

Is Rhythm Control with Pulmonary Vein Isolation Superior to Rate Control with AV Nodal Ablation in Patients with Heart Failure?

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Hypothesis

Pulmonary-vein isolation is increasingly being used to treat atrial fibrillation in patients with heart failure. Is Pulmonary vein isolation better than AV nodal ablation with bi-ventricular pacing in patients with heart failure?

Methods & Materials

This was a prospective, multicenter clinical trial in which 81 patients with symptomatic, drug-resistant atrial fibrillation, an ejection fraction of 40% or less, and New York Heart Association class II or III heart failure were randomized to undergo either catheter ablation for AF (n= 41) or atrioventricular-node ablation with biventricular pacing (n=40). Catheter ablation for AF primarily consisted of pulmonary vein isolation with or without additional atrial substrate modification. The primary end points were change in ejection fraction, 6-minute walk test and quality of life questionnaire in HF. All patients completed the Minnesota Living with Heart Failure questionnaire (scores range from 0 to 105, with a higher score indicating a worse quality of life) and underwent echocardiography and a 6-minute walk test (the composite primary end point). Over a 6-month period, patients were monitored for both symptomatic and asymptomatic episodes of atrial fibrillation.

Results

At 6 months, freedom from AF in the catheter ablation group was 88% with or without antiarrhythmic drugs and 71% without antiarrhythmic drugs. The composite primary end point favored the group that underwent catheter ablation, with an improved questionnaire score at 6 months (60, vs. 82 in the group that underwent atrioventricular-node ablation with biventricular pacing; $P<0.001$), a longer 6-minute-walk distance (340 m vs. 297 m, $P<0.001$), and a higher ejection fraction (35% vs. 28%, $P<0.001$). Non-fatal complications were slightly higher in the catheter ablation group (10%) compared to the AV nodal ablation group. Progression of AF was higher in patients with AV nodal ablation than those in catheter ablation group (30% vs 0%). There was also slight reduction in the left atrial size in the catheter ablation group than in the AV nodal ablation group.

Conclusions

In patients with known heart failure, catheter ablation results in greater rhythm control off antiarrhythmic drugs, halts of progression of AF, reduction of LA size, improvement in ejection fraction and QoL score than AV nodal ablation and biventricular pacing.

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Commentary

Rate vs rhythm control is a much contested debate in the treatment of atrial fibrillation. Critical trials like AFFIRM, SAVE and AF-CHF have not shown any significant difference in primary outcomes of mortality, QoL and stroke. However, most of these trials had used rhythm control strategy with the help of antiarrhythmic drugs, which often times are associated with significant side effects and less than perfect for rhythm control with poor success rates. So PABA-CHF tries to answer the everlasting question if rhythm control using a non pharmacologic strategy like catheter ablation that has superior success rates and lower side effects is superior to rate control. In most of the prior pharmacologic rate vs rhythm control trials, the rate control arm often times were in sinus rhythm and no clear data on effective rate control was known. The current trial nicely addresses that by potentially allowing for 100% rate control with biventricular pacing. The strengths of this study are its prospective randomized controlled nature, multicenter participation, use of techniques that are proven to have superior results with minimal

sideeffects or complications in accomplishing their respective end results. This study has answered the question that was much debated very effectively. Few more details would have provided better insights into this trial. It is not clear if the patients in the AV nodal ablation group had an atrial lead or not; what percentage of patients had failed AV nodal ablation; what percentage of patients had V-sensing above the lower rate limits of the pacemaker or defibrillator. Were all patients in the AV nodal ablation group taken off of the Amiodarone after the procedure? Could some of the sinus rhythm in this group be attributed to the rhythm controlling properties of the antiarrhythmic drugs? The sample of patients described in this study seems to have a only mild to moderate left atrial enlargement. It would have been helpful to see if there was a difference in outcomes between ischemic and dilated cardiomyopathic groups in the catheter ablation group. The current study is a critical piece that connects the puzzle in several ways. It provides strong evidence that rhythm control using non-pharmacologic strategy that effectively eliminates atrial fibrillation is definitely superior to the true rate control strategy with AV nodal ablation.