Ablation index (AI) value for point-to-point ablation of typical right atrial flutter

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Introduction: The ablation index (AI, Biosense Webster, Johnson & Johnson, USA) is a novel marker incorporating contact force-time (FTI, Biosense Webster, Johnson & Johnson, USA) and power, was shown to be reliable in predicting lesion size and depth for radiofrequency delivery. The AI value is a marker of tissue contact and ablation depth developed particularly for atrial fibrillation treatment. We sought to evaluate if the AI value can be also a marker of lesion efficacy during cavotricuspid isthmus (CTI) ablation for typical right atrial flutter.

Methods: We assessed the AI values in patients undergoing typical right atrial flutter point-by-point ablation guided by the CARTO 3 V4 (Biosense Webster, Johnson & Johnson, USA) electroanatomic mapping system. The distance of point to point is <5mm (4.1 ± 1.1mm). AI and FTI values were collected before, during, and after radiofrequency (RF) delivery. The physician was blinded to AI/FTI and judged ablation efficacy according to standard parameters (impedance drop 10Ω (11.9 ± 6.4Ω), local potential reduction, and/or split in two separate potentials). Patients were followed up at 6 months.

Result: Twelve consecutive patients (9 males, mean age 60.8 ± 10.1 years) with a history of typical right atrial flutter were included in this study. A total of 157 RF applications were assessed. The average length of ablation line in tricuspid isthmus was 35.4 ± 6.3mm. At ablation point, the average pressure was 12.3 ± 5.6g. The mean AI value was 438.5 ± 43.5, the mean FTI value was 327.8 ± 123.9. The AI value 452 after ablation were identified by the ROC curve as the best cutoff value to discriminate between effective and ineffective ablation (sensitivity 57.73%, specificity 88.33%). When the power is fixed, AI is well correlated with FTI, the correlation coefficient was 0.90. Acute and 6-month success rates were 100% and 91.67%.

Conclusion: The AI value appeared a reliable index to guide CTI ablation, AI 452 during radiofrequency energy delivery was accurate in identifying effective lesion.