LSI to assess the adequacy of lesion formation for typical atrial flutter

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Introduction: The purpose is to describe the use of lesion index (LSI) to assess the adequacy of lesion formation in ablation of typical atrial flutter (AFL). The appropriate LSI value for the CTI has not been established. LSI is calculated by the formula: $\text{LSI} = \text{CF (g)} \times \text{Current (mA)} \times \text{Time (sec)}$.

Methods: 18 patients with a history of AFL in NSR at the time of presentation, underwent ablation of the CTI. Pacing was performed from the distal pole of the ablation catheter during ablation at 2x diastolic threshold. Ablation lesions were delivered until pacing no longer captured and the corresponding LSI value was noted. Ablations lesions were delivered until Bi-directional block was achieved in all patients.

Result: In the proximal 1/3 of the isthmus, the LSI was 4.71 (+0.91) and the RF time was 28.7(+17.8) sec, middle 1/3 LSI was 5.40 (+0.94) and the RF time was 26.6(+17.4), distal 1/3 LSI was 4.62 (+0.92) sec and RF time was 22.1 (+10.7) sec. In comparison to the other locations, the middle 1/3 of the CTI required a higher LSI value (p=0.0004) to achieve an adequate lesion.

Conclusion: Anatomic studies have shown that the middle 1/3 of the CTI is thicker than the proximal and distal 1/3. The LSI value needed to achieve a lesion varies according to the location within the CTI with the thickest part of the CTI requiring a higher LSI value and increased number of ablation lesions.