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Editorial Comment

All's Well That Ends Well, or Is It?*

Eric N. Prystowsky, MD, Benzy J. Padanilam, MD
Indianapolis, Indiana

The past 2 decades have witnessed an explosion of basic and clinical research in atrial fibrillation (AF), and the pharmacologic and nonpharmacologic therapeutic options have improved tremendously (1). To provide clinicians with a better understanding of how to approach the management of patients with AF, the American College of Cardiology, American Heart Association, and European Society of Cardiology published a comprehensive guidelines document (2). Restoration and maintenance of sinus rhythm are recommended for individuals with symptomatic AF in whom the clinician thinks a rhythm- rather than rate-control strategy is most appropriate. The guidelines also provided an algorithm for maintenance of sinus rhythm that stated clearly "selection of an appropriate agent is based first on safety" and that catheter ablation was a reasonable alternative to drugs in a variety of patient subgroups (2).

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The Heart Rhythm Society subsequently published an AF ablation consensus document that stated "the primary justification for an AF ablation procedure . . . is the presence of symptomatic AF, with a goal of improving a patient's quality of life" (3). At present, no large prospective, randomized trial has demonstrated a mortality benefit or stroke reduction with rhythm-control over rate-control strategy in the more elderly populations studied. At least for these patients, it seems reasonable to choose a rhythm-control strategy specifically when reduction of AF symptoms is desired, and rate control is neither effective nor considered appropriate for that patient. Our personal bias is to select a rhythm-control strategy initially for the younger patients not well represented in the rhythm/rate strategy trials. In the end, what we all want for our patients is a better quality of life (QoL).

Wokhlu et al. (4) from the Mayo Clinic address this important issue of QoL after catheter ablation of AF in this issue of the *Journal*. Of 502 patients undergoing ablation for AF, 323 (46% with paroxysmal AF) had a 2-year follow-up that included QoL data. The ablation methods changed over time and included pulmonary vein isolation in 22% of patients and wide area circumferential ablation with additional linear lesions in 78% of patients; all underwent cavotricuspid isthmus ablation. QoL instruments included the Medical Outcomes Study Short Form 36 (SF-36), and one developed at the Mayo Clinic, the Mayo AF-Specific Symptom Inventory. Definitions for ablation outcomes were: 1) AF elimination (72% of patients)—arrhythmia free without antiarrhythmic drugs at least 6 months before evaluation; 2) AF control with antiarrhythmic drugs (15% of patients)—sinus rhythm requiring antiarrhythmic drugs at least 6 months before evaluation; and 3) no AF control even with drugs (15% of patients).

Using the SF-36, both the physical and mental QoL scores improved in patients after ablation. Surprisingly, QoL improvement did not seem to differ for the ablation efficacy subgroups, with patients who had no AF recurrences having results similar to those not controlled even with drugs. A difference was noted using the Mayo AF-Specific Symptom Inventory, and here the ablation outcomes influenced the symptom results, and patients with elimination of AF fared better than those with recurrent AF. Although this seems to make sense, caution is advised with this analysis because it was only used in a smaller subgroup of patients and will require testing in a larger and broader population of post-ablation patients. Specific factors that negatively affected QoL after ablation were obesity, continued warfarin use, and higher baseline SF-36 scores. The authors opine that the limited QoL improvement in obese patients relates to diminished underlying functional capacity, which may be correct, but this is an important issue that requires more investigation. If such patients are not likely to have a better QoL after ablation, even with no AF recurrence, then why should they undergo the risks of the procedure? We caution any such conclusions along these lines, but suggest that investigators look into this issue. The negative effect on QoL with continued warfarin use is no surprise; in fact, many patients request an ablation merely to "get off warfarin." That said, until more safety data are obtained, patients at high risk of stroke should continue warfarin therapy post-ablation even with no obvious AF recurrence (2,3). Perhaps newer anticoagulants will be better

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From The Care Group, Indianapolis, Indiana. Dr. Prystowsky has served as a consultant for Stereotaxis, Sanofi-Aventis, and Boehringer-Ingelheim and on the Board of Directors of Stereotaxis and CardioNet.

tolerated by patients (5). Last, it seems obvious that patients who had more favorable SF-36 scores at baseline would derive less benefit after ablation.

Ablation is a second-line therapy for AF when antiarrhythmic medications fail, as directed by the American College of Cardiology, American Heart Association, and European Society of Cardiology management guidelines (2). Second line does not mean second rate, and that has often been misunderstood. As a committee member (E.N.P.), the thought was to direct physicians to therapeutic choices that were the safest for the patient considering many variables, particularly underlying heart disease. Amiodarone has consistently outperformed other antiarrhythmic agents for maintenance of sinus rhythm, but it has many significant and potentially dangerous side effects and thus was relegated to second-line use for most patient subgroups (2,6). Catheter ablation is very effective for maintenance of sinus rhythm and typically is better than drug therapy when prospectively tested in clinical trials (7). Wokhlu et al. (4) relate major complications in 43 of their patients undergoing catheter ablation for AF, and these are very experienced ablators. It is difficult to imagine a similar high rate of major complications in patients with no or minimal heart disease who are given a drug such as flecainide or even dronedarone (6). Thus, we still think it is reasonable to choose a drug before ablation for most patients with AF. There are exceptions to this rule, including patients whose only drug choice is amiodarone, those who would require a pacemaker if a drug was given, and, of course, a patient who simply does not want to take a drug.

Is it true that "all's well that ends well," at least for catheter ablation of AF? The current data show us that QoL is improved post-ablation for all categories of efficacy, even *no* efficacy! So, by Shakespeare's axiom, then all is well. But, we know all is not well, and this means that we need to reassess either how we assess QoL measures or determine whether there are some unexplained mechanisms for symptom improvements with ablation of wide areas of left atrial tissue that do not correlate with AF recurrence. We have wondered whether atrial sensory inputs are damaged or altered during ablation and how this might affect symptoms of recurrent AF. Many of us have seen patients in our office who report feeling great ever since their ablation, and we wonder how we are going to break the news to them that their electrocardiogram demonstrates AF! It is well reported that silent AF occurs after ablation, even at times more frequently than symptomatic episodes (3). Is this a manifestation of simply more intense monitoring, or have neural inputs of the atria been altered?

We surely need to find a better way to quantify QoL for patients with AF, at baseline and after pharmacologic or nonpharmacologic interventions. What exactly is QoL to patients? It likely parallels how they view life in general and is a measure of the degree of happiness that has been met or how fully their expectations have been realized. Perhaps we should take a lesson from the 1980 Carter-Reagan presidential debate when Governor Reagan asked the American people "Are you better off than you were four years ago?" We strongly suggest a better metric be developed, whether the symptom index, Mayo AF-Specific Symptom Inventory, used at the Mayo Clinic, or a new one, before embarking on prospective studies aimed at defining AF therapies that improve QoL. We do not think that a failed ablation that yields a better QoL score is a success or a desired end point.

Reprint requests and correspondence: Dr. Eric N. Prystowsky, The Care Group, 8333 Naab Road, Indianapolis, Indiana 46032. E-mail: eprystow@thecaregroup.com.

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