SINGLE BEAT RESETTING RESPONSE CAN BE USED INSTEAD OF ENTRAINMENT TO IDENTIFY PROXIMITY TO AN ARRHYTHMIA CIRCUIT

Introduction: Entrainment is invaluable to localize reentrant circuits but may terminate or change an arrhythmia. We evaluated single beat resetting response as an alternative to entrainment.

Methods: We examined the difference resetting curves from two different pacing sites in patients with typical cavotricuspid isthmus (CTI) dependent atrial flutter. Resetting curves were plotted using response to extrastimulation (S2) from the proximal coronary sinus (CS) or CTI and compared to the response from the distal CS in 7 patients undergoing ablation. Each point was normalized to the tachycardia cycle length (TCL) and expressed as a fraction of the TCL. The S2 coupling interval was plotted on x-axis and the return CL interval was plotted on the y-axis. A receiver operating curve (ROC) was generated to determine the optimal Return Cycle Length fraction.

Results: The mean AFL CL was 242 ± 87 msec. A total of 41 points within and 33 points outside of the arrhythmia circuit were plotted (figure). Late coupled extra-stimuli (>0.85 TCL) from the proximal CS/CTI uniformly resulted in a RCL of < 1.1 TCL which was not observed in sites remote from the arrhythmia circuit (distal CS). Later coupled S2s (>0.9 TCL) from the distal CS did not reset the tachycardia. The C statistic for the ROC was 0.96 with an optimal Return Cycle Length fraction of 1.11 (Sensitivity 1.0, Specificity 0.93).

Conclusion: Response to late-coupled single beat resetting (>0.85 TCL) will localize a site within an arrhythmia circuit without entrainment.