The 11th Annual Scientific Meeting

InaHRS 2024

REVIEW

The 11th Annual Scientific Meeting InaHRS 2024

Indonesian Journal of Cardiology

Indonesian J Cardiol 2024:45:suppl_B
pISSN: 2830-3105 / eISSN: 2964-7304
doi: 10.30701/ijc.1734

Optimalization of Angiotensin Receptor-Neprilysin Inhibitors on Arrhythmias in Patients with Implantable Cardioverter-Defibrillator (ICD): A Systematic Review and Dose-Ranking Network Meta-analysis

J. Budiono[1], H. Balweel[1], N. A. Tafriend[1], A. Harsoyo[1]
[1]*Unit Clinical Cardiac Electrophysiology and Cardiology Intervention, Department of Cardiology Indonesia Army Center Hospital Gatot Soebroto (RSPAD), Jakarta, Indonesia*

Background and aims: The PARADIGM-HF trial indicates that angiotensin-neprilysin inhibitors (sacubitril/valsartan) significantly lowered arrhythmias and sudden cardiac death, but there is no further analysis on the optimalization, especially in patients with implantable cardioverter-defibrillators (ICD). Therefore, we conducted the first network meta-analysis to determine optimal approach of sacubitril/valsartan and its efficacy on arrhythmia outcomes in heart failure with reduced ejection fraction (HFrEF) patients with ICD.
Materials and methods: An extensive search was performed on PubMed, Embase, and Cochrane Library until June 2024 to identify trials that evaluated the effects of switching optimal ACEi or ARB medication with sacubitril/valsartan in HFrEF patients that had ICD or CRT-D implantation minimal six months prior. To assess risk of bias Strengthening the Reporting of Observational Studies in Epidemiology (STROBE) is used. A Bayesian network meta-analysis adopted both direct and indirect comparisons to investigate the most optimal medication.
Results: Seven observational cohort studies comprising 707 patients were included in the final analysis. Four studies used final high dose of sacubitril/valsartan (titrated until 200 mg twice daily), two studies used final lower dose (titrated until 100 mg twice daily), and one study compared final high and low doses of sacubitril/valsartan. The results showed switching to sacubitril/valsartan significantly reduced appropriate ICD shocks [RR: 0.32 (95%CI: 0.16, 0.64; p-value: 0.001)], significantly lowered incidence of non-sustained ventricular tachycardia (NSVT) [RR: 0.49 (95%CI: 0.33, 0.73; p-value: 0.005)], significantly reduced premature ventricular contractions (PVCs) burden [MD: -39.91 (95%CI: -43.07, -36.75; p-value < 0.01)], and significantly lowered atrial fibrillation (AF) burden [RR: 0.65 (95%CI: 0.44, 0.95; p-value: 0.02)]. Additionally, the network meta-analysis suggests that final high dose of sacubitril/valsartan have the highest effectiveness in reducing appropriate ICD shocks, incidence of NSVT, and AF burden. Litmus rank-o-gram SUCRA (figure 1) was also used to demonstrate the ranking of the medications.
Conclusion: The meta-analysis showed that switching to sacubitril/valsartan significantly reduced appropriate ICD shocks, reduced NSVT incidence, lower PVC burden, and lower AF burden. In addition, the network meta-analysis suggested that titrated sacubitril/valsartan until optimal dose (200 mg twice daily) showed the highest effectiveness in majority outcomes.

Keywords: angiotensin receptor-neprilysin inhibitors, sacubitril/valsartan, arrhythmias, network meta-analysis

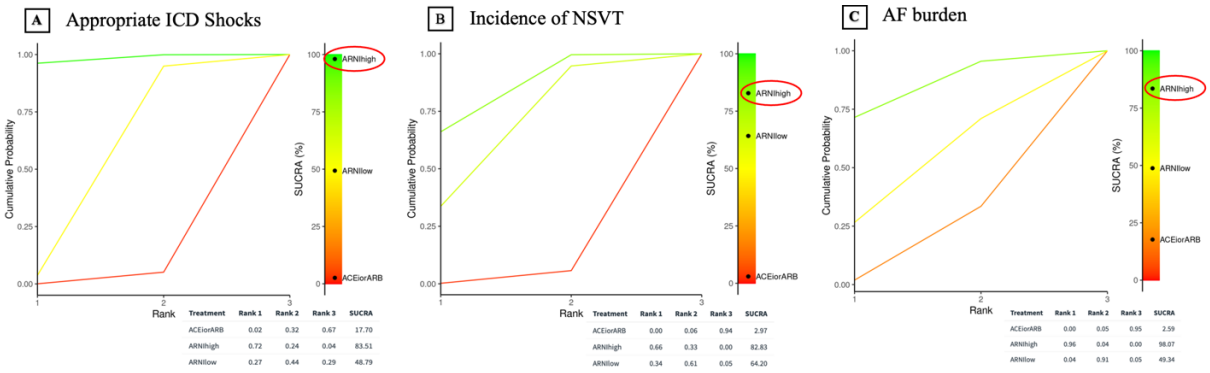


Figure 1. Litmus rank-o-gram from Bayesian network meta-analysis showed sacubitril/valsartan that titrated until optimal dosage 200 mg twice daily (ARNIhigh) showed the highest effectiveness in reducing appropriate ICD shocks (figure 1A), incidence of non-sustained ventricular tachycardia (NSVT) (figure 1B), and atrial fibrillation (AF) burden (figure 1C) when compared with sacubitril/valsartan that titrated until 100 mg twice daily (ARNIlow) and ACEi/ARB medication.

The 11th Annual Scientific Meeting InaHRS 2024

Indonesian Journal of Cardiology
Indonesian J Cardiol 2024:45:suppl_B
pISSN: 2830-3105 / eISSN: 2964-7304
doi: 10.30701/ijc.1734

A meta-analysis of pacing strategies following atrioventricular nodal ablation in atrial fibrillation patients with reduced left ventricular ejection fraction: Is conduction system pacing a better option to conventional biventricular pacing?

W. Kamarullah[1], G. Karwiky[1], R. Pranata[1], C. Achmad[1], M. Iqbal[1]
[1]Department of Cardiology and Vascular Medicine, Faculty of Medicine, Universitas Padjadjaran, Hasan Sadikin General Hospital, Bandung, Indonesia

Background and aims: It is now apparent that right ventricular pacing (RVP) is perilous in individuals with ventricular dysfunction who require constant ventricular pacing; thus, substitutes these days extend to biventricular pacing (BiVP) and conduction system pacing (CSP). The latter modality has gained significant momentum recently due to its greater physiological stimulation, particularly in drug-refractory atrial fibrillation (AF) patients scheduled for pace and ablate strategy with reduced left ventricular ejection fraction (LVEF) and narrow baseline QRS complex. However, data on its efficacy and safety remains scarce due to the small number of participants and therefore lack of accuracy. Our aim was to yield more robust evidence by pooling all these data in this meta-analysis.

Materials and methods: Systematic literature search was conducted using PubMed, Europe PMC, and ScienceDirect for studies that compared the outcomes of CSP compared to BiVP. Study outcomes included periprocedural parameters, pacing and echocardiographic metrics, complications, and clinical outcomes.

Results: A total of 5 studies involving 720 participants were included. Most of the included studies employed His-bundle pacing (HBP) as the primary CSP strategy. Procedural success rates were comparable between groups. Compared to BiVP, CSP appeared to result in shortened procedure (MD: -39.95 (-49.71, -30.19); P<0.001; I^2=50%) and fluoroscopy (MD: -7.47 (-12.19, -2.76); P=0.002; I^2=85%) time, along with significantly narrower paced QRS duration (MD: -41.30 (-56.09, -26.52); P<0.001; I^2=96%), lower capture thresholds (MD: -0.32 (-0.54, -0.10); P=0.004; I^2=85%), substantial New York Heart Association (NYHA) class improvement (MD: -0.19 (-0.28, -0.10); P<0.001; I^2=0%), and better LVEF improvement (MD: 3.88 (1.98, 5.77); P<0.001; I^2=94%). The primary combined endpoint of mortality was notably reduced in CSP compared to BiVP (RR=0.64 (0.45-0.92); P=0.01; I^2=0%). No statistical differences were found in heart failure rehospitalization and lead-related complications in the CSP group compared to BiVP.

Conclusion: Current evidence suggests that CSP delivers a modest but superior significant improvement in several clinical parameters and is a viable alternative to BiVP, especially in AF patients with reduced LVEF and narrow QRS undergoing atrioventricular nodal ablation. A specific learning curve should be considered for CSP, yet long-term, randomized trials are still warranted to corroborate these findings.

Keywords: conduction system pacing; biventricular pacing; heart failure with reduced ejection fraction; atrial fibrillation; pace and ablate

The 11th Annual Scientific Meeting InaHRS 2024

Indonesian Journal of Cardiology
Indonesian J Cardiol 2024:45:suppl_B
pISSN: 2830-3105 / eISSN: 2964-7304
doi: 10.30701/ijc.1734

Long-term Clinical Outcomes of Left Bundle Branch Area Pacing versus Right Ventricular Pacing: A Systematic Review and Meta-Analysis

K. Wibawa[1], P. Adhisatya Pratama[1], I. Cahyo Santosa Putra[1], C. Achmad[1], G. Karwiky[1], M. Iqbal[1]
[1]Department of Cardiology and Vascular Medicine, Rumah Sakit Hasan Sadikin, Bandung, Indonesia

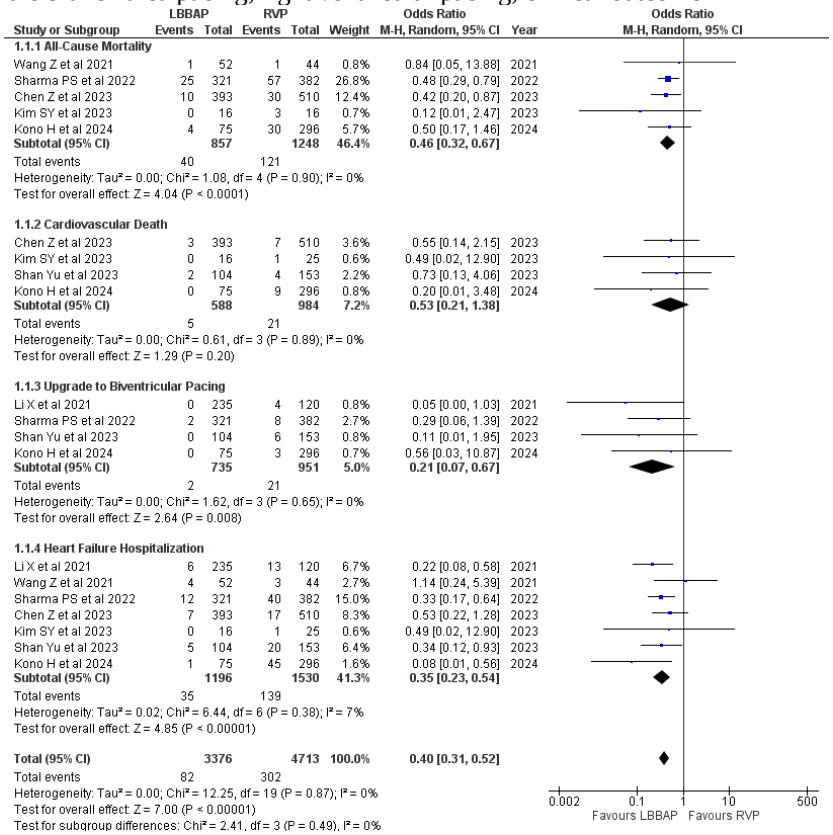
Background and aims: Conventionally, Right Ventricular Pacing (RVP) is recommended as a first option for patients with specific pacing indication. However, RVP may cause pacing-induced cardiomyopathy (PICM) resulting from electromechanical dyssynchrony in the long-term. The prevalence of PICM varied between 5.9% to 30% and is commonly observed in patient with ventricular pacing burden >40%. To overcome the deleterious effects of RVP, Left Bundle Branch Area Pacing (LBBAP) emerges as an alternative pacing option. LBBAP is better in preserving electromechanical synchrony compared to RVP. However, studies still report a mix result for long-term clinical outcomes. Therefore, we aim to study the long-term clinical outcomes of LBBAP compared to RVP.

Material and methods: A structured search was conducted in Pubmed, Proquest, and Clinicaltrial.gov. Our inclusion criteria were: 1) Age >18 years old; 2) Direct comparison between LBBAP and RVP. The outcome of interests were all-cause mortality, cardiovascular mortality, heart failure hospitalization (HFH), and the need for upgrading to biventricular pacing (BVP).

Results: A total of 7 final articles involving 1196 patients with LBBAP and 1530 patients with RVP were included. The paced QRS duration was significantly narrower in LBBAP compared to RVP during follow-up period (MD= -37.89; 95%CI=-41.71 to –34.07; P<0.00001; I2=12%; P-heterogeneity=0.33). The primary composite endpoints were significantly lower in LBBAP compared to RVP (HR=0.39; 95%CI=0.30–0.51; P<0.00001; I2=0%, P-heterogeneity=0.85). LBBAP was associated with a significantly lower all-cause mortality (HR=0.46; 95%CI=0.32–0.67; P<0.0001; I2=0%, P-heterogeneity=0.90), HFH (HR=0.35; 95%CI=0.23–0.54; P<0.00001; I2=7%, P-heterogeneity=0.38), and the need for upgrading to BVP (HR=0.21; 95%CI=0.07–0.67; P=0.008; I2=0%, P-heterogeneity=0.65) compared to RVP. Cardiovascular death was comparable between LBBAP and RVP (HR=0.53; 95%CI=0.21–1.38; P=0.20S; I2=0%, P-heterogeneity=0.89).

