Long-term outcome of Catheter Ablation for Ventricular Tachycardia in Patients with post-Myocardial Infarction with Heart Failure in Mid-range Ejection Fraction term

Shin Nakamura
Takeshi Kitamura
Soichiro Maeda
Shihoko Tsujihata
Koichiro Yamaoka
Kosuke Takeda
Tomoyuki Arai
Kohei Yamaoka
Sayuri Tokioka
Yasuki Koyano
Dai Inagaki
Kiyotaka Yoshida
Iwanari Kawamura
Takeshi Kitamura
Rintaro Hojo
Takashi Shibui
Seiji Fukamizu

Introduction: Background: Ventricular tachycardia (VT) is a fatal arrhythmia that causes sudden death in patients with heart failure (HF). It is well known that patients who have low left ventricular (LV) ejection fraction (EF) show unfavorable outcomes after VT ablation. Recently, the classification of HF by LVEF has been renewed (Heart Failure reduced EF (HFrEF) [EF < 40%], HF mid-range HF (HFmrEF) [40% <= EF < 50%], HF preserved EF (HFpEF) [EF >= 50%]). However, no reports are available on the effectiveness of catheter ablation for VT in patients categorized using the updated classification, in particular of the HFmrEF group. Objective: The purpose of this study was to evaluate the outcome after initial ablation for post-myocardial infarction (MI) VT in patients classified in the 3 groups divided by the updated classification of HF (HFrEF, HFmrEF, HFpEF).

Methods: We enrolled patients with post-MI who underwent initial VT ablation. Enrolled patients were divided into 3 groups (HFrEF group, HFmrEF group, HFpEF group) by EF as defined above. Then, we retrospectively analyzed patients characteristics and evaluated VT recurrence after ablation. The outcome of HFmrEF group was compared with that of HFrEF or HFpEF.

Result: Sixty-seven cases were analyzed (HFrEF, n = 41; HFmrEF, n = 13; HFpEF, n = 13). The mean age was not significantly different among the 3 groups (67±12, 66±15, 72±17, respectively). The average EF was significantly different among 3 groups (30±12%, 44±15% and 56±13%, respectively P < 0.001). The rate of HFmrEF patients in whom implanted ICD or CRTD was not significantly different from HFrEF, however lower than that of HFpEF (71%, 77%, 38%). Mean follow-up period was 2.5±1.8 years. In Kaplan-Meier analysis, the outcome of HFmrEF group did not differ from that of the HFrEF group in VT recurrence during the follow-up (Log-rank = 0.652), and the HFmrEF group tended to have a higher VT recurrence rate than the HFpEF group (Log rank = 0.07). In
terms of mortality after VT ablation, the mortality of HFmrEF group did not differ from that of the HFpEF group during the follow-up (Log-rank = 0.361), and was lower than that of the HFrEF group (Log rank = 0.019).

**Conclusion**: Conclusions: The HFmrEF group tended to have a higher VT recurrence rate than the HFpEF group, and comparable recurrence rate to the HFrEF group. The HFmrEF group showed higher mortality than the HFrEF group, and comparable mortality to the HFpEF group.