Atrial fibrillation is the most common sustained arrhythmia and results in significant morbidity, especially in the elderly. The prevalence of atrial fibrillation increases dramatically with advancing age to almost 6% in individuals older than 65 years. In fact, 84% of people with atrial fibrillation are over 65 years of age. Additionally, the risk of stroke increases with advancing age, such that one-third of strokes in patients over the age of 65 are caused by atrial fibrillation.

As a result of the morbidity associated with atrial fibrillation, several treatment strategies have been tested in elderly patients. Pharmacological treatment has typically involved a rate control strategy, consisting of AV nodal blockade and warfarin anticoagulation, or a rhythm control strategy, using antiarrhythmic agents. Several trials have shown that both strategies result in similar symptoms, quality of life, stroke rates and survival. In fact, the AFFIRM trial resulted in a trend toward increased mortality using a rhythm control strategy. Thus, it is unclear if there is any benefit to the maintenance of sinus rhythm in elderly patients with paroxysmal atrial fibrillation.

Following the publication of the intention-to-treat analysis of the AFFIRM Study, an “on-treatment” analysis was performed. This analysis demonstrated that the presence of sinus rhythm resulted in a 47% reduction in mortality. In contrast, the use of antiarrhythmic agents was associated with a 49% increase in mortality. This suggests that the benefits of sinus rhythm were neutralized by the harm of antiarrhythmic agents. Thus, if a safe and effective method for maintaining sinus rhythm were found, this technique may improve survival.

As a result, alternative strategies have been developed to maintain sinus rhythm, without the use of antiarrhythmic agents. These non-pharmacological interventions have included multisite atrial pacing, antitachycardia pacing, atrial defibrillators, AV node ablation with implantation of a permanent pacemaker, and the surgical Maze procedure. Although each of these strategies showed initial promise, there have been significant limitations associated with each technique.

In 1998, Haissaguerre and colleagues published a manuscript suggesting that focal triggers within the pulmonary veins represented the source of paroxysmal atrial fibrillation. In addition, these foci could be localized with an ablation catheter in hopes of “curing” atrial fibrillation. As a result of this observation, multiple laboratories have now demonstrated that radiofrequency catheter ablation of these foci can prevent recurrences of paroxysmal atrial fibrillation. However, mapping of ectopic foci within pulmonary veins is difficult due to the unpredictability of spontaneous ectopic activity and the occurrence of repetitive paroxysms of atrial fibrillation which leads to prolonged waiting or repeated cardioversions. Additionally, this procedure is limited by pulmonary vein stenoses. Thus, a new anatomic technique was developed called pulmonary vein isolation, which delivers radiofrequency energy to the left atrium surrounding the pulmonary veins. This procedure is often aided by noncontact mapping systems. Initially, this procedure was only performed in young patients with paroxysmal atrial fibrillation and no evidence of structural heart disease. Recently, this procedure has been extended to patients with heart failure, rheumatic heart disease, and permanent atrial fibrillation.

In this issue of the Journal of Geriatric Cardiology, Lu and associates report on a small series of elderly patients with paroxysmal atrial fibrillation and no structural heart disease. This cohort was treated with pulmonary vein isolation combined with three linear lesions, using noncontact mapping. During a mean follow-up of 6.5 months, 64% of patients were free of arrhythmic symptoms. In addition, no complications were reported.

This study reports the feasibility of performing pulmonary vein isolation in a cohort of elderly patients. Since older patients have the highest prevalence of atrial fibrillation, and are at the highest risk of thromboembolic events and complications of anticoagulation, a cure for atrial fibrillation in this population is highly desirable. Additionally, antiarrhythmic agents have not decreased mortality in elderly patients. Thus, it is encouraging that a “curative” procedure may be available. However, at this point, it is still too early to recommend this strategy for routine management.

This paper has several limitations. The current study is largely observational and involves a small cohort of patients with a relatively short 6 month follow-up. In addition, there is no control group or alternative strategy to compare the current results to. It is likely that at least 64% of patients (the number cured with ablation) would be asymptomatic after 6 months, if they were treated with antiarrhythmic agents, rather
than catheter ablation. Since symptoms are used to document a recurrence of atrial fibrillation, there may have been asymptomatic recurrences in patients who were “cured” of their atrial arrhythmia. Finally, although patients were discharged home on only aspirin, there is little evidence to suggest this is safe in elderly patients with paroxysmal atrial fibrillation.

Atrial fibrillation ablation can provide excellent symptomatic improvement in patients with refractory symptoms. However, there are few data to support a role for this procedure to decrease costs or mortality, especially in elderly patients. Thus, before we can talk about the treatment of choice in elderly patients with paroxysmal atrial fibrillation, randomized controlled trials are needed. At this point, most studies have not compared radiofrequency catheter ablation to pharmacological therapy or to placebo. In addition, trials have been limited by short follow-up, inadequate detection of silent recurrences of atrial fibrillation, and variable use of antiarrhythmic agents following ablation. Recently, this problem has begun to be addressed with a prospective, randomized study by Wazni and colleagues, which compared radiofrequency ablation to antiarrhythmic drugs as first-line therapy in patients with symptomatic atrial fibrillation. At the end of one year of follow-up, symptomatic atrial fibrillation recurred in 63% of patients treated with antiarrhythmic agents compared to only 13% of patients treated with pulmonary vein isolation. This was associated with an improved quality of life and reduced hospitalizations. Although the results of this study are promising, this study was quite small, with only 33 patients undergoing a pulmonary vein isolation procedure. In addition, patients were relatively young and approximately three-fourths had no structural heart disease or hypertension.

Radiofrequency catheter ablation is becoming a common treatment modality for the management of atrial fibrillation. As the procedure continues to evolve, it has been associated with higher success rates and less complications. In addition, the maintenance of sinus rhythm appears beneficial, especially if it can be maintained without the use of antiarrhythmic drugs. Thus, catheter ablation of atrial fibrillation is quite attractive. However, it cannot be consider the treatment of choice until large, multicenter, randomized studies with long-term follow-up are completed. This is especially true in elderly patients, where a rate control strategy has been shown to be safe and effective.

References