Physician feedback on the use of activation mapping with integration of vector and velocity information

Yenn-Jiang Lin
Livio Bertagnolli
Christian Meyer
Nicolas Derval
Malte Kuniss
Lars Karlsson
Jean Paul Albenque
Jérôme Lacotte
Mattias Duytschaever

Introduction: Activation maps of atypical atrial tachycardias (AT) are often difficult to interpret because of a variety of factors (e.g. inaccurate/inconsistent annotations, multiple activation patterns etc.). An activation mapping algorithm (Coherence Map, CM) integrating vectors was developed to help determine the arrhythmia mechanism, identify its critical components, and simplify the activation representation of complex scar-related arrhythmias. The objective of this evaluation was to gather clinical feedback from operators and evaluate the general acceptance of the concepts behind activation mapping integrating vectors, its visualization elements and performance, and its ability to serve as an efficient tool for mapping complex, scar related arrhythmias such as atypical atrial flutters.

Methods: The evaluation was performed through prospective, multi-center systematic physician surveys of performance evaluation across 10 sites in EMEA and 1 site in Taiwan, with feedback from a total of 184 cases. Majority of the mapping was performed with either Pentaray catheter (159) or Lasso catheter (20).

Result: Majority (120/184) of the arrhythmias was identified as macro-reentrant AT. Overall satisfaction of CM features was high (5.79 / 7.00 Likert scale). Physicians’ feedback revealed that in 93% of the cases, CM represented activation maps the same or better than regular Local activation time (LAT) maps; in 72% of the cases, CM was rated better than LAT (Figure). Final ablation strategy was based, all or in part, on CM in 154 of the 184 cases recorded. In 78 cases, only CM was used. Lastly, in 41% (76 / 184) of the cases, CM provided additional information to the physicians leading to changes in ablation treatment strategy.

Conclusion: The novel CM represented atypical AT better than regular LAT maps in the majority of cases and had a significant impact in the final ablation strategy.