

Catheter Ablation for Atrial Fibrillation: Renal Function Benefit Only Makes Sense

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It's a rare day when a clinician does not see an atrial fibrillation (AF) patient, decide on an anticoagulation strategy, or counsel regarding establishment of sinus rhythm. For those >40 years of age, the lifetime risk of developing AF is 1 in 6, regardless of risk factors.¹ Renal dysfunction increases the risk of new-onset AF, and conversely, AF increases the risk of renal dysfunction.²

The article in this issue of the *Journal of the American Heart Association (JAHA)* by Park et al³ evaluates the 5-year change in renal function after catheter ablation. The study quite nicely compared the change in renal function in AF patients who underwent catheter ablation and those patients who underwent medical therapy alone. The ablation patients received regular rhythm follow-up per guidelines and the medical therapy group was database derived. Of note, in the catheter ablation group (571 patients), 103 patients underwent a second ablation and 3 patients underwent a third. Exclusions included AF with rheumatic valvular disease, permanent AF refractory to electrical cardioversion, and prior cardiac surgery with concomitant AF surgery or catheter ablation.

To summarize, the authors are specifically evaluating changes in renal function. No significant difference in the patient characteristics, medication use, or baseline estimated glomerular filtration rate (eGFR) existed between the catheter ablation group and the medical therapy group. The eGFR in the catheter ablation group was higher at the 5-year follow-up as was the change in GFR. Among the overall population, 2 characteristics were independently associated with improved renal function: young age and AF catheter ablation.

One of the most interesting findings in the study is the improvement in renal function in the nondiabetic patients *only*. Although sinus rhythm persisted after ablation in the patients with pre-existing diabetes mellitus, no improvement in renal function was identified. The authors suggest that the left atrial remodeling associated with diabetes mellitus may be responsible for the lack of improvement in renal function.³ The atrial remodeling is electrical as well and includes shortening of the atrial effective refractory period and increased atrial effective refractory period dispersion.⁴ Atrial fibrosis is the main pathologic change in the diabetic patient.⁴

Could these changes preclude the benefit of re-establishing normal sinus rhythm on renal function seen in the nondiabetic population? This is a complex question because in the current study, pre-existing chronic kidney disease was associated with atrial structural remodeling before any catheter ablation was performed and did not affect the rhythm outcome of the catheter ablation.³

Park et al studied an observational cohort and point out that these patients were a highly selected referral group. They also did not represent a broad range of impaired renal function. The final limitation discussed was the unknown correlation between the improvement in eGFR and improvement in the chronic kidney disease stage.³ Therefore, one cannot assume clinical improvement or improved long-term outcome with the improved eGFR value. The limitations are appreciated, but the current cohort study lends great support for a randomized trial to further evaluate the relationship of renal function and maintenance of normal sinus rhythm.

The clinical perspective is well stated at the beginning of the article. Catheter ablation for this very common arrhythmia with maintenance of normal sinus rhythm showed an improvement in eGFR with 5-year follow-up in the nondiabetic population as compared with medical therapy. As one might expect, no recurrence of the atrial fibrillation was independently associated with the long-term improvement. The article suggests another potential benefit of normal sinus rhythm maintenance.

Disclosures

None.

The opinions expressed in this article are not necessarily those of the editors or of the American Heart Association.

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