The Prevalence and Possible Mechanism of Very Late Recurrence of Atrial Fibrillation after Catheter Ablation

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Background: Some patients after atrial fibrillation (AF) ablation experienced first time recurrence in very late phase, but their mechanism was still unknown. Methods and Results: We followed 363 patients after AF ablation performed in our hospital. We followed them for 3.7 ± 1.5 years, and checked the presence of early recurrence (ER), defined as AF recurrence occurring within one year from ablation procedure, and very late recurrence (VLR), defined as first time recurrence occurring more than one year after AF ablation. A blanking period of 3 month was employed in this study. ER was observed in 54 patients (15%). Even in patients without ER, 39 patients (11%, 2.4%/year) suffered from VLR. Then, 26 patients with ER and 14 patients with VLR underwent repeat ablations. We checked PVs with firing in the 1st procedure, and their electrical reconnection in the 2nd procedure. In patients with VLR, reconnection of PVs with firing and those initiating AF tended to be less frequent than in patients with ER (ER vs. VLR, 85% vs. 57% and 46% vs. 21%, p=0.11 and 0.18, respectively). Conclusion: Reconnection of PVs tended to contribute to recurrence more frequently in patients with ER than in those with VLR. Generation of new AF trigger and/or progression AF substrate, rather than reconnection of PV, might be the mechanism of VLR.

Keywords: very late recurrence, atrial fibrillation, catheter ablation