Atrial Fibrillation and Atrial Flutter: Nonpharmacologic Therapy

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KEYWORDS

• Atrial fibrillation • Atrial flutter • Catheter ablation • Rhythm control

KEY POINTS

- As elderly patients present significant challenges for long-term pharmacologic management, nonpharmacologic approaches will continue to be a vital option for clinicians to improve the quality of life and function of these patients.
- For rhythm control, observational studies of catheter ablation suggest similar long-term efficacy and safety rates in elderly and very elderly populations in comparison with younger groups.
- Minimally invasive surgical approaches have distinct advantages in certain populations, but require further study in the elderly to define and understand the potential benefits and risks in comparison with younger patients.

Atrial fibrillation (AF) is the most common cardiac arrhythmia encountered clinically, and affects more than 2 million people in the United States alone.[1] With advances in medicine, patients are living longer with diseases such as cardiovascular disease. Enhanced longevity with cardiovascular disease is one of the suspected mechanisms behind the increase in the prevalence of AF (0.1% <55 years to 9.0% >80 years).[2] Statistics have shown that the median age of patients with AF is 75 years, and 70% of the AF patients are 65 to 85 years old.[2,3] Unfortunately for health care providers, the number of individuals who have AF is only going to increase. It is expected that in the next 20 to 30 years, as the Western population ages, the number of people with AF will double or triple.[2,4]

AF management in the elderly can present unique challenges. These challenges stem from concurrent cardiovascular diseases and physiologic changes secondary to age, which make these patients more susceptible to drug toxicities and interactions.[5] In addition, elderly patients are frequently using numerous medications to improve their health and longevity, resulting in a myriad of potential drug-to-drug

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interactions that can minimize medication effects and potentially expose patients to harm.[5] Such challenges underlie need to explore and refine all treatment strategies in the elderly, particularly those not based on long-term medication dependency.

Across all age strata, but particularly in the elderly, the optimal timing of a treatment approach, as well as the approach in general for AF, continues to evolve. Often a patient's age and objective frailty come into the decision-making process, particularly in decisions involving invasive and noninvasive options. Furthermore, the extent of an invasive procedure may also have been minimized in the elderly to avoid a perceived risk of higher complications. The challenge with a therapy-decision construct of avoiding more aggressive or invasive procedures in the elderly is that it typically is not based on evidence or potential benefit, but more on anticipated or perceived risk. At a minimum, a careful age-based review of the true benefits and risks of invasive procedures is essential in understanding their place and relevance in the care of an aging population.

In the treatment of AF, 3 primary concepts are essential: (1) to minimize risk of thromboembolism, (2) to reduce cardiovascular morbidity such as heart failure, and (3) to improve quality of life and symptoms. To this extent this review discusses the nonpharmacologic treatment options for AF in the elderly, in particular atrioventricular (AV) node ablation and pacemaker implantation, catheter ablation, and surgical Maze procedures.

When choosing a treatment strategy, the ability of the strategy to reduce symptoms and cardiovascular morbidity must be weighed against the relative risk and burden imposed by the approach. There is significant variability in response, and treatment approaches must be considered dynamically as disease processes advance and evolve.

RATE CONTROL

In most patients, rate-control medications become the first line of approach. The relative use of these agents increases as the AF disease progresses from paroxysmal to persistent/long-standing persistent, and with advancing age.[6]

Rate control is a preferable option in many patients based on the results of the AFFIRM and RACE trials, which not only showed equivalence in outcomes compared with those treated with rhythm options, but actually revealed trends toward benefit with rate control.[7,8] A meta-analysis of 5 rate-control trials confirmed a trend toward a reduction in total mortality with rate control in comparison with rhythm control (13.0% vs 14.6%, odds ratio 0.87, 95% confidence interval [CI] 0.74–1.02).[9] This outcome was not totally unexpected, as the AFFIRM study accounted for 77% of the patients. Unfortunately, the very elderly are often underrepresented in these clinical trials. Nonetheless, rate-control strategies are often chosen in the elderly, owing to the potential of proarrhythmia from rhythm-control drugs and more advanced AF subtypes.[10]

Radiofrequency (RF) ablation of the AV node and/or the His bundle is the most common form of nonpharmacologic rate control. Because of the invasive nature of the procedure and the requirement for permanent pacemaker implantation, this treatment is reserved for patients in whom pharmacologic rate-control therapy is either unsuccessful or not tolerated.[11,12] In looking at these patients in aggregate, patients reported an enhanced quality of life after AV node ablation.[13–16] In addition to improvement in quality-of-life scores, patients with AV node ablation report fewer physician visits, hospital admissions, and heart-failure episodes, and a general improvement in ejection fraction.[13,16] Unlike the aggregate data from the rhythm versus rate-control studies, there does not appear to be a clear mortality advantage in AV node ablation and pacemaker implantation. In a study of 350 patients, 3-year survival rates after AV node ablation and pacemaker implantation and that with pharmacologic