Conclusion: Among patients with specific indications for pacing, LBBAP significantly reduced all-cause mortality, HFH, and upgrade to BVP compared to RVP during follow-up.

Keyword: left bundle branch area pacing, right ventricular pacing, clinical outcome



The 11th Annual Scientific Meeting InaHRS 2024

Indonesian Journal of Cardiology

Indonesian J Cardiol 2024:45:suppl_B
pISSN: 2830-3105 / eISSN: 2964-7304
doi: 10.30701/ijc.1734

Assessing the Efficacy and Safety of Cryoablation, Radiofrequency Ablation, and Antiarrhythmic Drugs in the Management of Persistent and Intermittent Atrial Fibrillation: A Combined Frequentist and Comparative Network Meta-Analysis with Meta-Regression of Randomized Clinical Trials

D. D. C. H. Rampengan[1], M. V. Ariyanto[2], J. Nathanael[3], N. J. Tjipta[2], K. G. P. Anugraha[2], D. Giri[4], I. M. Puling[4], S. Emmanuel[4]

[1]Faculty of Medicine, Universitas Sam Ratulangi, Manado, Indonesia; [2]Faculty of Medicine, Universitas Airlangga, Surabaya, Indonesia; [3]Faculty of Medicine, Universitas Indonesia, Manado, Indonesia; [4]Faculty of Medicine, Universitas Brawijaya, Malang, Indonesia

Background and Aims: The prevalence of atrial fibrillation (AF) has seen a significant global increase in recent years. Antiarrhythmic drugs (AAD) have long been employed in managing both persistent and intermittent. AF. These days, pulmonary vein isolation is commonly used as an interventional therapy for AF, whether using the long established radiofrequency ablation (RFA) or the newly emerged cryoablation (CBA). RFA efficacy has developed greatly for the past decades, but the idea of minimal energy application in CBA has notably enhanced its safety profile. Thus, the safety and efficacy of these three treatment modalities must be assessed between each other.

Materials and Methods: Frequentist meta-analysis was done using RevMan 5.4 and network meta-analysis (NMA) using Rstudio. Each treatment was ranked using the surface under cumulative ranking curve (SUCRA) based on every outcome. We also conducted subgroup and meta-regression analysis.

Results: A total of 85 studies with 31980 patients were included in the analysis. According to the NMA, the risk of re-ablation was significantly decreased in the CBA group (RR = 1.61; 95% CI = 0.42 – 6.13) while RFA has the highest risk of freedom from arrhythmia recurrence (RR = 0.87; 95% CI = 0.75 – 1.02). In terms of safety, CBA is superior to RFA in reducing incidence of serious adverse effects (RR = 0.91; 95% CI = 0.79 – 1.05) while RFA has the lowest risk for incidence of phrenic nerve palsy (RR = 0.77; 95% CI = 0.13 – 4.44). Other parameters, including success rate, follow-up time, rehospitalization, cardioversion, other complication rate, such as stroke, hematoma, pulmonary valve stenosis, pericardial tamponade, pericardial effusion, myocardial infarction, bleeding, vascular complication, transient-ischemic attack, and death also show variance of significance among RFA and CBA group. Furthermore, meta-analysis showed that CBA was significantly associated with shorter procedural time (MD = -18.57; 95% CI = -23.84 – -13.30; $p < 0.00001$).

Conclusion: Interventional therapy modalities demonstrate significantly higher efficacy compared to AAD. A defining statement of the finest modality should be considered in a specific manner, as CBA and RFA each hold an upper hand in various efficacy and safety aspects of therapy.

Keywords: Atrial fibrillation, Cryoablation, Intermittent, Persistent, Radio Frequency Ablation

The 11th Annual Scientific Meeting InaHRS 2024

Indonesian Journal of Cardiology

Indonesian J Cardiol 2024:45:suppl_B
pISSN: 2830-3105 / eISSN: 2964-7304
doi: 10.30701/ijc.1734

The effects of exercise intervention on cardiac function of individuals with non-permanent atrial fibrillation and preserved ejection fraction: a systematic review and meta-analysis of randomized controlled trials

E. Fukata[1], R. B. Hardani[2], A. Rizal[3]

[1]Faculty of Medicine, Universitas Negeri Malang, Malang, Indonesia
[2]General practitioner, Dr. R. Hardjanto Hospital, Balikpapan, Indonesia
[3]Department of Cardiology and Vascular Medicine, Faculty of Medicine, Brawijaya University Malang, Indonesia

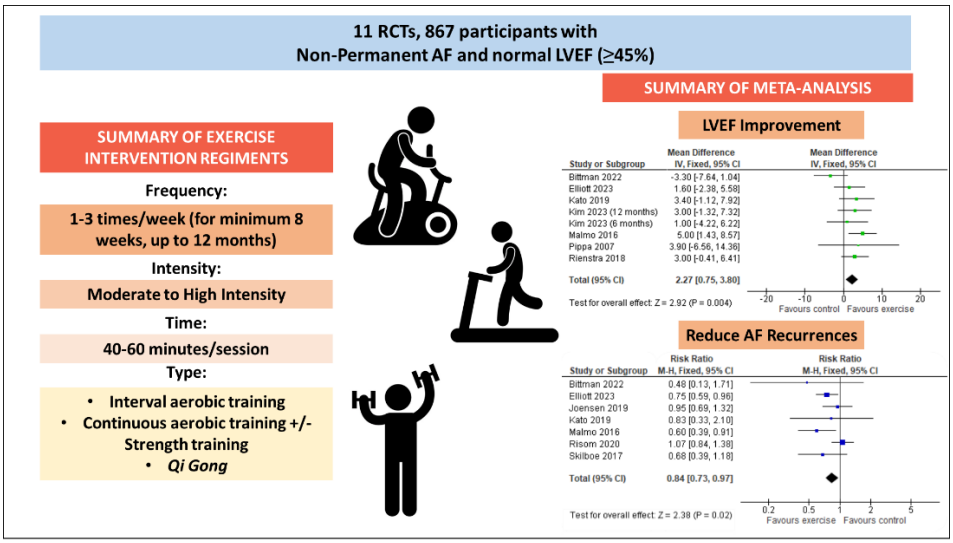
Background and aims: Atrial fibrillation (AF) is the most common type of cardiac arrhythmia and is associated with significant morbidity and mortality. Despite the high prevalence of AF, recommendations for exercise in individuals with AF are still lacking. Left ventricular ejection fraction (LVEF) is recently considered a potential prognostic factor in AF. We aimed to investigate the effectiveness of exercise for individuals with AF to improve LVEF and reduce AF recurrence.

Materials and methods: A systematic review and meta-analysis study was conducted based on PRISMA guidelines. PubMed, Google Scholar, and ProQuest were searched for randomized controlled trials (RCT) comparing exercise intervention combined with AF routine treatments to routine treatments alone, on non-permanent AF patients with normal LVEF. The primary outcomes were LVEF changes and the number of participants with AF recurrences. The pooled effects were estimated using fixed effects models and presented as mean differences (MD) for LVEF changes and risk ratio (RR) for AF recurrences.

Results: A total of 11 RCTs, involving 867 participants, were included. In the experimental group, patients received a supervised with or without home-based exercise intervention, in addition to the routine care for AF. Exercise interventions vary, including exercise-based cardiac rehabilitation (combination of endurance and resistance training), interval aerobic training, and Qi Gong. There were significant positive effects of exercise intervention on LVEF changes (MD=2.27%, 95% CI: 0.75 to 3.80, p=0.004, I^2=26%). Exercise intervention was also associated with a lower risk of AF recurrences than the usual care only (RR=0.84, 95% CI: 0.73 to 0.97, p=0.02, I^2=33%).

Conclusion: Exercise intervention effectively increases LVEF and reduces AF recurrence in participants with AF. Further large RCTs with optimized exercise regimens are needed to make specific recommendations for exercise training for AF patients.

Keywords: atrial fibrillation, arrhythmia, exercise, cardiac rehabilitation



The 11th Annual Scientific Meeting InaHRS 2024

Indonesian Journal of Cardiology
Indonesian J Cardiol 2024:45:suppl_B
pISSN: 2830-3105 / eISSN: 2964-7304
doi: 10.30701/ijc.1734

Overall Outcomes of Apixaban vs Warfarin for Atrial Fibrillation Treatment : A systematic review

M. D. Sembiring[1], C. D. Shafyra[1], N. A. Islami[1], S. N. Yudianto[1], Y. A. Teguh[1], C. Z. Salsabilah[1]
[1]Faculty of Medicine, Pelita Harapan University, Tangerang, Indonesia

Background and aims: Atrial fibrillation (AF) is the most prevalent ongoing cardiac arrhythmia, affecting about 1.0–1.5% of the general population, with a significantly rising incidence projected for the future. Apixaban, an oral anticoagulant, prevents strokes and systemic embolism in patients with non-valvular atrial fibrillation. It inhibits factor Xa, an enzyme crucial for blood clotting, thereby reducing the risk of blood clot formation and providing significant protection against potential stroke and embolic events. NOACs, such as apixaban, effectively reduce stroke and thromboembolic events and offer a safer profile than warfarin. Warfarin has a slowly diminishing anticoagulant effect, so it is typically withheld several days before procedures with moderate-to-high bleeding risks. Thus, this systematic review aims to evaluate overall outcomes of apixaban compared to warfarin for atrial fibrillation.

Materials and methods: These studies were extracted from Pubmed with the keywords (Atrial Fibrillation) AND (Apixaban) on 31st May 2024. Six from 75 studies were selected through inclusion criteria, such as randomized controlled trials and clinical trials with last 10 years publication and exclusion criteria, such as meta-analysis, reviews, case reports and observational Studies. The quality of the included studies were assessed using the Newcastle-Ottawa Scale (NOS).

Results: Six out of 75 studies involving 83,032 participants, were conducted using data from the ARISTOTLE trial. Four studies found apixaban more effective than warfarin in reducing stroke or systemic embolism and bleeding risks, regardless of age or number of medications. One study showed apixaban provided an overall gain of 116 days event-free time compared to warfarin. In comparison, another study indicated similar 30-day post-procedure outcomes for stroke, death, and significant bleeding with both drugs. These results proved that apixaban demonstrates superior efficacy compared to warfarin.

Conclusion: In conclusion, apixaban demonstrates superior efficacy than warfarin for atrial fibrillation across different age groups, as indicated by the longer duration before complications arise in apixaban users. However, further research is required to assess the safety of apixaban vs warfarin, especially regarding post-procedural hemorrhage.

Keyword: Apixaban, warfarin, atrial fibrillation

The 11th Annual Scientific Meeting InaHRS 2024

Indonesian Journal of Cardiology

Indonesian J Cardiol 2024:45:suppl_B
pISSN: 2830-3105 / eISSN: 2964-7304
doi: 10.30701/ijc.1734

Early Rhythm Control, Especially Catheter Ablation is Superior Compared to Rate Control in Atrial Fibrillation – A Systematic Review, Meta-analysis, and Meta-regression

K. Hermanto[1,2], R. Pranata[1,2], H. S. Prameswari[1,2], G. Karwiky[1,2], C. Achmad[1,2], M. Iqbal[1,2]

[1]Department of Cardiology and Vascular Medicine, Faculty of Medicine, Universitas Padjadjaran, Bandung, Indonesia

[2]Department of Cardiology and Vascular Medicine, Dr Hasan Sadikin General Hospital, Bandung, Indonesia

Background and aims: Previous studies have shown that rate control has outcomes comparable to rhythm control; however, new research suggests that early rhythm control may be superior for patients with atrial fibrillation (AF). Additionally, it remains unclear whether catheter ablation or anti-arrhythmic drugs/cardioversion is more effective. This study aimed to compare the effectiveness of early rhythm control to rate control and is the first to perform a meta-regression to determine if catheter ablation offers more benefits compared to other rhythm control methods.

Materials and Methods: A comprehensive literature search was conducted on PubMed, SCOPUS, and EuropePMC up to July 2, 2024. The primary outcome of this study was major adverse cardio-cerebrovascular events (MACCE), defined as a composite of mortality, stroke/systemic embolism, heart failure hospitalization (HFH), and acute coronary syndrome (ACS) during the follow-up period. Outcome measures were adjusted hazard ratios (aHR).

Results: A total of 504,124 patients from 11 studies were included in this systematic review and meta-analysis. Early rhythm control was significantly associated with a reduction in MACCE (aHR 0.85 [95% CI 0.80, 0.90], $p < 0.001$; I^2: 23%), stroke (aHR 0.79 [95% CI 0.72, 0.86], $p < 0.001$; I^2: 25%), HFH (aHR 0.87 [95% CI 0.78, 0.96], $p = 0.008$; I^2: 48%), and ACS (aHR 0.80 [95% CI 0.66, 0.96], $p = 0.018$; I^2: 40%). No mortality benefit (aHR 0.93 [95% CI 0.85, 1.01], $p = 0.066$; I^2: 67%) was observed; however, mortality benefit became evident (aHR 0.87 [95% CI 0.85, 0.89], $p < 0.001$) upon the removal of a study during a leave-one-out sensitivity analysis. Meta-regression analysis showed that the benefits of early rhythm control in terms of MACCE were more pronounced with ablation (coefficient -0.004, $p = 0.010$, R^2: 100%).

