Long-Term Effect to Avoid Cerebral Embolism after Ablation of Atrial Fibrillation by the Use of Radiofrequency Hot Balloon Catheter

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Background: Non-uniform heating of the tissue due to direct resistive heating by radiofrequency current under regional cooling was changed blood flow or irrigation, resulting in thrombus formation. To avoid non-uniform heating, we have developed a radiofrequency hot balloon catheter system (RFHBS).

Methods and Results: We treated 446 patients with atrial fibrillation (AF) (paroxysmal AF (PAF), n=269; persistent AF (Per-AF), n=78; long persistent AF (Long-AF), n=99) by pulmonary vein (PV) antral isolation or box isolation using RFHBS and performed MRI of brains after procedure. There were no complications such as cardiac tamponade, cerebral embolism, atrio-esophageal fistula, symptomatic PV stenosis or phrenic palsy, associated with the ablation procedure. During 12 months follow up, no AF episodes were detected without anti-arrhythmic drugs in 346 patients (PAF, n=230 (86%); Per-AF, n=53 (68%); Long-AF, n=55 (56%)). During 3.6±1.2 years follow-up period, no AF episodes were detected without anti-arrhythmic drugs in 279 patients (PAF, n=188 (70%); Per-AF, n=43 (55%); Long-AF, n=48 (48%)).

Conclusion: PV antral isolation or box isolation using a RFHBS could be performed without serious complication and long-term effective for the patients with AF.

Keywords: atrial fibrillation, radiofrequency catheter ablation, cerebrovascular disorder