6.6 ABLATION OF ATRIOVENTRICULAR NODAL REENTRANT TACHYCARDIA (AVNRT) USING SHORT RADIOFREQUENCY ENERGY DELIVERY

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Introduction: Catheter ablation of atrioventricular nodal reentrant tachycardia (AVNRT) is usually performed by delivering radiofrequency (RF) energy at the slow pathway region during 60 to 90 seconds. The efficacy of shorter applications has not been evaluated.

Aim: to assess the efficacy and safety of short applications of radiofrequency energy to the slow pathway region.

Methods: Ninety-eight consecutive patients with AVNRT (40 males, age 50±16) underwent RF ablation. RF energy was delivered to the slow pathway region for a maximum of 20 seconds. If junctional beats were obtained, electrical stimulation was repeated to assess inducibility of AVNRT. If not, ablation catheter was repositioned and an additional 20 seconds application was performed. Only if despite obtaining junctional beats AVNRT remained inducible, RF delivery was prolonged for a maximum of 60 seconds. The procedure was considered successful if AVNRT remained inducible under programmed stimulation at baseline and under isoproterenol infusion. Patients were followed at 3, 6 and 12 months after the procedure.

Results: AVNRT ablation was considered successful in 90/98 (92%) pts. 77/90 pts were successfully ablated by RF delivery for 20 seconds or less (average 17±4) (Group I). In 13/90 pts RF delivery was prolonged more than 20 seconds (50±15) (Group II) p=0.003. The average of RF pulses for each group was 3.5±2.2 and 8.5±4 respectively (p=0.05). Acute complications were right bundle branch block in one patient and transient AV block in another. During the follow up, recurrence was observed in 2 patients.

Conclusion: AVNRT can be successfully ablated with short pulses of RF energy. This approach may be beneficial in avoiding excessive tissue damage and reducing the risk of AV block.

6.7 SUCCESSFUL RADIOFREQUENCY CATHETER ABLATION OF AV NODAL REENTRANT TACHYCARDIA GUIDED BY SIMULTANEOUS UNIPOLAR AND BIPOLAR SLOW PATHWAY TARGETING

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We identified new electrogram (EGM) characteristics of effective RFA of AVNRT using unipolar and bipolar EGM registration.

Materials and Methods: This study consisted of 31 consecutive typical AVNRT pts (11 female), 40.7±12.6 years of age. All pts underwent EPS and RFA of AVNRT guided by novel approach. Unipolar and bipolar EGMs from mapping catheter were registered using Siemens RECOR-EPCOR system. 1 or 2 RF-applications were used aiming less than 60 seconds in total RF-delivery time. Follow-up was 13±1.2 months.

Results: Novel unipolar EGM-characteristic showed two components – positive low-frequency delta-shaped monophasic complex 34.0±2.9 ms in duration (corresponding to plateau phase of bipolar EGM) preceded the second high frequency atrial biphasic (+/-) deflection (corresponding to R wave on bipolar EGM), Bipolar atrial EGM-characteristics - QR/RS QR-like morphology which was 30.1±5.6 ms long, A/V ratio was 0.8±1.6/1. During 13±1.3 follow-up all the pts remained free out of AVNRT episodes and RFA-related complications.

Conclusion: We propose a novel approach for AVNRT ablation using simultaneous unipolar and bipolar EGM-targeting that correlates with the absence of AV nodal extensions identified earlier by Backer et al.

6.8 LOCALISA SYSTEM FOR SAFE AND EFFECTIVE RADIOFREQUENCY ABLATION OF ATRIOVENTRICULAR NODAL RE-ENTRANT TACHYCARDIA IN YOUNGER PATIENTS


Aim of this study was to evaluate usefulness of LOCALISA system for safe and effective RF ablations in younger pts.

Methods: Twenty-one pts. with AVNRT and treated by RF ablation were divided into two groups according to age: group A, ≤ 15 years and group B, > 15 years. LOCALISA system was used to localize triangle of Koch.

Results: In group A triangle of Koch’s showed a significantly smaller area and a larger number of RF pulses was needed to achieve successful procedure (p<0.001). In the same group, RF ablations were performed in regions closer to the His bundle (p<0.001).

Conclusions: LOCALISA allowed safe and effective RF ablations of AVNRT in younger pts. RF ablations were safely performed very close to the His bundle due to the better vision of the Koch triangle.

7. PULMONARY VEINS: ANATOMY AND TRANSCATHETER ELECTRICAL ISOLATION

7.7 VARIABILITY OF PULMONARY VEIN ANATOMY IN PATIENTS ABLATED FOR ATRIAL FIBRILLATION

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From January 2003 to February 2005, 30 consecutive patients (mean age 54±8 years, 27 male, 3 female) waiting for a catheter ablation of atrial fibrillation underwent gadoxilumine-enhanced magnetic resonance imaging (MRI) before the procedure. Variant pulmonary vein anatomy was observed in 12 (40%) of patients. The most frequent was a common left trunk (5 patients). Right middle pulmonary vein was observed in 4 cases, two right middle pulmonary veins in 2 cases and a common right trunk in 2 cases. One patient showed a common right trunk together with a common left trunk.

Our study demonstrates the high frequency of variant pulmonary vein anatomy in the general population and demonstrates the value of MRI in facilitating catheter ablation of atrial fibrillation. Potential benefits of obtaining preprocedureal MRI include the ability to quantitatively evaluate the number, size, and shape of the pulmonary veins and the eventual choice of alternative mapping or ablation tools.

7.8 CORRELATIONS BETWEEN PULMONARY VEINS DILATION AND ARRHYTHMOGENICITY

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Left atrial stretch and dilatation can favour the development of atrial ectopies and atrial fibrillation (AF). Only few and conflicting data are available about the relationships between the size of the pulmonary veins (PVs) and their arrhythmogenicity.

Aim: to investigate on correlations between the size of the PVs and their arrhythmogenicity.

Methods: Eight patients (mean age 57±13 years; 6 males) with recurrent paroxysmal AF were studied. In every patient only one vein was arrhythmogenic. It was possible to identify the arrhythmogenic pulmonary vein (APV) with the firing focus by means of the analysis of multiple ECG recordings, Holter recordings, and the data of the electrophysiological test. Every patient underwent a cardiac spiral CT and the diameters of the PVs were measured at the ostia.

Results: The APV was: left superior in 62.5%; right superior in 37.5%. In 75% of patients the APV was the vein with the largest diameter. The diameters of the APVs resulted to be significantly larger when compared to the non-APVs (20.4±5.7 mm vs 17.0±3.0 mm; p<0.05). Four patients (50%) showed an additional PV (2 top right and 2 middle right).

Conclusions: Our study, performed in a small number of patients with focal AF, seems to confirm a correlation between the diameter of the pulmonary veins and their arrhythmogenicity.