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Is There a Connection Between the Right Superior Vena Cava and Patients With Atrial Fibrillation?

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Background: Ectopic atrial activity in the pulmonary veins (PVs) and superior vena cava in Patients With Atrial Fibrillation?

Methods: We report our experience in 179 consecutive patients (mean age 53±11 years, 79% male) undergoing catheter ablation for AF. Atrial tachycardia was paroxysmal in 99 patients, persistent in 26 and permanent in 54 patients. All patients had ≥3 ≥0.95 antiarhythmic drugs.

Results: Sustained atrial arrhythmias originating from the SVC were observed in 5.5% (10 out 179 patients). In all of these patients AF appeared to originate from the right upper PV (RUPV). After isolation of the RUPV, 7 patients developed spontaneous atrial tachycardia originating from the SVC (cycle length ranging from 170 to 260 ms). In the remaining 3 patients, firing of the SVC continued to lead to AF. After successful SVC isolation all 10 patients remained arrhythmia-free.

Conclusion: Superior vena cava foci triggering atrial arrhythmias appear to be consistently associated with the presence of right upper PV focus. This may suggest an interdependent connection between these 2 structures, or reflect a common embryological origin. In patient showing RUPV firing ablation in the SVC may be required to maximize long-term cure.

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Atrial Electro-Anatomical Remodeling as a Predictor of the Success of Circumferential Pulmonary Vein Ablation for Atrial Fibrillation

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Background: Circumferential radiofrequency (RF) ablation around pulmonary veins (PV) is a promising approach for curing atrial fibrillation (AF), but is very effective on sources and substrate is still unclear. Identification of factors affecting success could give insight into the mechanism and aid patient selection.

Methods: Between 1999 and 2010, 900 patients with paroxysmal (n=699) or permanent (n=201) AF (79% male, age 59±9 years, AF duration 7±2.5 years; 59% with structural heart disease) were studied. All of these pts showed additional ST-segment elevation (> 0.15 mV) in at least 2 leads as X, Y, Z, respectively. P wave dispersion (Pd) was estimated from the difference between the maximum and minimum duration of signal-averaged P wave (Pmax, Pmin). Pre-RF clinical factors or effective PV trigger isolation may not be critical to achieve AF suppression. Benefits of circumferential PV ablation appear to depend on the degree of atrial electroanatomical remodeling and related probability of AF inhibition and maintenance.

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Intravascular Conduction Abnormalities in Patients With Brugada-Type ECG Estimated By P Wave Triggered Signal-Averaged ECG

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Background: Brugada syndrome is often accompanied by atrial tachyarrhythmias including paroxysmal atrial fibrillation (PAF). Underlying mechanisms for the atrial tachyarrhythmogenicity are unknown.

Methods: Fifteen patients (pts) (all males, 45±6 years) with Brugada-type ECG (RBBB with low-amplitude QRS complexes in the right inferior leads; without organic heart disease) were studied. All of these pts showed additional ST-segment elevation (> 0.15 mV) in response to picrotoxin administration (1 mg/kg, i.v.). Two pts had syncopal events, and one had a family history of sudden death. Remaining 12 pts were asymptomatic, but ventricular fibrillation (VF) during VF inductions in 4 of the 5 pts who underwent EPS were not observed. No organic heart diseases were studied. All of these pts showed additional ST-segment elevation (> 0.15 mV) in response to picrotoxin administration (1 mg/kg, i.v.). Two pts had syncopal events, and one had a family history of sudden death. Remaining 12 pts were asymptomatic, but ventricular fibrillation (VF) during VF inductions in 4 of the 5 pts who underwent EPS were not observed. No organic heart diseases were studied. All of these pts showed additional ST-segment elevation (> 0.15 mV) in response to picrotoxin administration (1 mg/kg, i.v.). Two pts had syncopal events, and one had a family history of sudden death. Remaining 12 pts were asymptomatic, but ventricular fibrillation (VF) during VF inductions in 4 of the 5 pts who underwent EPS were not observed. No organic heart diseases were studied. All of these pts showed additional ST-segment elevation (> 0.15 mV) in response to picrotoxin administration (1 mg/kg, i.v.). Two pts had syncopal events, and one had a family history of sudden death. Remaining 12 pts were asymptomatic, but ventricular fibrillation (VF) during VF inductions in 4 of the 5 pts who underwent EPS were not observed. No organic heart diseases were studied.