Has the Time Come to Recommend Catheter Ablation of Atrial Fibrillation as First-Line Therapy?

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During the past decade, catheter ablation of atrial fibrillation (AF) has evolved from being a novel unproven procedure for treatment of AF to its role today as an important, commonly performed treatment option for patients with symptomatic AF refractory to antiarrhythmic drug therapy. The 2012 Heart Rhythm Society, European Heart Rhythm Association, and European Society of Cardiology (HRS/EHRA/ECAS) expert consensus document1 on catheter ablation of atrial fibrillation provides a “class 1 level of evidence A” recommendation for catheter ablation of AF for patients with paroxysmal atrial fibrillation for whom treatment with at least 1 antiarrhythmic medication failed and a “class 2 level of evidence B” recommendation for patients with paroxysmal AF for whom antiarrhythmic drug therapy has not failed. Similar recommendations are made by the 2012 update of the European Society of Cardiology Atrial Fibrillation Guidelines.2

In this issue of JAMA, Morillo et al3 report the results of a randomized trial comparing catheter ablation of AF with antiarrhythmic drug therapy as first-line therapy for treatment of patients with symptomatic paroxysmal AF. The patient population comprised 127 young, predominantly male patients, 61 of whom were randomized to antiarrhythmic drug therapy and 66 to catheter ablation. The primary end point was the occurrence of a symptomatic or asymptomatic atrial tachyarrhythmia (>30 seconds). During 2 years of follow-up, this end point was observed in 72% of patients randomized to antiarrhythmic drug therapy compared with 55% of patients randomized to ablation (P = .02). A symptomatic atrial arrhythmia was also observed more frequently in patients randomized to antiarrhythmic drug therapy than in patients randomized to ablation (59% vs 47%, P = .03). A major complication was observed in 9% of patients randomized to ablation, including cardiac tamponade (6%), severe pulmonary vein stenosis (1.5%), and bradycardia requiring placement of a permanent pacemaker (1.5%). No patient died or developed a stroke. This compared with a 5% complication rate among patients randomized to antiarrhythmic drug therapy. The complications observed in the antiarrhythmic drug group included atrial flutter with 1:1 conduction (1.6%) and syncope (3.3%). Quality of life was moderately impaired in both groups and improved to a similar degree following treatment.

The results of this study should be interpreted in the context of the considerable body of previously published literature on AF ablation and of clinical experience performing catheter ablation procedures, focusing on 4 questions: Are the results of this study valid? Are the results of this study new? Are the results of this study important? What are the clinical implications of this study for patients considering having the procedure performed, for physicians who perform this procedure, and for guideline-writing committees that work to define the role of catheter ablation in the management of atrial fibrillation?

The results of this study by Morillo et al appear valid. The trial was rigorously conducted and had adhered to the definitions of success and complications and to the monitoring and follow-up strategy, recommended in the 2012 HRS/EHRA/ECAS consensus document.3 Adherence to transtelephonic monitoring during follow-up was excellent (83%). As the authors make clear, this is not the first nor the largest study to examine the role of catheter ablation as first-line treatment of AF. The Radiofrequency Ablation vs Antiarrhythmic Drugs as First-Line Therapy of Atrial Fibrillation I (RAAFT-I), study published in 2005 by Wazni et al,4 enrolled 70 patients in a randomized trial of first-line catheter ablation vs antiarrhythmic drug therapy in a similar patient population. The RAAFT-I study reported that catheter ablation was superior to antiarrhythmic drug therapy with AF recurrence rates of 63% in the antiarrhythmic drug group vs 13% in the catheter ablation group at 12 months’ follow-up.

More recently, Nielsen et al5 published the Medical Antiarrhythmic Treatment or Radiofrequency Ablation in Paroxysmal Atrial Fibrillation (MANTRA-PAF) trial. This second study of first-line catheter ablation vs antiarrhythmic drug therapy was considerably larger than either of the RAAFT trials, enrolling 294 patients. The MANTRA-PAF trial was negative, demonstrating no difference in the cumulative AF burden, as assessed with 7-day Holter monitors at 3- to 6-month intervals during 2 years of follow-up. Despite the absence of a difference in cumulative AF burden, at 24 months’ follow-up, the AF burden was lower in patients randomized to ablation (9% vs 18%) and more patients in the ablation group were AF free. Complications in the ablation group included 1 death due to a stroke and 3 cases of cardiac tamponade. Quality of life improved in both treatment groups, with greater improvement in the physical component summary score in patients in the catheter ablation group.