Conclusion: Early rhythm control was associated with better outcomes compared to rate control in AF. This is the first meta-regression analysis to show a more pronounced benefit for catheter ablation for early rhythm control.

Keywords: atrial fibrillation; early rhythm control; rate control; ablation; meta-analysis

The 11th Annual Scientific Meeting InaHRS 2024

Indonesian Journal of Cardiology

Indonesian J Cardiol 2024:45:suppl_B
pISSN: 2830-3105 / eISSN: 2964-7304
doi: 10.30701/ijc.1734

Predictive value of inducibility test following catheter ablation of atrial fibrillation: a systematic review and meta-analysis

N.M. Haykal[1*], O.M. Syarif[1], M.F. Abdurrahman[1], S. Ramadita[1], S. Amirah[1], S.A. Telaga[1], J. Hanoon[1], S.B. Raharjo[2].

[1] *Faculty of Medicine, Universitas Indonesia, Jakarta 10430, Indonesia*
[2]*Department of Cardiology & Vascular Medicine, Universitas Indonesia, Jakarta 10430, Indonesia*

Background & aim: Although catheter ablation (CA) is an effective treatment for atrial fibrillation (AF) patients, the predictive value of non-inducibility post-ablation remains controversial. We aim to evaluate the predictive value of non-inducibility post-CA with long-term atrial arrhythmia recurrence.

Methods and materials: We conducted a systematic review and meta-analysis based on PRISMA using PubMed, Cochrane, Scopus, and ProQuest. Cohort studies of AF ablation were included. The relative risk of atrial arrhythmia recurrence at follow-up was assessed as the primary outcome using a fix-effects model.

Results: Seventeen cohort studies with non-inducible AF (n=2067) and inducible AF (n=1391) post-CA were analyzed. Overall, at a median follow-up of 12 months, non-inducible AF post-CA was associated with a lower risk of atrial arrhythmia recurrence compared to inducible AF (RR 0.68 [95% CI 0.58–0.79]) (Figure 1). This finding was consistent for both paroxysmal AF (RR 0.67 [95% CI 0.59–0.76]) and non-paroxysmal AF (RR 0.76 [95% CI 0.61–0.94]). Interestingly, the inducibility test using isoproterenol has a better predictive value (RR 0.29 [95% CI 0.16–0.52]) than atrial burst pacing (RR 0.68 [95% CI 0.59–0.79]), while an inducibility test with adenosine has no predictive value (RR 1.0 [95% CI 0.67-1.50]).

Conclusion: Non-inducibility of AF post-catheter ablation is associated with lower atrial arrhythmia recurrence, and the isoproterenol induction test has the best predictive value of atrial arrhythmia recurrences.

Keywords: atrial fibrillation, catheter ablation, non-inducibility, recurrence

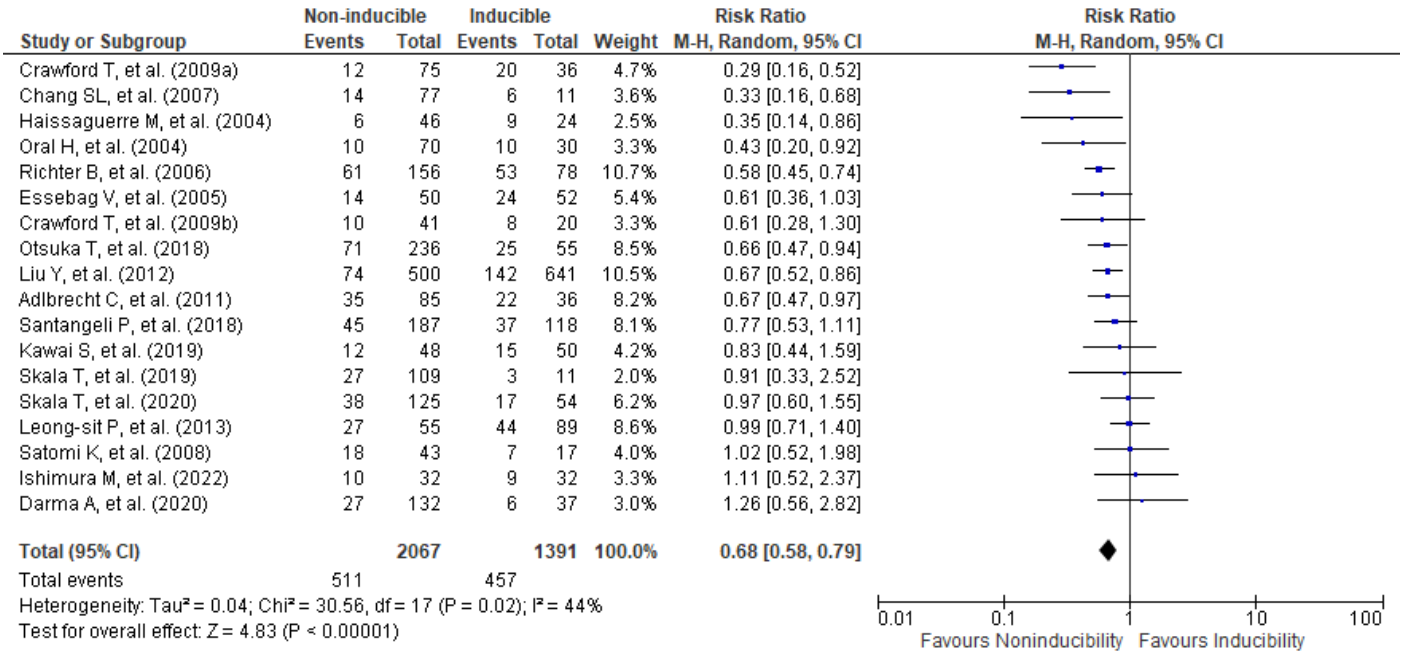


Figure 1. Forest plot of the predictive value of atrial arrhythmia recurrence based on the inducibility status post-AF ablation.

The 11th Annual Scientific Meeting InaHRS 2024

Indonesian Journal of Cardiology

Indonesian J Cardiol 2024:45:suppl_B
pISSN: 2830-3105 / eISSN: 2964-7304
doi: 10.30701/ijc.1734

Comparison of His Bundle Pacing and Left Bundle Branch Pacing for Cardiac Resynchronization Therapy

S. Valentina[1], E. N. Hailianto[1], K. P. Sugiono[1], T. C. E. Adeodatia[1], Andree Kurniawan[2]

[1]*Faculty of Medicine, Universitas Pelita Harapan, Tangerang, Indonesia*

[2]*Department of Internal Medicine, Faculty of Medicine, Universitas Pelita Harapan, Tangerang, Indonesia*

Background and aims : Conventional Right Ventricular Apical Pacing (RVAP) as Cardiac Resynchronization Therapy (CRT) is associated with increased incidence of cardiac dyssynchrony. Conduction System Pacing (CSP), consisting of His bundle pacing (HBP) and left bundle branch pacing (LBBP), are considered to be promising alternatives for RVAP. However, comprehensive studies comparing the two pacing methods are still limited. This study aims to compare the efficacy and short-term outcomes of HBP and LBBP.

Materials and methods : The data used for this study were retrieved from PubMed Central (PMC), ScienceDirect, and Google Scholar by using the keywords “His Bundle Pacing” and “Left Bundle Branch Pacing”, and “Comparison”. Inclusion criteria includes cohort studies, clinical trial studies, and observational studies within the past 5 years that includes patients who underwent CSP pacemaker implantation with at least 3 month follow-up period. Exclusion criteria consist of patients undergoing Cardiac Resynchronization Therapy with pacemaker replacement or upgrade with existing lead. The primary outcomes assessed were the electrical parameter stability, implantation success rates, and complications after follow-ups. All eligible studies were assessed using the Newcastle-Ottawa Scale (NOS) and involve more than 2 independent investigators to reduce risk of bias.

Result : Out of 117 studies found, 5 cohort studies and 2 observational studies were included in this study. All studies involving a total of 700 patients concluded that LBBP demonstrated a higher success rate, lower capture threshold, and greater R-wave amplitude compared to HBP, while paced QRS Duration were found similar. Follow up data indicated fewer complications and greater improvement in left ventricular ejection fraction (LVEF) in LBBP patients, both in those with reduced and preserved ejection fractions. Additionally, mean procedural time and fluoroscopy duration were found shorter in LBBP. All studies, assessed using the NOS Scale, were found to be of good quality.

Conclusion : In conclusion, LBBP performs better efficacy and short-term outcomes than HBP. However, Further studies are required to compare long term-outcomes between these two pacing methods.

Keyword : ”His Bundle Pacing”, “Left Bundle Branch Pacing”, “Comparison”

The 11th Annual Scientific Meeting InaHRS 2024

Indonesian Journal of Cardiology
Indonesian J Cardiol 2024:45:suppl_B
pISSN: 2830-3105 / eISSN: 2964-7304
doi: 10.30701/ijc.1734

Conduction disorders and permanent pacemaker implantation after transcatheter aortic valve implantation – a systematic review, meta-analysis, and meta-regression of outcomes

J. N. Hariyanto[1], C. J. Hardi[1], J. A. Setiawan[1]
[1]*Faculty of Medicine, Universitas Pelita Harapan, Tangerang*

Background and aims: Despite advancements, conduction disturbances (CD) after TAVI persist. This review analyzes outcomes in CD and PPM implantation after TAVI.

Materials and methods: We reviewed PubMed, Scopus, and Cochrane for cohort studies on CD and PPM implantation after TAVI from 2019, with statistical analysis in R.

Results: Badertscher (2023) noted LBBB in 25% of patients the day after TAVI, 86% new-onset. Masoullie (2023) reported 30.6% developed high-grade CD within 12 months, 32.1% within 30 days, median onset 110 days. Nazif (2019) found persistent new-onset LBBB increased all-cause (19.3% vs. 10.8%, P = 0.002) and cardiovascular mortality (16.2% vs. 6.5%, P < 0.001), rehospitalization (HR 1.94, 95% CI 1.11–2.43; p = 0.01), PPM implantation (HR 3.02, 95% CI 1.72–5.29; p < 0.001), and decreased LVEF over 2 years (-4.3 vs +0.1; p < 0.001).
Chen (2024) found 61.7% of PPM indications were for complete heart block and 12.1% for LBBB, with LVEF declining from 55.1% at 1 year to 60.4% at 5 years (p = 0.02). Meduri (2019) identified baseline RBBB and valve implantation depth as predictors of PPM. PPM recipients had higher 1-year mortality (HR 2.16, p = 0.03) and cardiomyopathy (HR 14.8, p < 0.01) due to high RV stimulation (Ananwattanasuk 2022). RV stimulation >10% was linked to increased 1-year mortality and HF hospitalization (Dykun 2023).
Across 13 studies with an average follow-up of 480 days, PPM had a non-significant effect on all-cause mortality (OR = 0.86, 95% CI 0.67-1.11; I^2 = 81%). Meta-regression showed significant associations with baseline 1st degree AV block (p = 0.0149), RBBB (p = 0.0226), LBBB (p = 0.0493), renal impairment (p = 0.0135), NYHA class III/IV (p = 0.0016), and AVG (p = 0.0009). PPM was linked to a higher risk of HF rehospitalization (OR = 1.22, 95% CI 1.16-1.29; I^2 = 0%).

Conclusion: Conduction disorders after TAVI increases mortality, HF rehospitalization, and reduces LVEF. PPM implantation is associated with HF rehospitalization but has no significant effect on mortality.

