Atrial fibrillation (AF) is the most common tachyarrhythmia in clinical practice, and the number of patients is now estimated at nearly 1 million in Japan. The development of novel oral anticoagulants has facilitated anticoagulation therapy in a considerable number of patients without increasing the risk of intracranial bleeding. The management of AF is, however, still complex because of the wide variety of comorbidities in AF patients. It is well known that comorbidities are associated with an increased risk of stroke in AF patients. Not only the risk of stroke, but also the risk of heart failure increases according to the comorbidities. In AF patients, the presence of structural heart disease is associated with a 3.5-fold increased risk of heart failure. As for patients with hypertrophic cardiomyopathy (HCM), AF is associated with a 3.7-, 17.7-, and 2.8-fold increased risk of mortality, stroke and NYHA class of III or IV, respectively. One may argue that the occurrence of AF is not a cause of poor clinical outcome, but a marker of the severity of the heart disease. This is perhaps partly true, but previous studies demonstrated that catheter ablation of AF improves quality of life, exercise capacity, and left ventricular (LV) systolic and diastolic function in patients with heart failure. These findings indicate that AF worsens heart failure even with appropriate rate control and the elimination of AF without use of antiarrhythmic drugs is able to improve clinical outcomes in heart failure patients.

Although the percentage of persistent AF differed between the studies (77% vs. 36%), a speculation that may come to mind is that diastolic dysfunction may be associated with progression of the atrial substrate, and that PV isolation is inadequate in patients with diastolic dysfunction. Hemodynamic deterioration during AF affects patients with LV systolic or diastolic dysfunction to a greater extent, compared with those with lone AF. Thus, benefit of maintaining sinus rhythm is greatly anticipated in patients with LV dysfunction. However, AF patients with LV dysfunction are likely to have greater structural and electrophysiological remodeling of the atria, and therefore would be associated with poor clinical outcomes after ablation. To improve the clinical outcomes in AF patients with advanced atrial remodeling, the development of new ablation techniques to eliminate atrial substrates or mapping technologies for understanding fibrillatory process ongoing after PV isolation is needed.

The postablation management of patients with HCM remains to be fully discussed. A recent study demonstrated that the arrhythmia-free rate was 76% at 1 year after AF ablation, but decreased to 49% at 3.5 years of follow-up in patients with HCM, and that the mechanism of the late recurrences was non-PV triggers. This study suggested that the atrial substrate or triggers develop even if sinus rhythm is maintained for more than 1 year. In the study by Okamatsu et al., the patients were followed for less than 2 years, and an association between E/e’ and late recurrence was not investigated. Another issue is the use of antiarrhythmic drugs. Although the safety of disopyramide in obstructive HCM patients was shown by an observational cohort study, limited data are available on the safety of the use of antiarrhythmic drugs in patients with non-obstructive HCM. Antiarrhythmic drugs were given to 68% of patients in the study by Okamatsu et al. Presumably, the maintenance of sinus rhythm with the use of antiarrhythmic drugs was beneficial in terms of quality of life during the mid-term follow-up, but we must remember the potential risk of sudden cardiac death. In addition, the efficacy of antiarrhythmic drugs has become reduced over the years, suggesting a limited effects of these drugs against the progression of AF. We must therefore deliberately use antiarrhythmic drugs after catheter ablation with the knowledge that the long-term clinical outcome of a hybrid therapy of ablation and antiarrhythmic drugs is unclear.

Catheter ablation of AF is now effective in 70% of patients with HCM with use of antiarrhythmic drugs, repeat procedures or extensive atrial ablation adjunctive to PV isolation. The maintenance of sinus rhythm greatly improves the quality of clinical outcomes in heart failure patients.
of life in these high-risk patients, but advanced LV dysfunction is associated with poor clinical outcome because of extensive atrial substrates. Understanding the mechanism of AF in patients with extensive atrial substrates is required for the beginning of a new era of the management of AF.

References