Comparisons of efficacy, safety, and recurrence risk factors of paroxysmal and persistent atrial fibrillation catheter ablation using robotic magnetic navigation system

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Introduction: No data exist on comparisons of efficacy, safety, and recurrence risk factors of paroxysmal and persistent atrial fibrillation (AF) ablation using robotic magnetic navigation system (MNS), respectively.

Methods: About 151 AF patients were prospectively enrolled and divided into paroxysmal AF group (n = 102) and persistent AF group (n = 49). Circumferential pulmonary vein antrum isolation (CPVI) was performed in all patients. Linear ablation at the left atrial roof and mitral isthmus was performed in patients with persistent AF in addition to CPVI. The procedural time, X-ray exposure time, acute and long-term success rates of CPVI, and procedure-related complications were analyzed. The AF recurrence rates in the two groups were compared during 1 year, and Cox regression was used to analyze the recurrence risk factors.

Result: The acute success rates of CPVI in the two groups were 98.04% and 97.96%, respectively. There were no significant differences in the procedural time, X-ray exposure time, and ablation time between the two groups (P > 0.05). No serious complications appeared in either group. The AF ablation success rates were 70.6% and 57.1% for the paroxysmal and persistent groups respectively at 12-month follow-up (P = 0.102). AF duration and coronary heart disease prior to ablation were associated with the higher AF recurrence in patients with persistent AF.

Conclusion: Ablation using MNS is effective and safe both in patients with paroxysmal and persistent AF. AF duration and coronary heart disease prior to ablation are two independent risk factors of AF recurrence in patients with persistent AF postoperatively.