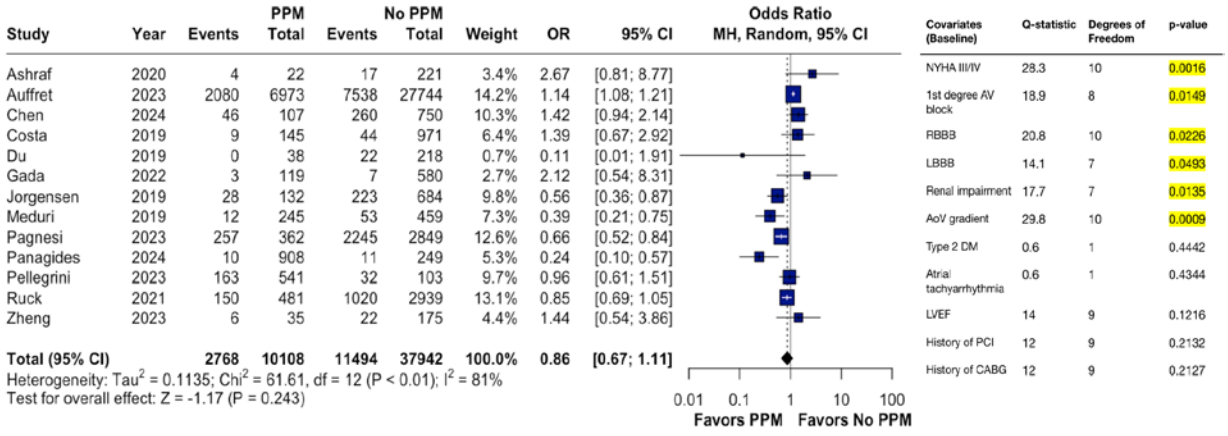


Figure 1: Forest plot for all-cause mortality and summary of meta-regression analysis; significant covariates highlighted in yellow

The 11th Annual Scientific Meeting InaHRS 2024

Indonesian Journal of Cardiology
Indonesian J Cardiol 2024:45:suppl_B
pISSN: 2830-3105 / eISSN: 2964-7304
doi: 10.30701/ijc.1734

Ineffectiveness of Beta Blockers in Managing Idiopathic Premature Ventricular Complexes: A Systematic Review and Meta-Analysis

A. P. Ardinal[1], A. V. Wiyono[1]
[1]Faculty of Life Sciences and Medicine, King's College London, United Kingdom

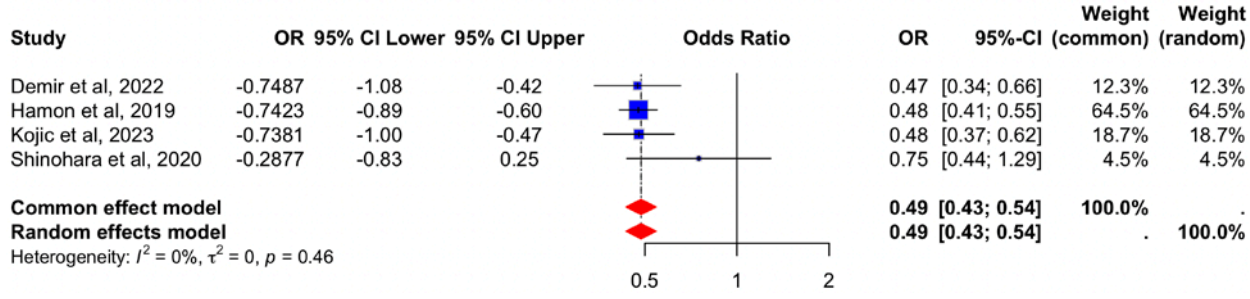
Background and Aims: The management of idiopathic premature ventricular complexes (PVCs) often involves choosing between catheter ablation and pharmacological therapy. While catheter ablation can potentially eliminate ectopic sources permanently, it carries risks of procedural complications and treatment failure. Beta blockers have emerged as a non-invasive alternative for managing PVCs. This systematic review and meta-analysis aim to evaluate the effectiveness of beta blockers in reducing PVC burden and identify patient characteristics influencing their efficacy.

Materials and Methods: A comprehensive literature search was conducted in PubMed, Medline, and CINAHL using the keywords "beta blockers" and "premature ventricular complexes." Studies published in English within the last 10 years, focusing on idiopathic PVCs, were included. Methodological quality was assessed using the Newcastle-Ottawa Scale for observational studies. The primary outcome was the reduction in PVC burden, analyzed using odds ratios (ORs) with 95% confidence intervals (CIs). Data synthesis was performed in R software using the DerSimonian-Laird method with Restricted Maximum Likelihood (REML). The I^2 statistic, Cochrane's Q test, and sensitivity analysis were utilized to explore heterogeneity.

Results: A total of seven studies were included in this review. Initially, five studies were selected for quantitative analysis, but due to high heterogeneity, one study was excluded after sensitivity analysis, resulting in four studies with a pooled random-effects OR of 0.49 (95% CI: 0.43-0.54), encompassing 745 patients. The types of beta blockers used varied, including bisoprolol, sotalol, and carvedilol. Despite the overall limited efficacy, several studies indicated that baseline and clinical characteristics, such as gender, baseline heart rate, PVC QRS width, and left ventricular ejection fraction (LVEF), might affect response to beta blocker therapy, though results were conflicting.

Conclusion: Beta blockers demonstrated a limited effect on PVC burden reduction. While certain patient characteristics may predict better response, the evidence remains inconclusive. Further large-scale cohort studies are needed to confirm these findings and ensure reliability. Delaying other effective treatment options in favor of beta blockers may be detrimental to patient outcomes.

Keyword: Premature ventricular complexes, idiopathic, beta blockers, calcium channel blockers



The 11th Annual Scientific Meeting InaHRS 2024

Indonesian Journal of Cardiology

Indonesian J Cardiol 2024:45:suppl_B
pISSN: 2830-3105 / eISSN: 2964-7304
doi: 10.30701/ijc.1734

Catheter Ablation in Persistent Atrial Fibrillation Improves VO2 Max Significantly: A Meta-Analysis

R. R. Eri[1], H. Balweel[2], A. Harsoyo[2], N. A. Tafriend[2]

[1]General Practitioner, Gatot Soebroto Army Central Hospital, Jakarta, Indonesia

[2]Cardiologist, Gatot Soebroto Army Central Hospital, Jakarta, Indonesia

Background and aims: Atrial fibrillation (AF) can cause various symptoms, including palpitations, chest pain, and exercise intolerance. Catheter ablation is indicated if symptoms persist despite optimal medication. However, in developing countries with limited resources, catheter ablation for AF poses challenges, ranging from reimbursement issues to limited technologies. Here, we present a meta-analysis of significant VO2 max improvement, one of the most accessible parameters of functional capacity, in persistent AF following catheter ablation. Our aim is to provide more data that may support increased use of catheter ablation for persistent AF.

Materials and Methods: We did a comprehensive search in four databases: PubMed, PMC, Embase, and SCOPUS, using the keywords "VO2" and "Atrial fibrillation". We included studies that examined VO2 Max improvement following persistent AF catheter ablation with no other cardiac problems such as congenital heart disease, other arrhytmias, coronary heart disease. The quality of all studies were assesed using Newcastle-Ottawa scale.

Results: Five prospective cohort studies with total samples of 351 were analyzed. Duration of follow-up ranged from 3 to 12 months. All studies showed improvement of VO2 Max following atrial fibrillation catheter ablation, with average increase of VO2 Max of 2.8 ml/kg/min.

Conclusion: Our meta-analysis reveals a significant improvement in VO2 Max following catheter ablation in patients with persistent atrial fibrillation, showing an average increase of 2.8 ml/kg/min. Given that each 1 ml/kg/min increase in VO2 Max is associated with a 14-17% reduction in the risk of cardiovascular and all-cause mortality, catheter ablation in AF may reduce this risk by 39-48%. These findings highlight the potential of catheter ablation to enhance patient exercise tolerance and outcomes, as well as to reduce mortality in persistent AF.

Keyword: Atrial fibrillation, catheter ablation, VO2 Max.

The 11th Annual Scientific Meeting InaHRS 2024

Indonesian Journal of Cardiology

Indonesian J Cardiol 2024:45:suppl_B
pISSN: 2830-3105 / eISSN: 2964-7304
doi: 10.30701/ijc.1734

Diagnosis of Cardiac Arrhythmia in Community using Wearable Smartwatches: A Systematic Review and Meta-analysis of Diagnostic Accuracy

L. H. Andira, R. A. Nugraha, B. P. D. Khrisna, R. B. Wicaksono, M. J. Al-Farabi, R. I. Gunadi, R. Amadis, R. N. Rosyadi, B. B. Dharmadjati, R. Julario

[1] *Division of Electrophysiology and Pacing, Department of Cardiology and Vascular Medicine, Faculty of Medicine Universitas Airlangga – Dr. Soetomo General Academic Hospital, Surabaya*

Background and aims: Conventional screening strategy such as 12-lead electrocardiograms are often unsuccessful in detecting arrhythmias, due to its transient nature of episodes. Ambulatory electrocardiography monitors such as Holter are often expensive and uncomfortable. Nowadays, there is a move to more personalized and patient-centric approach in mobile health technology using wearable electronic device which allows heart rhythm monitoring to be undertaken in real time with greater comfort, ease, and engagement. This study aims to systematically review and meta-analyze the diagnostic accuracy of wearable smartwatches in the detection of cardiac arrhythmias.

Materials and Methods: We comprehensively searched the databases of PubMed, Embase, and Scopus from inception to June 29, 2024, in accordance with the PRISMA (Preferred Reporting Items for Systematic Reviews and Meta-Analyses) guidelines to identify studies reporting the use of a wearable smartwatch for the detection of cardiac arrhythmia. Database searches identified 292 studies. Duplicates were removed, and 215 studies were eligible. The primary endpoint was the proportion of patients newly diagnosed with arrythmia for each devices. Summary estimates of sensitivity, specificity, and area under the curve were attempted using a bivariate model for the diagnostic meta-analysis. Data were extracted onto a standard spreadsheet template. Studies were examined for quality using the Quality Assessment of Diagnostic Accuracy Studies 2 tool.

Results: Total of 22 studies (511,281 subjects) examining atrial fibrillation, premature atrial / ventricular contraction, bradycardia and tachycardia detection, were analysed. Wearable smartwatches were non-inferior to ECG monitoring (OR 1.16, 95% CI: 0.93 - 1.21, p=0.312) or 12 lead Holter monitoring (OR 0.97, 95% CI: 0.65 - 1.33, p=0.517) for arrhythmia detection. Overall sensitivity and specificity of wearable smartwatches for detecting cardiac arrhythmias were 82% (95% CI: 0.72-0.88) and 95% (95% CI: 0.92-0.96), respectively.

Conclusions: This review demonstrates that current diagnostic accuracy of smartwatch technology for the detection of cardiac arrhythmias is high. Although wearable smartwatches were effective as a 24-hour Holter monitor in detecting symptoms of cardiac arrhythmia, however a false-positive screening result may lead to overutilization of the health care system. Accordingly, more patients could be diagnosed earlier and comorbidities could be prevented.

Keywords: ambulatory electrocardiography monitoring, atrial fibrillation, cardiac arrhythmias, wearables smartwatch

The 11th Annual Scientific Meeting InaHRS 2024

Indonesian Journal of Cardiology
Indonesian J Cardiol 2024:45:suppl_B
pISSN: 2830-3105 / eISSN: 2964-7304
doi: 10.30701/ijc.1734

Efficacy and Safety of Subclavian or Axillary Vein Puncture versus Cephalic Vein Cutdown for Cardiac Implantable Electronic Device Implantation – A Systematic Review and Network Meta-Analysis

L.D. Pradipta[1], I.P. Farissa[1], A. Alamsyaputra[1], A. Yudanto[1], P. Ardhianto[1]

[1]Department of Cardiology and Vascular Medicine, Faculty of Medicine, Diponegoro University – Dr. Kariadi Central General Hospital Semarang, Indonesia

Background and aims: Minimally invasive venous access is necessary for inserting leads of cardiac implantable electronic device (CIED) such as permanent pacemaker (PPM), implantable cardioverter defibrillator (ICD), and cardiac resynchronization treatment (CRT). Despite the various venous access methods, there is ongoing debate regarding their relative efficacy and safety. This study aimed to assess the effectiveness and safety of venous access strategies for CIED implantation.

Materials and methods: A thorough investigation was conducted in PubMed, Google Scholar, ScienceDirect, and Scopus, to find studies that compare subclavian vein puncture (SVP), axillary vein puncture (AVP), and cephalic vein cutdown (CVC) for implantation of CIED, between 2017 – 2024. The main outcome of interest was successful attempts with additional outcomes were pneumothorax, pocket hematoma/bleeding, lead failure, and device infection. The relative ranking between each modality was assessed with surface under the cumulative ranking curve (SUCRA). Two reviewers evaluated quality of trial and synthesized the data independently. The statistical analyses were conducted using R Studio software.

Results: Thirteen studies were eligible that included 4514 patients (SVP, n = 1158; AVP, n = 1110, CVC, n = 2246) underwent CIED implantation. Most studies compared SVP versus CVC (6 studies) and PPM was the most devices implanted in those studies (2786 patients). Compared to SVP, both AVP and CVC were associated with reduced risk of pneumothorax (RR: 0.19, 95%CI: 0.06 – 0.62 and RR: 0.29, 95%CI: 0.09 – 0.95, respectively) with AVP had the lowest incidence of pneumothorax with SUCRA score 0.893 while CVC SUCRA score was 0.595. AVP was associated with less incidence of lead failure (RR: 0.39, 95%CI: 0.17 – 0.89) with SUCRA score was 0.912. No significant differences between those three venous access methods in other outcomes such as successful attempts, pocket hematoma/bleeding, and device infection.

Conclusion: Axillary vein puncture appears to be a feasible method for the implantation of cardiac implantable electronic device. Furthermore, it appears to be a safer choice compared to CVC and SVP since it is associated with reduced risk for pneumothorax and lead failure.

