

Meta-Analysis of Catheter Ablation Compared with Drug Therapy as First Line Treatment Strategy of Paroxysmal Atrial-Fibrillation

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Letter To Editor

In the United States, the prevalence atrial fibrillation (AF) in 2010 was reported to be 2% among individuals less than 65 years old and 9% among individuals more than 65 years old.¹ The recent 2020 European society of cardiology (ESC) guidelines for the diagnosis and management of AF recommends "AF catheter ablation for pulmonary vein isolation (PVI) should/may be considered as first-line rhythm control therapy to improve symptoms in selected patients with symptomatic paroxysmal AF episodes (Class IIa, Level B)". While randomized controlled trials (RCTs) in the past have studied catheter ablation as a first line treatment compared with antiarrhythmic drugs among patients with paroxysmal AF, the results were inconsistent.^{2,3} Recently published EARY AF and STOP AF trials reported favourable results supporting catheter ablation as a first line strategy in patients with paroxysmal AF.^{4,5} We performed an updated study level meta-analysis of RCTs comparing catheter ablation as a first line treatment with antiarrhythmic drugs in patients with paroxysmal AF. Considering the small sample size of published RCTs a pooled analysis will provide a sturdy conclusion.

Embase, MEDLINE/PubMed, and Cochrane Library were systematically searched for relevant trials independently by two reviewers (AK and AAA) from the inception of the database through November, 2020. No language-based restrictions were imposed. Two reviewers (AK) and (AAA) extracted relevant data independently by using a predetermined data collection table. Any discrepancies between the reviewers were resolved by mutual consensus and after consultation with other authors. The endpoints of interest were recurrence of atrial

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tachycardia and recurrence of symptomatic atrial fibrillation/atrial tachycardia at 12–24 months. We used Mantel-Haenszel method with Paule-Mandel (PM) estimator of tau² and Hartung-Knapp-Sidik-Jonkmanthe adjustment to calculate risk ratio (RR) with 95% confidence interval (CI). All analysis was carried out using R version 4.0.3 and using "meta" package.

Five RCTs consisting a total of 794 patients were included in the present analysis.^{2–6} Three of the included studies used radiofrequency ablation while two studies used cryoablation. Catheter ablation as compared with antiarrhythmic drugs in patients with paroxysmal atrial fibrillation were associated with significantly lower risk of recurrence of any atrial tachycardia at follow-up [RR: 0.66; 95%CI: 0.56;0.77; I2:0%] [Figure, (A)]. However, catheter ablation as compared with antiarrhythmic drugs in patients with paroxysmal atrial fibrillation were associated with similar risk of recurrence of symptomatic atrial fibrillation/tachycardia at follow-up [RR: 0.49; 95%CI: 0.19;1.28; I2:69%] [Figure, (B)].

The present meta-analysis reported catheter ablation compared with antiarrhythmic drugs in paroxysmal AF to be superior in terms of recurrence of atrial tachycardia, while no difference was noted in the recurrence of symptomatic atrial fibrillation/tachycardia. The strengths of our study included use of Paule-Mandel (PM) estimator of tau² and Hartung-Knapp-Sidik-Jonkmanthe adjustment to account for small number of included studies and substantial heterogeneity. Further endpoints with similar range of follow up were analysed to avoid heterogeneity. With the recent RCTs and the results of the EAST trial, there is a likely push towards early restoration of sinus rhythm with the ever-increasing prevalence of AF.⁷

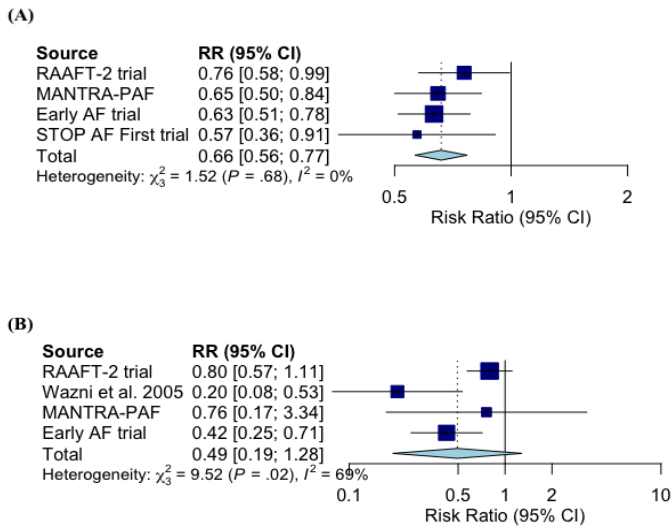


Figure 1:

(A) Forest plot for recurrence of all atrial tachycardia; catheter ablation was associated with significantly reduced risk of recurrence of atrial tachycardia compared with antiarrhythmic drug therapy; (B) Forest plot for recurrence of symptomatic atrial fibrillation/atrial tachycardia; there was no difference in the risk of symptomatic atrial fibrillation/tachycardia between the two treatment strategies; RR: Risk ratio; CI: Confidence Interval.

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