

Morphologic remodeling of pulmonary veins and left atrium after catheter ablation of atrial fibrillation: insight from long-term follow-up of three-dimensional magnetic resonance imaging

謝敏雄

Tsao HM;Wu MH;Huang BH;Lee SH;Lee KT;Tai CT;Lin YK;Hsieh MH;Kuo JY;Lei MH;Chen SA.

摘要

Abstract

INTRODUCTION: Understanding the structural remodeling and reverse remodeling of the left atrium (LA) and pulmonary vein (PV) after radiofrequency ablation of atrial fibrillation (AF) may provide important insights into the mechanism and management of AF. This study used magnetic resonance angiographic (MRA) images to investigate changes in PV and LA morphologies before and more than 1 year after ablation. **METHOD AND RESULTS:** Forty-five patients (36 men and 9 women, mean age 60 +/- 13 years) who underwent MRA before and more than 12 months (mean 21 +/- 11) after ablation of paroxysmal AF were included in the study. The patients were divided into two groups: group I included 35 patients without AF recurrence, and group II included 10 patients with late (>1 month postablation) recurrence of AF. The sizes of the LA and nonablated PV were compared before and after ablation. In group I, significant reduction of ostial area of both superior PVs was noted (left superior PV: from 2.85 +/- 0.67 to 2.59 +/- 0.73 cm²; right superior PV: from 2.89 +/- 0.85 to 2.60 +/- 0.73 cm², both P < 0.001). Geometric alteration toward a round shape was noted in the ostia of superior PVs during follow-up (eccentricity of right superior PV and left superior PV decreased from 0.31 +/- 0.10 to 0.22 +/- 0.13 and from 0.27 +/- 0.11 to 0.19 +/- 0.13, respectively, both P < 0.01). However, LA volume showed only borderline reduction (from 61.52 +/- 19.06 to 56.64 +/- 17.13 mL, P = 0.05). In group II, significant dilation of the LA (from 61.14 +/- 17.54 to 78.73 +/- 25.27 mL, P = 0.004) and right superior PV (from 3.41 +/- 1.12 to 4.08 +/- 1.31 cm², P = 0.016) was noted during follow-up. Ostial area and eccentricity of the left superior, left inferior, and right inferior PVs and LA were similar before and

after ablation. CONCLUSION: Structural remodeling of the superior PVs and LA can be reversible after successful ablation without AF recurrence; however, late recurrence of AF is associated with progressive LA dilation.