Keywords : subclavian vein puncture; axillary vein puncture; cephalic vein cutdown; cardiac implantable electronic device

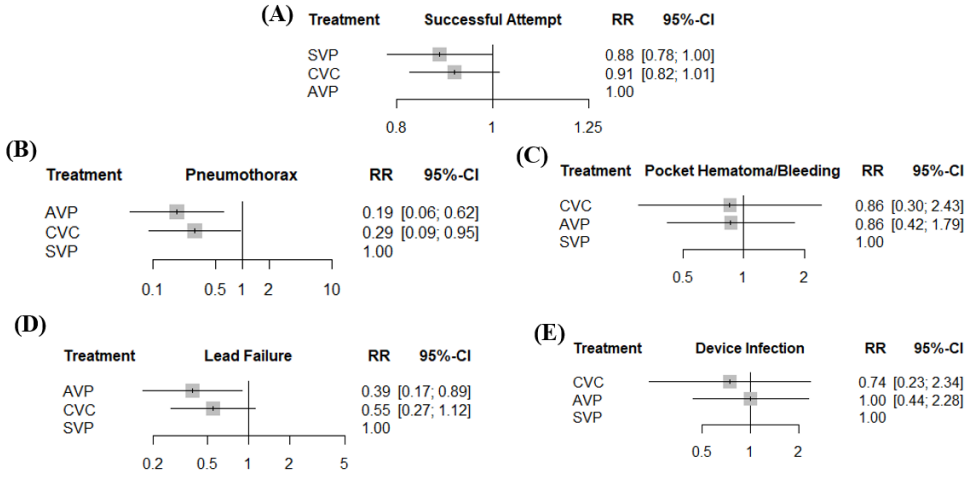


Figure 1. Forest plot of this network meta-analysis: (A) successful attempts; (B) pneumothorax; (C) pocket hematoma/bleeding; (D) lead failure; and (E) device infection

The 11th Annual Scientific Meeting InaHRS 2024

Indonesian Journal of Cardiology
Indonesian J Cardiol 2024:45:suppl_B
pISSN: 2830-3105 / eISSN: 2964-7304
doi: 10.30701/ijc.1734

Comparative Safety Profile of Direct Oral Anticoagulants Versus Warfarin in Non-Valvular Atrial Fibrillation: A Meta-Analysis of Randomized Controlled Trials and Subgroup Analysis of Bleeding Adverse Events

A.M. Yapanto[1], K.A. Lestari[1], W. Sari[2], Z.P. Mahardika[3], Rifqatussaadah[4], A. F. Chandranegara[5]

[1]*Faculty of Medicine, YARSI University, DKI Jakarta, Indonesia*
[2]*Department of Pharmacology, Faculty of Medicine, YARSI University, DKI Jakarta, Indonesia*
[3]*Department of Medical Education, Faculty of Medicine, YARSI University, DKI Jakarta, Indonesia*
[4]*Department of Public Health, Faculty of Medicine, YARSI University, DKI Jakarta, Indonesia*
[5]*Department of Cardology, Pasar Rebo General Hospital, DKI Jakarta, Indonesia*

Background and Aims: Anticoagulant therapy is often prescribed for managing non-valvular atrial fibrillation (NVAF) to prevent thromboembolic events, which are significantly increased due to irregular heart contractions that impair blood flow and cause stasis, particularly in the left atrial appendage. This meta-analysis evaluates the bleeding risks of DOAC compared to warfarin in patients with NVAF. It also includes a subgroup analysis to identify which DOACs carry higher or lower risks, particularly for intracranial and extracranial bleeding events.
Material and Methods: Adhering to the PRISMA guidelines, we conducted a systematic review of literature spanning from 2008 to 2023, extracting data from PubMed, Google Scholar, and the Cochrane Library using specific MeSH terms to identify relevant studies. Only studies that directly compared the bleeding risks between DOACs and warfarin on human were included. A fixed effects model was applied to evaluate the pooled hazard ratios across studies, while I^2 statistics assessed the heterogeneity among the included studies. Quality of studies and potential biases were evaluated using the Cochrane Risk of Bias 2.0 tool.
Result: The analysis included 13 RCTs with total 175,199 patients. Results showed DOACs generally had a lower risk of major bleeding compared to warfarin, with significant reductions in extracranial bleeding (HR 0.82; 95% CI 0.78-0.87; p=<0.005; Figure 1A) and intracranial bleeding (HR 0.64; 95% CI 0.61-0.67; p= <0.005; Figure 1B). In both subgroup analyses, apixaban consistently showed the lowest risk among all of DOACs, with (HR: 0.42; 95% CI 0.39-0.45; p= 0.40; Figure 1A) for extracranial bleeding and (HR: 0.69; 95% CI 0.63-0.76; p= 0.68 Figure 1B) for extracranial bleeding, distinguishing it as the most favourable DOAC in terms of bleeding risk reduction.
Conclusion: In this meta-analysis of patient with NVAF, here were significant differences between DOACs and warfarin in the incidence of major bleeding outcomes. DOACs generally exhibited a lower risk of both intracranial and extracranial bleeding compared to warfarin. Apixaban showed the most favourable profile with the lowest risk for both types of bleeding events.

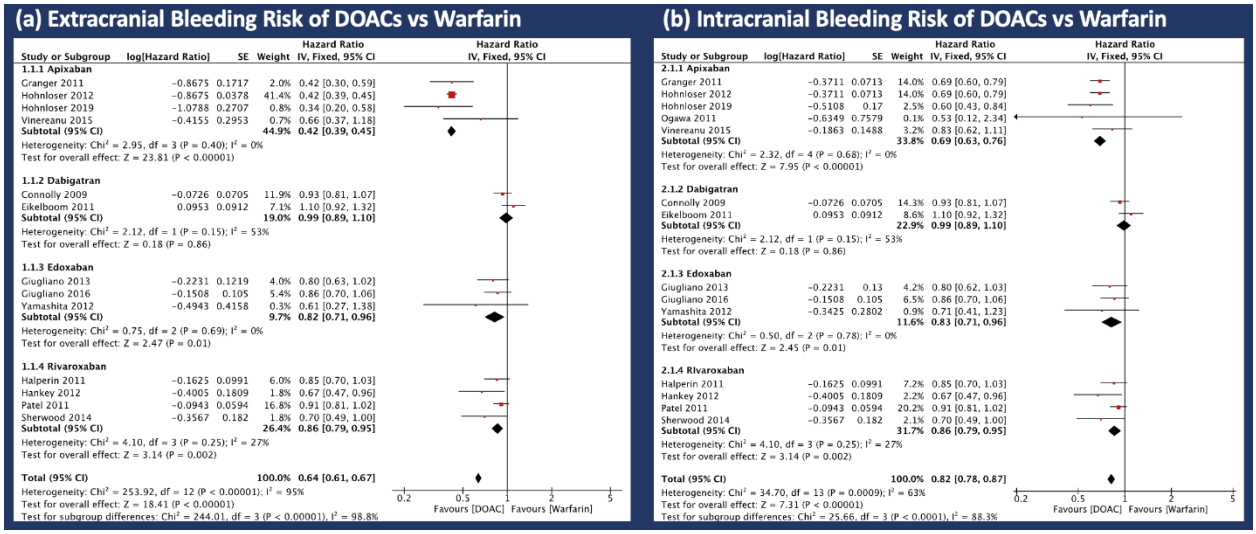


Figure 1. DOACs was significantly reduces extracranial and intracranial bleeding events in patients with NVAF. Forest plot illustrate of pooled HR and 95% CI for (A) Extracranial Bleeding risk, and (B) Intracranial Bleeding Risk along with subgroup analysis in all type of DOACs.

The 11th Annual Scientific Meeting InaHRS 2024

Indonesian Journal of Cardiology
Indonesian J Cardiol 2024:45:suppl_B
pISSN: 2830-3105 / eISSN: 2964-7304
doi: 10.30701/ijc.1734

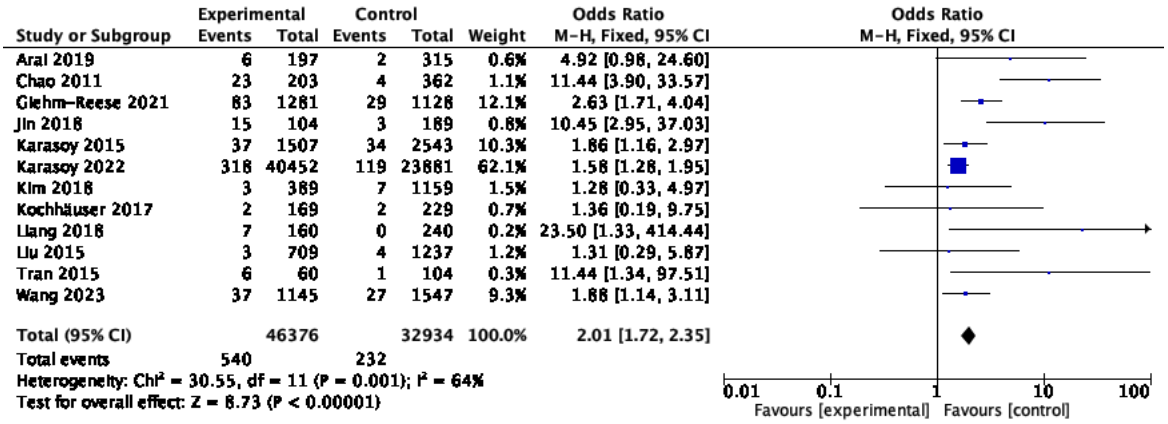
The effectiveness of CHA2DS2-VASc score in predicting thromboembolic events after catheter ablation: meta-analysis

A. R. Kusumowardani[1], N. L. Yudhisthira[1]
[1]*Faculty of Medicine, Universitas Airlangga, Surabaya, Indonesia.*

Background and aims: Atrial fibrillation (AF) and atrial flutter (AFL) are common arrhythmias that increase the risk of thromboembolic events. Catheter ablation is a widely used treatment aiming to restore sinus rhythm and improve symptoms. Despite the success of catheter ablation, thromboembolic events remain a significant concern. This review aimed to investigate the association between the CHA2DS2-VASc score and the incidence of thromboembolic events in patients with AF or AFL following catheter ablation.

Materials and methods: The search for relevant studies was conducted through the, Medline, Scopus, and Google Scholar databases. Studies that documented the occurrence of thromboembolic events in patients with AF or AFL following catheter ablation were included in the analysis. The incidences were categorized according to the risk stratification determined by the CHA2DS2-VASc score. This review was conducted in accordance to the PRISMA guidelines. Meta-analysis of studies was conducted with Review Manager.

Results: Thirteen studies were included in the review. CHA2DS2-VASc score of 0 to 1 was categorized into low-intermediate risk; and score of ≥2 was categorized into high risk. Total of 36107 patients were included and thromboembolic events occurred in 449 patients (1.24%). Among those population, 311 (69.27%) events occurred in high risk patients. The result of meta-analysis showed significant association between CHA2DS2-VASc score and thromboembolic events after catheter ablation (OR 2.65, 95% CI 2.15 to 3.25, p<0.00001).



Conclusion: The CHA2DS2-VASc score retains its effectiveness as a risk stratification tool for thromboembolic events even after catheter ablation.

Keyword: CHA2DS2-VASc score, catheter ablation, thromboembolism, risk.

The 11th Annual Scientific Meeting InaHRS 2024

Indonesian Journal of Cardiology

Indonesian J Cardiol 2024:45:suppl_B
pISSN: 2830-3105 / eISSN: 2964-7304
doi: 10.30701/ijc.1734

Does premature atrial complex (PAC) during exercise test predict the development of atrial fibrillation: a systematic review.

I. Fitriani[1], A. C. Azzahra[1]

[1] *Faculty of Medicine, Universitas Indonesia, Jakarta, Indonesia*

Background and Aims: Premature atrial complex (PAC) are common occurences during exercise testing, potentially serving as markers for development of atrial fibrillation (AF), the most common sustained arrhythmia in adults. This systematic review aims to evaluate the relationship between PAC detected during exercise testing and the incidence of AF, assessing the prognostic significance of exercise test-induced PAC.

Materials and Methods: A systematic search during June 5-14th, 2024 following the PRISMA standard was done on PubMed Central, Science Direct, Scopus, and MEDLINE using terms of atrial fibrillation, exercise test or exercise, & premature atrial complex. The inclusion criteria are cohort studies involving adult participants, and published in English language. These studies should investigate the relation of premature atrial complex during exercise test and development of atrial fibrillation. Animal studies and irrelevant studies are not included. The quality of the included studies was evaluated using Newcastle-Ottawa scale.

Results: Two cohort studies are included for this systematic review with a total of 7521 patients. The studies reviewed consistently demonstrate that patients exhibiting PAC during standard exercise stress tests (EST) or treadmill testing are at an elevated risk for developing AF. In a cohort of 6,523 patients, those with PAC during baseline EST had a more than twofold increased risk of developing AF compared to those without PAC, independent of other factors. Similarly, in a study of 998 patients, those with frequent PAC during treadmill testing showed a markedly higher incidence of AF during follow-up.

Conclusion: In conclusion, this systematic review showed that PAC observed during exercise testing are a potent marker for predicting the onset of AF. These findings showed the importance of the assessment of PAC in routine exercise testing protocols to identify individuals at higher risk of AF.

Keyword: Premature atrial complex, exercise test, atrial fibrillation

The 11th Annual Scientific Meeting InaHRS 2024

Indonesian Journal of Cardiology
Indonesian J Cardiol 2024:45:suppl_B
pISSN: 2830-3105 / eISSN: 2964-7304
doi: 10.30701/ijc.1734

24-h Premature Ventricular Contraction Count to Predict Sudden Cardiac Death in Arrhythmogenic Right Ventricular Cardiomyopathy : A Systematic Review & Meta-Analysis

J. V. Lee[1], M. Emmanuela[1], J. B. Lee[2], A. Patricio[2], H. K. Andita[2], D. Setiawan[2], D. A. Theja[2]
[1]Faculty of Medicine, University of Pelita Harapan, Tangerang, Indonesia
[2]Faculty of Medicine, Atma Jaya Catholic University of Indonesia, Jakarta, Indonesia

Background and Aims: Arrhythmogenic Right Ventricular Cardiomyopathy (ARVC) is an inheritable heart disease that is associated with life-threatening ventricular arrhythmias and lead to Sudden Cardiac Death (SCD). One of the hallmarks in ARVC was Premature Ventricular Contraction (PVC). PVC burdens were routinely assessed at the time of diagnosis to stratify the risk. The aim of this study is to find out whether 24-h PVC count could predict the risk of SCD in ARVC patients.

