Radiofrequency catheter ablation of atrioventricular nodal reentrant tachycardia using standardized voltage mapping system protocol

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Background: according to European guidelines, ablation has become the treatment of choice in patients with symptomatic atrioventricular nodal reentry tachycardia (AVNRT). Despite the high procedure success rate, anatomical variations can affect the outcome in terms of relapses and complications. As recently demonstrated, low-voltage bridge visualization allows low pathway identification and therefore a new ablation strategy.

Purpose: our purpose was the validation of standardized ablation protocol within the low-voltage bridge area.

Methods: 70 consecutive patients with inducible AVNRT were evaluated and a three-dimensional voltage map of the right atrial septum and Koch Triangle was constructed by means of contact mapping. Ablation site was identified as the low-voltage area below the His bundle, adjusting the high-voltage slider to 1,5 mV and dynamically adjusting the slider of low-voltage. Radio-frequency energy (with an average number of nine lesions per patient) was then delivered within this area until the appearance of junctional beats. The results were tested at the end of the procedures and during the observational period (the mean follow-up was 10,5 months).

Results: the slow pathway was identified by the low-voltage bridge in 60 patients (85,6%) and in these patients, the target lesions in that area finally prevented induction of AVNRT in 100% of cases. A zero-fluoroscopy approach was possible for 50 patients (83%). Compared with standard AVNRT ablation, no complications as well as no statistical differences in terms of total procedure time were observed (p = 0,056). 59 patients (98%) had no relapses during the follow-up.

Conclusions: voltage gradient mapping successfully targeted the slow pathway in most of our cases. Lesions on the voltage bridge led to effective ablation of AVNRT and to a drastic x-ray exposure reduction in the absence of acute or long-term complications.

Abstract Figure. Last lesion on low-voltage bridge.