGM stability and respiration phase. In 10 patients with LA Macro-AT (4 pts), RA Macro-AT (1 pt), Typical AFL (4 pts) or AF (1 pt), HRAM were obtained during Macro-AT or AFL (6pts) or CS pacing (4 pts). Conventional point-by-point 3D maps were also obtained in 7 pts during Macro-AT or CS pacing. Results: The new system produced very HR maps from 6026 ± 3506 EGMs, obtained in only 11.5 ± 4.5 min. Compared to conventional point-by-point maps in 7 pts, HRAM included more EGM sites (6525 ± 1739 vs 378 ± 58 ), had higher resolution and required less time (11 ± 3 min vs 30 ± 3 min). HRAM successfully identified the channel in AT circuit and confirmed isthmus block in AFL pts. Conclusions: The new HRAM system accurately and quickly identified the RA or LA macroreentrant circuit.

Keywords: catheter ablation, atrial fibrillation, atrial tachycardia