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Clinical and electrophysiological data of patients with first degree AV block and AV node reentrant tachycardia

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Typical atrioventricular (AV) node re-entrant tachycardia (AVNRT) occurs in patients with dual AV nodal pathway, a rapid pathway used for retrograde conduction and a slow pathway used for the anterograde conduction. In sinus rhythm, the patients have generally the signs of conduction through the rapid pathway with a normal or short PR interval. The purpose of the study was to evaluate the prevalence of patients with 1st degree AV block and with AVNRT and their clinical characteristics.

Methods: 973 patients, 348 males, 625 females, were admitted for typical AVNRT. They were aged from 6 to 90 years (mean age 50±19). Initial ECG and clinical data were collected. Electrophysiological study was systematic.

Results: Spontaneous 1st degree AV block (AVB) was rare and noted in 7 patients. The prevalence of the association 1st degree AV block and AVNRT was 0.7%. Five patients complained of AVNRT at exercise. Two patients had an ischemic heart disease. Patients with AVB were significantly older (71.5±16 years) than patients without AVB (50±19)(p<0.002). AVNRT was induced in control state in 4 patients. The rate of tachycardia was slow between 130 and 150 bpm. AVNRT was induced after isoproterenol in 3 patients and the rate was higher (180 to 200 bpm). Ablation of slow pathway was performed in 6 patients. Transitory 2nd degree AVB was noted in 1 patient. AVNRT was not inducible after ablation. PR interval remained unchanged. At atrial pacing, the rate of 2nd degree AVB occurrence decreased, due to the disappearance of the conduction through the slow pathway. Two patients developed transitory well-tolerated 2nd degree AVB one day after ablation. One patient presented apparent sinus bradycardia related to a concealed conduction through AV node. One year after ablation none of the patients required pacemaker implantation and patients were free of tachycardia.

Conclusions: The occurrence of AVNRT in patients with 1st degree AV block is exceptional and concerns old patients. Ablation of slow pathway might be safely performed without a need of pacemaker implantation. Transitory 2nd degree AVB can be noted the day after ablation.

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In how many patients with Wolff-Parkinson-White syndrome-related adverse presentation isoproterenol infusion was required to reproduce the arrhythmia?

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Electrophysiological study is the main method for the detection of patients with a Wolff-Parkinson-White syndrome (WPW) at risk of adverse presentation (resuscitated ventricular fibrillation (VF), documented life-threatening arrhythmia): the protocol is debated. The purpose of the study was to look in how many patients with WPW-related adverse presentation, atrial fibrillation (AF) or atrial tachycardia with the shortest RR cycle length (CL) with 1/1 conduction over accessory pathway (AP)<250 msec was induced in control state (CS) and when isoproterenol was required.

Methods: 63 patients, mean age 38±18, were referred for WPW-related adverse presentation (VF 6, other 56). EPS included in CS atrial pacing and measurement of the shortest CL with 1/1 conduction over AP and programmed stimulation with 1 and 2 extrastimuli. AP effective refractory period (ERP) was determined. In absence of induction of a tachycardia with a CL <250 msec, isoproterenol (0.02 to 1 µg. min⁻¹) was infused to increase sinus rate to 130 bpm; the protocol was repeated.

Results: Mean shortest CL conducted over AP was 223±30 msec in CS, 192±25 msec after isoproterenol. APERP was 225±29 msec in CS, 191±19 msec after isoproterenol. Atrioventricular orthodromic tachycardia (AVRT) was induced in 34 patients (54%), antidromic tachycardia (ATD) in 13 (21%), AF in 43 (68%). Criteria for a malignant form (induction of AF or ATD with a shortest CL <250 msec) were noted in 42 patients (67%) in CS and were obtained after isoproterenol in remaining 21 patients (33%). Among these patients, 12 had inducible tachycardia in CS (AVRT (n=6), ATD (n=3), AF (n=3) but the shortest CL was >240 msec. A tachycardia was only induced after isoproterenol in 9 patients (14%).

Conclusions: Infusion of isoproterenol should be systematic when WPW is evaluated. EPS performed only in CS missed at least 14% of patients at risk of life-threatening arrhythmias who had no inducible supraventricular tachycardia and 33% of patients with a WPW without the classical criteria for a malignant form. Isoproterenol increased the sensitivity of EPS for the detection of malignant form from 67 to 100%.

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Acute rate of transmural lesions induced by the Epicor system® during peri-operative left atrial ablation for atrial fibrillation

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Introduction: The Epicor system® is based on high intensity focused ultrasound (HIFU) energy used for creating a wide circumferential linear left atrial lesion encircling both left atrial posterior wall and pulmonary veins (box lesion) and provides long-term cure in patients with atrial fibrillation undergoing heart surgery. Whether if acute complete disconnection of the box lesion is achieved by application of HIFU is unknown.

Methods: bipolar pacing and detection into the box lesion was studied in 9 pts (5 men, 77 ±18 yo) undergoing heart surgery (5 aortic valve replacement, 3 mitral valve repair or replacement and one coronary by-pass) using bipolar electrophysiological catheter and a real time telemetry (Medtronic CareLink® programmer), just after completion of the ablation process on the beating heart prior to initiation of extracorporeal circulation. Sinus rhythm was present or obtained using internal cardioversion in each before the ablation process.

Results: Entrance block was absent in 7 (1 to 1 conduction from sinus rhythm inside the box lesion), undetermined in one and present in one (dissociated slow local rhythm). Exit block was lacking in 6 (capture of the cardiac rate by pacing inside the box lesion) and present in 3 (dissociated sinus rhythm from the paced area).

Conclusion: Acute complete block of the Epicor® HIFU induced box lesion is lacking in the vast majority of pts despite completion of the energy deliverance according to the automated ablation process. Whether block later happens, or whether supplementary applications would increase the electrophysiological and clinical success rate is unknown.

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Treatment of unexplained syncope: A multicenter, randomized trial of cardiac pacing guided by adenosine 5'-triphosphate testing

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