Material and Methods: This review was conducted on 21-29 June 2024. Two independent researchers systematically extracted data from several databases, such as PubMed Central (PMC), Science Direct, and PUBMED by using MeSH terminology of keywords Arrhythmogenic Right Ventricular Cardiomyopathy, Predictor, Sudden Cardiac Death. The extracted studies were then analyzed and selected according to our inclusion criteria such as studies in the last 10 years, cohort studies, case-control studies, study on ARVC patients with SCD outcome. We excluded systematic reviews, meta-analyses, case series, case reports, and other cardiomyopathies. Research quality was assessed using Newcastle-Ottawa (NOS).

Results: From 2 cohort studies (1392 ARVC subjects), we found more 24-h PVC count were significantly associated with higher risk of sudden cardiac death in ARVC patients (HR = 1.20, 95% CI: 1.09-1.33, P = 0.0003, I^2 = 0%). The higher PVC burden increased the SCD risk of the patient. Fixed Effect Model was used and the funnel plot showed symmetric distribution. All studies have proven good quality based on NOS.

Conclusion: In Conclusion, PVC count could predict the SCD risk in ARVC patients.. However, further study is needed to confirm these findings.

Keywords: Arrhythmogenic Right Ventricular Cardiomyopathy, Predictor, Sudden Cardiac Death

The 11th Annual Scientific Meeting InaHRS 2024

Indonesian Journal of Cardiology

Indonesian J Cardiol 2024:45:suppl_B
pISSN: 2830-3105 / eISSN: 2964-7304
doi: 10.30701/ijc.1734

Efficacy and Safety of Sedation with Propofol vs Other Sedatives in Direct Current Electrical Cardioversion : A Systematic Review and Meta-analysis

DJ Pesireron[1], A Yudha[1], LD Pradipta[1], MS Dhani[1], D Nugraha[1], P Ardhianto[1]

[1]Department of Cardiology and Vascular Medicine, Faculty of Medicine, Diponegoro University – Dr. Kariadi Central General Hospital, Semarang, Indonesia

Background and aims: Electrical cardioversion (ECV) is an essential procedure for converting abnormal cardiac tachyarryhytmias. Proper sedation is critical for patient comfort and procedural success. Propofol is a widely used sedative for ECV, but its efficacy and safety compared to other sedatives need thorough evaluation. This systematic review and meta-analysis aim to compare the efficacy and safety of propofol versus other sedative agents used in direct current cardioversion for cardiac tachyarryhytmias.

Materials and methods: We conducted a comprehensive search in PubMed, Scopus, and ScienceDirect for studies comparing propofol with other sedative agents in ECV published before May 2024. The measured outcomes were successful cardioversion, winduction time, anesthesia duration, incidence of hypotension, and apnea lasting more than 30 seconds. Studies that included were reviewed in their entirety and subjected to quantitative analysis by two independent reviewer. Heterogenity was assessed with I^2. Random-effects model was utilized to produce a synthesis of the data if the heterogeneity was found more than moderate.

Results: From 329 potential studies, 16 studes met the inclusion criteria (959 patients). From the pooled results, propofol demonstrated a significantly shorter anesthesia duration (MD -3.73 [95% CI, -6.64 - -0.81]; p = 0.01), faster induction time (MD -0.70 [95% CI, -0.81 - -0.59]; p < 0.00001) compared to other sedatives. The success rate of cardioversion was comparable between propofol and other sedatives (MD 0.78 [95% CI, -0.52 – 1.17]; p = 0.23). Patients sedated with propofol had a higher incidence of hypotension (OR 2.37 [95% CI, 1.36 – 4.13]; p = 0.002) but no significant difference in the occurrence of prolonged apnea (OR 1.20 [95% CI, 0.74 – 1.93]; p = 0.46) compared to other sedatives. There were no publication bias found according to the funnel plot.

Conclusion: Propofol is an effective sedative for electrical cardioversion, offering advantages in anesthesia duration and induction time. However, it is associated with a higher incidence of hypotension.. Clinicians should carefully consider the benefits and risks, when selecting a sedative for ECV.

Keywords: Sedation agent, electrical cardioversion, Propofol, anesthesia, adverse events

The 11th Annual Scientific Meeting InaHRS 2024

Indonesian Journal of Cardiology

Indonesian J Cardiol 2024:45:suppl_B
pISSN: 2830-3105 / eISSN: 2964-7304
doi: 10.30701/ijc.1734

Efficacy of magnesium supplementation in preventing atrial fibrillation after cardiac surgery: a meta-analysis and systematic review of randomized controlled trials

S. S. Immanuel[1], G. Tandecxi[2], V. Bandana[1], I. Posangi[3]

[1]Department of Internal Medicine, Faculty of Medicine and Health Sciences, Atma Jaya Catholic University of Indonesia, Jakarta, Indonesia; [2]Faculty of Medicine and Health Sciences, Atma Jaya Catholic University of Indonesia, Jakarta, Indonesia; [3]Faculty of Medicine and Health Sciences, Sam Ratulangi University, Manado, Indonesia

Background and aims: Atrial fibrillation (AF) is a common complication following cardiac surgery, associated with increased morbidity and prolonged hospital stays. Recent studies suggest magnesium supplementation may reduce the incidence of postoperative AF. This meta-analysis and systematic review evaluates the efficacy of magnesium supplementation in preventing AF after cardiac surgery.

Materials and methods: We conducted a comprehensive search of PubMed, ProQuest, SAGE, EBSCOHost, and Wiley Online Library for randomized controlled trials (RCTs) published from 2014 to 2024. The Preferred Reporting Items for Systematic Reviews and Meta-Analyses (PRISMA) guidelines were followed. Studies included human adults aged 18 and older undergoing cardiac surgery and receiving magnesium supplementation perioperatively. Studies with multi-nutrient supplementation or unclear magnesium regimens were excluded. Data were extracted and analyzed using Review Manager software, focusing on the incidence of postoperative AF as the primary outcome. The risk of bias was assessed using the Cochrane risk-of-bias tool.

Results: Seven RCTs met the inclusion criteria, encompassing 1,248 patients. The risk of bias assessment showed generally low risk for most domains except for other biases, which were high in a few studies. Magnesium supplementation was not associated with a statistically significant reduction in the incidence of postoperative AF (Odds Ratio: 0.72, 95% Confidence Interval: 0.38-1.35, $p = 0.30$). Subgroup analysis indicated similar results for oral and intravenous magnesium, with no significant difference in efficacy between the two forms ($p = 0.45$). Secondary outcomes such as length of intensive care unit (ICU) stay and hospital stay showed improvement in the magnesium group compared to controls, but these were not statistically significant ($p > 0.05$). No significant adverse effects related to magnesium supplementation were reported.

Conclusion: Although magnesium supplementation appeared to reduce the incidence of atrial fibrillation following cardiac surgery, the reduction was not statistically significant. Similarly, subgroup analysis did not show significant differences between the efficacy of oral and intravenous magnesium. While there were improvements in secondary outcomes such as ICU and hospital stays, these were also not statistically significant. Further research with larger sample sizes is needed to confirm these findings and establish clear clinical guidelines.

Keyword: Magnesium, Supplementation, Atrial Fibrillation, Post-Cardiac Surgery, Cardiac Surgical Procedures

PRISMA Figure

The 11th Annual Scientific Meeting InaHRS 2024

Indonesian Journal of Cardiology

Indonesian J Cardiol 2024:45:suppl_B
pISSN: 2830-3105 / eISSN: 2964-7304
doi: 10.30701/ijc.1734

M.S. Ramadhan[1], R. Mulawarman[2], L. Nudhar[1], M.R. Felani[3], A.E. Tondas[3],
[1]Faculty of Medicine, Universitas Sriwijaya, Palembang, Indonesia
[2]Cardiology Resident, Faculty of Medicine, Universitas Indonesia, Jakarta, Indonesia
[3]Arrhythmia Division, Department of Cardiology and Vascular Medicine, Mohammad Hoesin General Hospital, Palembang, Indonesia

Background and Aim: Thyroid dysfunction, especially hyperthyroidism known as a common risk factor for atrial fibrillation (AF). The risk of AF is also increased in subclinical hyperthyroidism. The aim of our study is to determine the association between high normal thyroid function, either free triiodothyronine (fT3) or free thyroxine (fT4), with AF recurrences after catheter ablation in euthyroid patients.

Materials and Methods: We conducted a systematic review of electronic databases to identify publications that investigated the association between high normal thyroid function and AF recurrence after catheter ablation. Data from studies reporting a hazard ratio (HR) with 95% confidence interval (CI) were pooled in a meta-analysis.

Results: Four relevant studies (3 prospective and 1 retrospective cohort studies) were included in this review, consisting a total of 2149 euthyroid patients with AF who underwent catheter ablation procedure. Patients with high normal fT3 levels showed increased risk of AF recurrence (HR 1.43; 95% CI, 1.21–1.70; $p < 0.0001$; I^2= 0%). High normal fT4 levels was not associated with AF recurrence (HR 1.18; 95% CI, 0.88 – 1.59; $p = 0.26$; I^2 = 74%).

Conclusion: High normal FT3 levels were associated with AF recurrence after catheter ablation in euthyroid patients, whereas there were no association between high normal FT4 levels and AF recurrences. These findings suggest that AF patients with high normal FT3 levels should be closely monitored following catheter ablation to observe any potential recurrence.

Keywords: Atrial Fibrillation, Catheter Ablation, Thyroid, Free Triiodothyronine, Free Thyroxine, Recurrence

The 11th Annual Scientific Meeting InaHRS 2024

Indonesian Journal of Cardiology

Indonesian J Cardiol 2024:45:suppl_B
pISSN: 2830-3105 / eISSN: 2964-7304
doi: 10.30701/ijc.1734

Harmonizing The Sinus Rhythm: A Network Meta-Analysis Assessing the Comparative Efficacy and Safety of Cryoablation Catheter Tip Sizes vs Irrigated and Non-Irrigated Radio Frequency Ablation in the Management of Atrioventricular Nodal Reentry Tachycardia

D. D. C. H. Rampengan[1], M. V. Ariyanto[2], K. C. Tjandra[3], N. J. Tjipta[3], K. G. P. Anugraha[3], S. E.Willyanto[4]

[1]Faculty of Medicine, Universitas Sam Ratulangi, Manado, Indonesia.
[2]Faculty of Medicine, Universitas Airlangga, Surabaya, Indonesia.
[3]Faculty of Medicine, Universitas Diponegoro, Semarang, Indonesia.
[4]Faculty of Medicine, Universitas Brawijaya, Malang, Indonesia.

Background and aims: Atrioventricular nodal reentrant tachycardia (AVNRT) is the most prevalent type of supraventricular tachycardia that can manifest at any age. Catheter ablation is a successful and widely used approach as first line treatment for AVNRT. However, there is still debate about the choice of the most optimal energy. Radiofrequency ablation (RFA) is highly effective but carries a risk of atrioventricular block (AVB) while cryoablation (CBA) is well known for its safety but its effectiveness is arguably lower. Moreover, different types of tip sizes used in cryoablation show a variative outcome. Same case applies to the use of irrigation in radiofrequency. Thus, this study aims to compare the efficacy of different CBA and RFA tip sizes for AVNRT treatment.

Material and methods: A systematic literature search was conducted based on the PRISMA NMA Checklist of Items in six databases**.** The risk of bias assessment utilized ROB-2 for randomized studies and ROBINS-I for non-randomized studies. Network meta-analysis was done using R-Studio with net meta package. We also performed surface under cumulative ranking curve (SUCRA), subgroup, and meta-regression analysis.

Results: This study analyzed data from 24 studies, including 4009 patients. The quality assessment showed low risk of bias for both randomized and non-randomized studies. We found that non-irrigated RFA had the lowest AVB risk (OR = 0.51; 95% CI = 0.04 – 7.32) with the lowest recurrence rate (OR = 0.76; 95% CI = 0.29 – 2.02), lowest energy of application (OR = -0.50; 95% CI = -11.44 – 10.44), and shortest procedural time (OR = -3.54; 95% CI = -7.72 – 0.64). CBA 4 mm had the shortest fluoroscopy time (OR = 3.57; 95% CI = 2.27 – 4.87), while CBA 8 mm had the highest success rate (OR = 1.89; 95% CI = 0.84 – 4.23).

Conclusion: When it comes to efficacy, non-irrigated RFA is the most effective method with lowest risk of recurrence rate and fastest procedural time and operation. With the lowest energy application and the lowest risk of AVB, RFA is deemed preferable in terms of safety, although fluoroscopy duration is second only to CBA 4 mm.

