Atrial Fibrillation and Congestive Heart Failure
The Intersection of Two Common Diseases

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Atrial fibrillation is the most common sustained cardiac arrhythmia, and congestive heart failure is an increasingly frequent diagnosis as our population tends to age. Appropriate management of these patients has engaged clinicians for many years. It was long appreciated that atrial fibrillation, per se, without associated cardiac disease could result in congestive heart failure and that prompt treatment resulting in either restoration of sinus rhythm or rate control could obviate the signs and symptoms of congestive heart failure.1-3

More recently, a spate of observations have shown that application of catheter ablative techniques to patients with atrial fibrillation with rapid ventricular rates unresponsive to drug therapy could likewise result in improved cardiac function.4,5 In the latter studies, patients generally had proved to be refractory to medical therapy before being offered catheter ablation of the atrioventricular (AV) junction.

Elsewhere in this issue of Circulation, Brignole et al6 report a novel controlled trial comparing drug versus AV junctional ablation for patients with atrial fibrillation and congestive heart failure. In this study, a total of 66 patients with chronic atrial fibrillation were randomized to receive either drug therapy for rate control or ablation and insertion of a VVIR pacemaker. These patients were followed up for at least 12 months with serial questionnaires used to assess changes in either specific symptoms (ie, palpitations, dyspnea), global quality-of-life issues (Minnesota LHFQ), or NYHA functional class. In addition, cardiac performance was assessed by serial exercise and echocardiographic studies.

It was found, not unexpectedly, that patients in both treatment limbs showed improvement. Patients treated with catheter ablation had a statistically significantly better response in terms of specific symptoms (especially palpitations or exertional dyspnea), but there was no significant difference in global quality-of-life improvement or in objective evidence of improved cardiac performance between the groups.

This study fills an important void in our therapeutic approach to patients with both congestive heart failure and atrial fibrillation. Several studies, for example, have shown that rate regularity, per se, may result in improved cardiac function in patients with atrial fibrillation.10,11 A natural extension of these observations would suggest benefits of catheter ablation and pacing, particularly in those patients with atrial fibrillation and congestive heart failure. The data provided by Brignole et al would suggest that ablation and pacemaker insertion is clearly not of proven benefit compared with drug-induced rate control in patients with chronic atrial fibrillation. Hence, the clinician is not mandated to choose ablation of the AV junction compared with drug therapy in patients with atrial fibrillation and heart failure.

A few additional points are necessary to place this excellent study in proper clinical context. First, the authors clearly showed that there was no significant difference in either overall mortality or the incidence of sudden death between the 2 treatment groups. This being the case, catheter ablation may be fruitfully applied to those patients disabled by specific symptom complexes (ie, intractable palpitations or exertional dyspnea). In these circumstances, one must use careful clinical judgment before choosing the appropriate therapy. The available data would suggest that the benefits of ablation/pacemaker therapy outweigh any potential risks for this patient subset.

It must also be appreciated that current practice advises use of catheter ablation for patients with drug-refractory atrial fibrillation associated with rapid ventricular response. It should be emphasized that nothing in this particular study contravenes current practice guidelines. The patients in this study were randomly assigned to treatment with either drugs or ablation. In the usual clinical context, patients are referred for possible ablation after they have failed a multitude of available drugs. These patients generally show significant benefit in both specific symptoms and overall lifestyle, as well as in improved cardiac function.12-15

Earlier studies16-20 emphasized a possible relationship between sudden cardiac death and catheter ablation of the AV junction. Factors that were implicated included use of high-energy DC discharge for ablation, presence of ischemia, or relatively low postablation pacing rates. This study using modern radiofrequency procedures provides reassurance that there are no increased adverse effects, either in terms of worsening of symptoms of congestive heart failure or in the incidence of cardiac (including sudden) deaths between the treatment modalities. They described 2 adverse periablation procedure complications, including 1 episode of ventricular fibrillation that occurred 12 hours after the procedure in a patient with a night heart rate drop to 50 bpm. Another patient suffered a nonfatal pulmonary embolus. No further complications were observed in these patients on follow-up. This experience does emphasize the need for continued pacing at...
rates of 80 to 90 bpm for several days after catheter ablation. It also serves to emphasize the need for a 2- to 3-day hospital stay for patients with atrial fibrillation treated with ablation and pacemaker.

One additional finding merits attention. Of the 34 patients randomized to drug therapy, a total of 10 (30%) ultimately crossed over to ablation and pacemaker therapy because of worsening of symptoms. Four patients crossed over to ablation before completion of the study, and 6 patients were treated with ablation immediately after completion of the 12-month visit. These findings suggest that although patients with atrial fibrillation (with moderate ventricular response) and congestive heart failure appear to respond equally well to either drug or ablative therapy during the first year, subsequent follow-up shows an increasing crossover to ablative therapy.

**Summary and Conclusions**

Brignole and associates have provided an interesting study of patients with atrial fibrillation and congestive heart failure. They have clearly shown that at least early on (12-month follow-up), drug therapy is as effective as catheter ablation in terms of changes in quality-of-life and cardiac-performance indices. Catheter ablation, however, appeared to confer benefit to those with specific symptoms (ie, palpitations or exertional dyspnea) and therefore remains a useful therapeutic tool for patients with disabling effects related to these symptoms. Of interest was the significant (30%) crossover to ablation both during and just after completion of the study. Patients with atrial fibrillation whose rate cannot be controlled with drug therapy clearly remain candidates for and would be expected to show improvement after ablation and pacing.

**References**

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