Second, the results of the study by Morillo et al are important in helping to define the efficacy, safety, and appropriate role of catheter ablation when considered for treatment of patients with paroxysmal AF. Several of the results of this study are worth highlighting. The results of this study provide important additional evidence that catheter ablation of atrial fi-
brillation should not be considered a “curative procedure” for most patients with AF. When catheter ablation of AF was first developed 15 years ago, the terms cure and AF ablation were commonly seen linked in the literature. The current trial and other carefully performed studies make it clear that symptomatic and asymptomatic recurrences of AF are not uncommon following AF ablation and that the efficacy of this procedure, even in optimal candidates, is modest. Atrial fibrillation is more complex than other types of supraventricular tachycardia such as atrioventricular nodal reentrant tachycardia that are routinely cured with catheter ablation procedures. In addition, the results of this trial demonstrate that both catheter ablation and antiarrhythmic drug therapy, when used as a first-line therapy, improve quality of life in patients with symptomatic paroxysmal AF and that there is little difference between the 2 treatment strategies.

Third, the results of this trial are an important reminder that catheter ablation is not a risk-free procedure. The complication rate of catheter ablation was 9% in this trial with a 6% incidence of cardiac tamponade. This complication rate is higher than that reported in the updated worldwide survey of AF ablation6 and reported in a recently published study examining in-hospital complications associated with more than 93,000 catheter ablation procedures contained in the Nationwide Inpatient Sample data set.7 Given the considerable expertise of the operators and the healthy patient profile in the trial by Morillo et al, a considerably lower complication rate could have been expected.

Fourth, this study has important implications when viewed from the perspective of clinicians who perform these procedures and those who serve on consensus document and guideline writing committees. The results of this trial are a powerful endorsement of the current indications for AF ablation as defined by the the 2012 HRS/EHRA/ECAS consensus document and the 2012 ESC updated atrial fibrillation guidelines.1,2 Both documents provide a “class 1 level of evidence A” recommendation for catheter ablation of AF in patients with paroxysmal atrial fibrillation for whom treatment with at least 1 antiarrhythmic medication has failed and a “class 2 level of evidence B” recommendation for patients with paroxysmal AF for whom antiarrhythmic drug therapy has not failed. However, patient preference and operator experience are important to consider. Some patients strongly prefer catheter ablation and are reluctant to take antiarrhythmic medications. Some operators have limited experience with AF ablation and high complication rates, whereas others have considerable experience and very low complication rates.7

In clinical practice, it is uncommon to find a patient who is eager to undergo catheter ablation without at least 1 trial of an antiarrhythmic medication. This is especially true after a thorough discussion of the risks of the procedure, the fact that 30% to 50% of patients require a repeat procedure,1,8 and consideration that the techniques and tools used for catheter ablation continue to improve. For several subgroups of patients, first-line AF ablation is a preferred treatment strategy. One example is patients with both paroxysmal atrial fibrillation and significant sinus node dysfunction. Although in the past many of these patients were treated with implanted pacemakers and antiarrhythmic drug therapy, increasing evidence suggests that catheter ablation may allow control of AF while at the same time avoiding the need for a pacemaker.9,10 Morillo and colleagues have made an important contribution in defining the safety, efficacy, and clinical role of catheter ablation of AF in treating symptomatic patients with paroxysmal AF. Their trial not only provides new and important information concerning the efficacy of AF ablation but also serves as another reminder of the potential complications of invasive therapies such as AF ablation.

ARTICLE INFORMATION
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Conflict of Interest Disclosures: The author has completed and submitted the ICMJE Form for Disclosure of Potential Conflicts of Interest and none were reported.
REFERENCES