Keywords: atrioventricular nodal reentrant tachycardia, cryoablation, efficacy, radiofrequency ablation

The 11th Annual Scientific Meeting InaHRS 2024

Indonesian Journal of Cardiology

Indonesian J Cardiol 2024:45:suppl_B
pISSN: 2830-3105 / eISSN: 2964-7304
doi: 10.30701/ijc.1734

Cryoballoon versus Radiofrequency Ablation for Atrial Fibrillation, Which is Best? : A systematic Review

M.Z. Sabran [1], A.Z. Thendiana [1], C. Zefanya [1], C.E.O.L. Hutauruk [1], A. Kurniawan[2]

[1]Faculty of Medicine, University of Pelita Harapan, Tangerang, Indonesia
[2]Department of Internal Medicine, Faculty of Medicine, University of Pelita Harapan, Tangerang, Indonesia

Background and aims: Atrial fibrillation (AF) is the most common type of cardiac arrhythmia which has increased in prevalence for recent years. According to treatment guidelines for patients with AF, an antiarrhythmic medication (AAD) should be administered before to catheter ablation (CA). Currently, catheter ablation has emerged as an effective treatment option for AF patients that intolerant to AAD. The most common method is cryoballon ablation and the second common method is radiofrequency ablation. Therefore, this study aims to evaluate safety and efficacy on cryoballoon and radiofrequency ablation for atrial fibrillation.

Materials and methods: Included study was retrieved from several databases, PubMed, PubMed Central (PMC), and Embase using MeSH keywords “Cryoballoon” AND “radiofrequency ablation” AND “atrial fibrillation” on 1st till 14th June 2024 by two independent researchers. Our inclusion criteria is patient with paroxysmal or persistent atrial fibrillation drug-refractory above 18 years old. We exclude pregnant women, pediatric patients, and patient with comorbid. We include randomized controlled trials and exclude studies on animals, case reports, systematic reviews, and meta-analysis. Our primary outcome was recurrence of symptomatic or asymptomatic AF. All of studies included was evaluated using Cochrane risk-of-bias tool for RCT (RoB 2.0).

Results: Seven RCT out of eighty four study was included, consisting 1512 patients with paroxysmal AF and 427 with persistent AF. All of the studies show that there is no significant difference in efficacy and overall safety between the two methods. It seems to be equally effective for rhythm control in patients with paroxysmal or persistent AF. However, the radiofrequency group had considerably more asymptomatic events, as indicated by ILRs than cryoballoon. All of the studies included is low risk bias based on RoB 2.0.

Conclusion: The efficacy and overall safety of cryoballoon ablation was noninferior than radiofrequency ablation for patient with paroxysmal or persistent AF.

Keyword: “Cryoballoon”, “radiofrequency ablation”, “atrial fibrillation”

The 11th Annual Scientific Meeting InaHRS 2024

Indonesian Journal of Cardiology

Indonesian J Cardiol 2024:45:suppl_B
pISSN: 2830-3105 / eISSN: 2964-7304
doi: 10.30701/ijc.1734

Comparative Efficacy of Radiofrequency and Balloon Catheter Ablation in Atrial Fibrillation – A Systematic Review and Network Meta-Analysis

L.D. Pradipta[1], I.P. Farissa[1], A. Alamsyaputra[1], A. Yudanto[1], P. Ardhianto[1]

[1]Department of Cardiology and Vascular Medicine, Faculty of Medicine, Diponegoro University – Dr. Kariadi Central General Hospital Semarang, Indonesia

Background and aims: Atrial fibrillation (AF) is a common cardiac arrhythmia associated with significant morbidity and mortality. Ablation therapy is a widely used intervention, with radiofrequency ablation (RFA) and balloon catheter ablation (BCA) being two prominent modalities. This network meta-analysis aims to compare the efficacy of RFA versus BCA in patient with AF.

Materials and methods: A comprehensive literature search for randomized (RCT) and nonrandomized (non-RCT) studies was conducted in multiple databases. Studies included compare the different ablation modalities for AF which is RFA and BCA (hot balloon ablation (HBA)/laser balloon ablation (LBA)/cryo-balloon ablation (CBA). The primary outcome of interest was 12-months freedom from atrial tachyarrhythmias (AF/atrial flutter/atrial tachycardia). Secondary outcomes included pericardial complications (pericarditis, pericardial effusion, or cardiac tamponade), phrenic nerve palsy, procedure duration, and fluoroscopy time. The relative ranking between each modality was assessed with surface under the cumulative ranking curve (SUCRA). Two reviewers evaluated quality of trial and synthesized the data independently. The statistical analyses were conducted using R Studio software. This study is registered with PROSPERO (CRD42024562693).

Results: We reviewed 43 studies evaluating four different catheter ablation devices, include 20627 patients with AF (14647 patients (71%) with paroxysmal AF and 5980 patients (29%) with persistent AF). Among 43 studies, 12 studies were RCT, and 26 studies compared RFA vs CBA. Most of the studies had decent quality assessment with moderate heterogeneity across them with $I^2 = 52\%$. The 12-months freedom from atrial tachyarrhythmias was not different between RFA, CBA, HBA, and LBA. In subgroup analysis of paroxysmal and persistent AF, no differences of primary outcome between those modalities as well. The pericardial complications and fluoroscopy time were not different between those modalities. However, CBA was associated with shortest procedural time (SMD -32.42; 95%CI -41.76 – -23.08, with SUCRA score 87.84), although associated with increased risk of phrenic nerve injury (RR 5.63; 95%CI 3.52 – 9.01, with SUCRA score 94.12).

Conclusion: There is no significant difference in the 12-month freedom of atrial tachyarrhythmias among AF patients treated with RFA, CBA, HBA, and LBA. CBA associated with shortest procedural time although carries the highest risk of phrenic nerve injury.

Keywords: radiofrequency; balloon catheter; ablation; atrial fibrillation

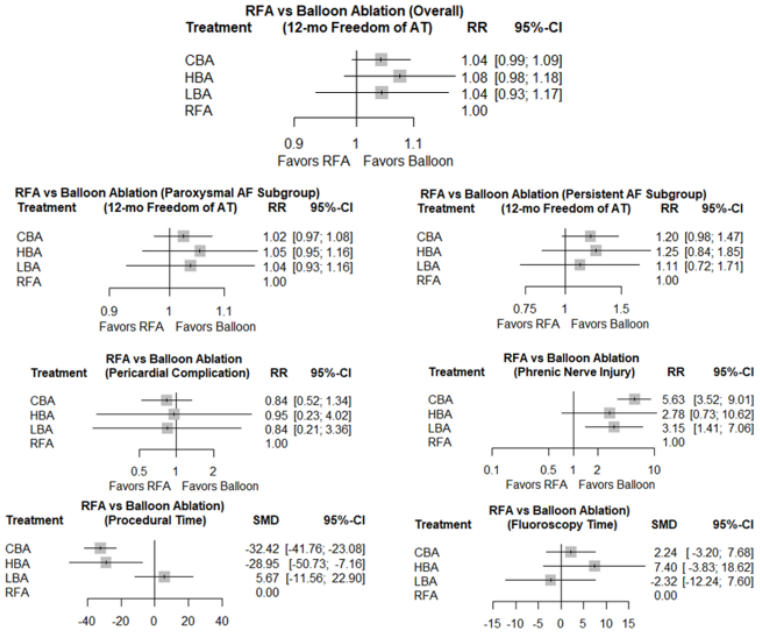


Figure 1. Forest plot of this network meta-analysis which consist of 12-mo freedom of atrial tachyarrhythmia (AT); pericardial complications; phrenic nerve injury; procedural time; and fluoroscopy time

The 11th Annual Scientific Meeting InaHRS 2024

Indonesian Journal of Cardiology

Indonesian J Cardiol 2024:45:suppl_B
pISSN: 2830-3105 / eISSN: 2964-7304
doi: 10.30701/ijc.1734

Monocyte to High Density Lipoprotein-Cholesterol Ratio as a Novel Biomarker in Predicting Post-Ablation Atrial Fibrillation Recurrence: A Systematic Review and Meta-Analysis

P. P. Siahaan[1], W. Widiarti[1], P. B.T. Saputra[2], H. Siahaan[1], Firas F. Alkaff [3, 4]

[1]Faculty of Medicine, Universitas Airlangga, Surabaya, Indonesia; [2]Dr. Soetomo Regional General Hospital, Surabaya, Indonesia; [3]Faculty of Medicine, Universitas Kristen Indonesia, Jakarta, Indonesia; [3]Division of Nephrology, Department of Internal Medicine, University of Groningen, University Medical Center Groningen, Groningen, The Netherlands; [4]Division of Pharmacology and Therapy, Department of Anatomy, Histology, and Pharmacology, Faculty of Medicine Universitas Airlangga, Surabaya, Indonesia

Background and aims: Atrial fibrillation (AF) is the most common type of arrhythmia. In persistent cases, it often treated with ablation. This study aims to evaluate the role of the monocyte-to-HDL cholesterol ratio (M/H) ratio as risk stratification in predicting post-ablation AF recurrence, highlights the potential of the M/H ratio to improve treatment outcomes, through linking inflammation and oxidative stress with cardiovascular risk.

Materials and methods: A comprehensive literature search was conducted until June 11th, 2024 in scientific databases such as PubMed, ScienceDirect, Web of Science, ProQuest, Cochrane. A bivariate random-effects meta-analysis using the Rutter and Gatsonis hierarchical summary receiver operating characteristic (HSROC) parameterization model was performed to measure predictive value. Quality assessment of each individual studies was carried out to minimize risk of bias.

Results: Four eligible studies were included in the analysis. The predictive value of M/H ratio in predicting post-ablation AF recurrence result in pooled sensitivity of 85.8% (95% CI 79.5-90.4%), specificity of 70.4% (95% CI 55.2-88.1%), AUC of 0.871 (95%CI 0.737-0.903), positive likelihood ratio of 2.900 (1.960-4.770), negative likelihood ratio of 0.206 (0.147-0.284), and diagnostic odds ratio of 14.30 (8.01-26.00). Additional outcomes of the included studies were reviewed, focusing on the average recurrence time in specific cut-offs and MHR in specific AF type.

Conclusion: Findings indicate that a higher M/H ratio effectively predicts AF recurrence, suggesting its potential as a clinical tool for risk stratification and guiding tailored therapeutic strategies.

Keywords: Monocyte-to-HDL Cholesterol Ratio, Atrial fibrillation, Atrial fibrillation recurrence, catheter ablation

Authors' ID	Study Design	Sample Size	AF Type/Type of Ablation/Onset of Occurence)	CHA_2DS_2-VASc score/LAD/EF	Outcome
Adili et al., 2020	Retrospective Cohort	Recurrence: 70 Sinus rhythm: 61	Persistent AF/ Radiofrequency/ Early recurrence	Recurrence: 2(2-3) / 5.3 (4.9-6.3) / 51(44-58) Sinus rhythm: 2 (2-3) / 5 (4.5-5.4) / 55 (50-57)	Positive correlation of M/H ratio (r = 0.387, P < .001) and WBC (r .001)
Canpolat et al., 2015	Prospective Cohort	Recurrence: 95 Sinus rhythm: 307	Paroxysmal (325, 80.8%) and Persistent AF (77, 19.2%)/ Cryobaloon/ Late recurrence	Recurrence: 2 (1–5)/ 39.4±5.6 / 51 (44-58) Sinus rhythm: 2 (0–5) / 37.3±4.5 / 55 (50-57)	Pre-ablation MHR due to occurre recurrence (median M/H rat (IQR:12.7–19.9) in patients with r vs. 9.98 (IQR: 8.2–11.6) in patien recurrence, P , 0.001) Median I was significantly higher in parox compared with the persistent A [10.03 (IQR: 8.2–12.1) vs. 15.1 (I 19.9), P , 0.001]
Chen et al., 2020	Retrospective Cohort	Recurrence: 47 Sinus rhythm: 78	Persistent AF/ Radiofrequency/ Late recurrence	Recurrence: 2.0 (2.0) / 38 (6.0) / 61 (3.0) Sinus rhythm: 2.0 (2.0) / 34 (6.0) / 62 (1.25)	- Forty-seven patients had devel recurrence during - The AF recurrence event ra significantly increased in the hig ablation MHR tertile compared v in the lowest MHR tertile (2 57.1%; P < - On multivariate logistic r analysis, the preablation MHR (C 95% CI = 1.12 ~ 1.60; P = 0.001 atrial diameter (LAD) (OR = 1.2 = 1.08 ~ 1.35; P = 0.001) were in risk factors predicting the recurre after radiofrequency ablation.
Ruan et al., 2022	Prospective Cohort	Recurrence: 59 Sinus rhythm: 162	Paroxysmal (139, 63%) and Persistent AF (82, 37%)/ Radiofrequency/ Early recurrence	Recurrence: 2.33 ± 1.45 / 44.77 ± 6.08 / NA Sinus rhythm: 2.43 ± 1.54 / 42.59 ± 5.76 / NA	The average recurrence time of RFCA according to MHR stratifi <0.5629, average recurrence tim months SE 0.429 (95% CI 21.738 2. ≥0.5629, average recurrence tir months SE 0.707 (95%CI 12.466

The 11th Annual Scientific Meeting InaHRS 2024

Indonesian Journal of Cardiology
Indonesian J Cardiol 2024:45:suppl_B
pISSN: 2830-3105 / eISSN: 2964-7304
doi: 10.30701/ijc.1734

URIC ACID TO ALBUMIN RATIO AS A NOVEL MARKER IN PREDICTING THE INCIDENCE OF ATRIAL FIBRILLATION: A SYSTEMATIC REVIEW

F. Farabi[1], M. N. Afifa[2]
[1]Faculty of Medicine, Universitas Padjadjaran, Bandung, Indonesia; [2]Faculty of Medicine, Universitas Indonesia, Jakarta, Indonesia

Background and aims: Oxidative stress is one of the critical factors closely associated with the first onset and progression of atrial fibrillation. One of the markers that can indicate increased oxidative stress is uric acid to albumin ratio. This study aims to identify whether uric acid to albumin ratio (UAR) can be a novel marker in predicting atrial fibrillation in several conditions.

