Catheter ablation of left atrial focal tachycardia guided by electroanatomic mapping and new insights into interatrial electrical conduction.

BACKGROUND: Experience in catheter ablation of left atrial (LA) focal tachycardia and information about interatrial electrical connections during LA focal tachycardia are limited.

OBJECTIVES: The purpose of this study was to describe our experience in electroanatomic mapping-guided catheter ablation of LA focal tachycardia and to investigate interatrial electrical connections during LA focal tachycardias.

METHODS: Thirty-three patients undergoing catheter ablation for LA focal tachycardia guided by electroanatomic mapping were reported. Interatrial electrical connections were analyzed in LA focal tachycardias with biatrial electroanatomic maps.

RESULTS: Of the 35 LA focal tachycardias (cycle length 309 +/- 100 ms) mapped, 19 (54%) originated from the pulmonary veins (PVs), 6 (17%) from the mitral annulus, 3 (8.6%) from LA roof, 3 (8.6%) from LA posterior wall, 2 (5.7%) from LA appendage, and 2 (5.7%) from LA septum. Fourteen of the 19 PV tachycardias (74%) were located in proximity to PV ostia. In 14 (7 PV, 7 non-PV) LA focal tachycardias with biatrial electroanatomic maps, posterior right atrium breakthrough sites at the intercaval area were identified in 7 PV tachycardias and 1 non-PV tachycardia. Five of the 7 PV tachycardias used only the posterior breakthrough for interatrial
propagation. Procedural success was achieved in 33 of 35 LA focal tachycardias (94%) in 31 patients. During 23 +/- 19 months of follow-up, 2 patients (6%) had recurrence of ablated tachycardia, and 3 (10%) developed new LA focal tachycardias. CONCLUSIONS: The PVs and the mitral annulus were the main sources of LA focal tachycardias. The majority of PV tachycardias originated from PV ostia. A posterior interatrial connection appeared to play a major role in interatrial electrical propagation during PV tachycardias. Electroanatomic mapping facilitated precise localization of LA focal tachycardias and achievement of a high rate of ablation success.

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