Pulmonary Vein Electrical Isolation for the Cure of Paroxysmal Atrial Fibrillation
Guided by a Novel Geometry Mapping System

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Abstract
Objectives: The purpose of the study is to evaluate the feasibility and effect of left wall (LA) ablation guided by a novel geometry mapping system in the treatment of older patients with paroxysmal atrial fibrillation (PAF). Methods: Regular electrophysiological study was conducted to exclude atrioventricular reentrant tachycardia (AVRT) with accessory pathways, atrioventricular nodal reentrant tachycardia (AVNRT) and other inducible tachyarrhythmias. Twice transseptal puncture was achieved with L1 and R1 Swartz sheaths. Pulmonary vein (PV) angiographies were conducted to evaluate their orifices and branches. LA geometry was constructed under either sinus rhythm or PAF using Ensite3000 Navx system. Two lesion loops and three lines (see details in the text) for electrical isolation were outlined and created by radiofrequency catheter ablation on the three-dimension geometry of LA. Each lesion point was ablated in 30 seconds with preset temperature 50°C and energy 30W. The disappearance or 80% decrease of the amplitude of LA target potential and 10 to 20 Ω decrease of ablation impedance were used as effective index. Results: Three patients included two males and one female of age 67.3±3.6. PAF history was 7.4±5.1 years. Mean 3.5±1.2 antiarrhythmic agents were used in 5.7±2.3 years without PAF effectively prevention. No organic heart diseases and stroke complications were founded. Left atrium was 38.7±3.2 mm and LVEF was 58.6±4.3 on echocardiography. Altogether 59-126 (63.7±11.2) lesion points were created to complete two loops and three lines. Rapid burst pacing up to 600 beats per minute was delivered from the distal coronary sinus electrode pair without PAF provoked. The procedure time was 2.8±0.7 hours and fluoroscopy time was 19.6±8.3 minutes. Patients were discharged with long-term oral warfarin and without any antiarrhythmic agent. During the follow up of 5.6±2.3 months, one patient was free of symptom and PAF attacks were decreased more than 80% in the other two patients by evaluation of Holter monitoring. Conclusions: Ensite3000 Navx guided LA wall ablation near PV orifice to cure PAF in the elderly is safe and feasible and has the advantages of clear procedure endpoint, shorter X-ray exposure, less complication and satisfied long-term effect. Large number of cases and long-term follow up data are
needed to validate these primary results. (J HK Coll Cardiol 2004;12:58-63)

Keywords: Electrophysiology, paroxysmal atrial fibrillation, radiofrequency ablation