Materials and methods: The literature search used in this study was sourced from Pubmed, Cocrane Library, Springer Link, and ScienceDirect. This was done in accordance with the Preferred Reporting Items for Systematic reviews and Meta-Analyses (PRISMA) 2020 guidelines. The articles that were used were those that had been published up to July 2024.

Results: After a systematic literature searching, we found only 2 studies related with uric acid to albumin ratio and atrial fibrillation. The first study discussed about UAR and the incidence of new-onset atrial fibrillation (NOAF) in STEMI patients. After multivariable logistic regression, UAR was an independent predictor of NOAF in STEMI patients (OR 6.951, 95% CI L 2.978 - 16.28, $p < 0.001$, sensitivity 69%, and specificity 74.5%). In another study, UAR can also predict the incidence of recurrence of atrial fibrillation after ablation with cryoballon catheter. The mean UAR in patients with recurrences was higher (2.4 +/- 0.9 vs 1.8 +/- 0.7, $p < 0.01$, sensitivity 77%, and specificity 57%).

Conclusion: There have been very few studies investigating the relationship between UAR and atrial fibrillation. However, UAR has been shown to have an association with the incidence of NOAF and AF recurrence. This study hopes that more studies will investigate the relationship between UAR and atrial fibrillation.

Keyword: Albumin, Atrial fibrillation, New onset, Uric acid, Recurrence

The 11th Annual Scientific Meeting InaHRS 2024

Indonesian Journal of Cardiology

Indonesian J Cardiol 2024:45:suppl_B
pISSN: 2830-3105 / eISSN: 2964-7304
doi: 10.30701/ijc.1734

Ivabradine as a Novel Alternative Therapy in Pediatric Junctional Ectopic Tachycardia: A Systematic Review

E.A. Budiono[1], D.A. Naufal[1], V.S.N. Widi[1], S.F. Wadoe[1], Irnizarifka[2]

[1]Medical Faculty, Universitas Sebelas Maret, Surakarta

[2]Division of Arrhythmia, Cardiac Pacing, and Heart Failure, Sebelas Maret Hospital, Department of Cardiology and Vascular Medicine, Faculty of Medicine, Universitas Sebelas Maret, Surakarta

Background and aims: Congenital Junctional Ectopic Tachycardia (JET) is a rare but critical pediatric arrhythmia, typically affecting infants under six months old. It poses significant mortality risks, often leading to cardiomegaly and congestive heart failure with a mortality rate of up to 35%. Current treatments, including digoxin, adenosine, amiodarone, and flecainide, have shown limited efficacy. Ivabradine, by selectively inhibiting the If current, presents a promising alternative to amiodarone due to its ability to control heart rate without adverse effects on myocardial function or conduction. This systematic review aims to evaluate ivabradine's efficacy and safety, advocating for its potential as a superior therapeutic option for congenital JET in pediatric patient.

Materials and methods: This systematic review adheres to PRISMA guidelines, with a search conducted in PubMed, ScienceDirect, and Scopus using the keywords "ivabradine" and "junctional ectopic tachycardia." Inclusion criteria were studies on both postoperative and congenital JET in pediatric patients, where ivabradine was given as monotherapy. Studies involving other congenital arrhythmias were excluded.

Results: Out of 194 reviewed studies, 12 were included after full-text and abstract screenings. These included 4 case reports, 7 case series, and 1 RCT, covering a total of 124 pediatric patients. Six studies focused on congenital JET and the rest on postoperative JET. Conventional antiarrhythmic agents such as Amiodarone, Flecainide, Magnesium, Propranolol, Enalapril, Adenosine, Sotalol, Procainamide, Esmolol, and Digoxin were used, but most failed to convert JET to SR. Ivabradine, administered at 0.05-0.2 mg/kg/day, successfully converted JET to SR without adverse effects in all cases. An RCT of 94 postoperative patients showed oral ivabradine was not inferior to IV amiodarone.

Conclusion: Ivabradine has emerged as a valuable therapeutic agent for managing congenital JET, achieving sinus rhythm without the need for additional antiarrhythmic medications. The best course of treatment for congenital JET is yet to be determined, but ivabradine offering rapid action and relatively few adverse effects makes it a viable option for a new role in the treatment of this challenging arrhythmia.

Keyword: Ivabradine, Junctional Ectopic Tachycardia, Arrhythmia, Congenital heart anomalies

Table 1. Characteristics of included studies

The 11th Annual Scientific Meeting InaHRS 2024

Indonesian Journal of Cardiology

Indonesian J Cardiol 2024:45:suppl_B
pISSN: 2830-3105 / eISSN: 2964-7304
doi: 10.30701/ijc.1734

Systematic Review: Unveiling the Effectiveness of Catheter Ablation in Atrial Fibrillation Patients

A.Z. Thendiana[1], M.Z. Sabran[1],C. Zefanya[1], C.E.O.L. Hutauruk[1]
[1]Faculty of Medicine, University of Pelita Harapan, Tangerang, Indonesia

Background and aims: Higher prevalence of Atrial Fibrillation (AF) was found in older age. Presence of atrial fibrillation can increase risk of heart failure by 2 fold. Significantly, AF can reduce patient quality of life (QoL) and limit exercise. Catheter ablation has shown superior efficacy on paroxysmal and persistent AF compared to Antiarrhythmic Drug (AAD) therapy. However, the study on Catheter Ablation (CA) success on atrial fibrillation case was still limited. Thus, this study aims to evaluate the effectiveness of CA on patients with AF.

Materials and methods: Included studies were derived from PubMed, PubMed Central (PMC), and Elsevier databases by keywords “Catheter Ablation” and “Atrial Fibrillation”, which is conducted from June 2014 - June 2024. Two independent investigators searched, extracted, and evaluated the studies from 1st until 14th June 2024 with inclusion criteria such as patients with atrial fibrillation on RCT above 18 years old. We excluded studies on patients under 18 years old and studies on animals, meta analysis, systematic reviews and case reports. Revised cochrane risk-of-bias tool for randomized trials (RoB 2) was used to determine the quality and the risk of bias of the included studies analysis.

Results: In an analysis of eleven out of seventeen randomized controlled trials (RCTs), involving a total of 2,826 Atrial Fibrillation (AF) patients, all studies were conducted rigorously. Ten of these studies concurred that Catheter Ablation (CA) effectively reduces the risk of stroke, bleeding, recurrence, and cardiovascular death. The remaining studies reported that more patients who undergo CA achieve sinus rhythm compared to those who do not. However, there is a study that reported procedure-related complications in several patients undergoing catheter ablation.

Conclusion: Catheter ablation effectively reduces the risk of stroke, bleeding, recurrence, and cardiovascular death, and helps more patients achieve sinus rhythm. However, the possibility of procedure-related complications must still be considered.

Keyword: Catheter ablation, atrial fibrillation

The 11th Annual Scientific Meeting InaHRS 2024

Indonesian Journal of Cardiology
Indonesian J Cardiol 2024:45:suppl_B
pISSN: 2830-3105 / eISSN: 2964-7304
doi: 10.30701/ijc.1734

Intravenous calcium channel blockers versus beta blockers for atrial fibrillation with rapid ventricular rate: A meta-analysis

C.J. Hardi, M.D[1], J.N. Hariyanto[2], M.D, J.A. Setiawan[2], S. Ng, M.D, PhD[2,3], D.A. Hanafy, M.D, PhD[4,5]
[1]Rumah Sakit Umum Kota Manado, Manado, Indonesia, [2]Faculty of Medicine, Universitas Pelita Harapan, Tangerang, Indonesia, [3]Siloam Hospitals, Tangerang, Indonesia, [4] National Cardiovascular Centre Harapan Kita, Jakarta, Indonesia; [5]Faculty of Medicine, Universitas Indonesia, Jakarta, Indonesia

Background and aims: Atrial fibrillation (AF) is the most commonly encountered tachyarrhythmia in the emergency department (ED). This meta-analysis compared use of intravenous non-dihydropyridine calcium channel blockers (CCB) and beta blockers (BB) for rate control efficacy and hemodynamic adverse events in AF with rapid ventricular rate (RVR).

Materials and methods: PubMed, Scopus, and Cochrane were searched until 10 June 2024. Primary outcome was achievement of ventricular rate control <110 bpm. Secondary outcomes observed were new hypotension (SBP < 90 mmHg), bradycardia (HR < 60 bpm) and conversion to sinus rhythm (SR). Statistical analysis was performed using Review Manager.

Results: A total of twenty studies (3 randomised controlled trials and 17 observational) were included, involving 4297 subjects, 53.8% male, mean age 68.0 ± 14.8 years, and mean baseline HR 134.4 ± 23.8 bpm. 59% of subjects received CCB, in which 95% received diltiazem (mean initial dose 0.22 ± 0.12 mg/kg), while 41% received BB, in which 77% received metoprolol (median initial dose 5 mg). Patients who received IV CCB exhibited a significantly higher attainment of rate control target (48.8%) compared to IV BB (38.9%) [RR 1.17; 95% CI 1.03 to 1.31; p = 0.01]. There were no significant differences in hypotension [RR 1.01; 95% CI: 0.73 to 1.40; p = 0.93] or bradycardia risk [RR 1.23; 95% CI: 0.65 to 2.35; p = 0.52] between the two groups. IV CCB also had higher efficacy in conversion of AF to SR compared to IV BB [RR 1.16; 95% CI: 1.16 to 1.31; p = 0.02].

Conclusion: In patients with AF RVR, IV CCB demonstrated superior acute rate control efficacy compared to IV BB, contrary to guideline-supported beliefs favouring IV BB. This may be due to the lower fixed dose used in BB administration versus CCBs' weight-based dosing. No significant differences in bradycardia and hypotension were observed.

Keywords: rate control, atrial fibrillation, calcium channel blockers, beta blockers

The 11th Annual Scientific Meeting InaHRS 2024

Indonesian Journal of Cardiology
Indonesian J Cardiol 2024:45:suppl_B
pISSN: 2830-3105 / eISSN: 2964-7304
doi: 10.30701/ijc.1734

Amiodarone vs Digoxin for Acute Rate Control Agents in Atrial Fibrillation: A Systematic Review and Meta-Analysis of Randomized Controlled Trials and Observational Studies

J. N. Arnindita[1,2,3]; P. P. Siahaan [1]; P. B. T. Saputra [1,2,3]; R. B. Kurniawan[1]; J. Lesmana [1,2,3]; Y. H. Oktaviono [1,2,3];
R. Julario [1,2,3]; B. B. Dharmajati[1,2,3]; R. N. Rosyadi[1,2,3]; R. Amadis[1,2,3]; M. J. Al-Farabi[1,2,3]; C. E. C. Z. Multazam [1,4]; F. F. Alkaff [5,6]

[1]Faculty of Medicine, University of Airlangga
[2]Department of Cardiology and Vascular Medicine, Dr. Soetomo General Hospital
[3]Cardiovascular Research Center, Surabaya, Indonesia
[4]National Heart and Lung Institute, Imperial College London, London, UK
[5] Division of Pharmacology and Therapy, Department of Anatomy, Histology, and Pharmacology, Faculty of Medicine Universitas Airlangga, Surabaya, Indonesia
[6] Division of Nephrology, Department of Internal Medicine, University Medical Center Groningen, Groningen, Netherlands

Background and aims: The rate control strategy is the first-line therapy in alleviating atrial fibrillation (AF)-related symptoms and preventing complications. However, beta-blockers and calcium channel blockers are contraindicated in acute decompensated heart failure. Both Digoxin and Amiodarone are the most commonly used anti-arrhythmic drug and considered effective in controlling heart rate in AF. This systematic review aimed to compare the efficacy of Amiodarone and Digoxin in controlling the ventricular rate of AF patients.

Materials and methods: A systematic search was conducted across online databases on March 9, 2024. Analysis was performed using RevMan 5.4 (Cochrane Collaboration, Copenhagen) and R software version 4.2.2 (Posit PBC, USA). Binary data were pooled as risk ratio (RR), while continuous data were pooled as mead difference (MD). Either fixed-effect or random-effect meta-analysis was applied based on heterogeneity test results.

Results: Seven cohorts and eight trials with 2,833 patients were included. Patients were followed up for the primary outcome in 1 – 4 hours after drug administration. Amiodarone was superior in controlling heart rate (MD-8.43 [95%CI -14.17, -2.70]; p=0.004; I^2=64%). However, unlike Digoxin, Amiodarone exhibited minor adverse events (RR 2.06 [1.06,4.00], p=0.03, I^2=48%) such as bradycardia, hypotension, and phlebitis. On the other hand, serious adverse events such as ischemic stroke was recorded in Digoxin patients. The duration of hospitalization and risk of recurrent AF and mortality in both groups were not different.

Conclusion: Amiodarone is considered effective as the alternative rate control in patients with AF to Digoxin.
Keywords: atrial fibrillation; amiodarone; digoxin; rate control; cardiovascular diseases

The 11th Annual Scientific Meeting InaHRS 2024

Indonesian Journal of Cardiology
Indonesian J Cardiol 2024:45:suppl_B
pISSN: 2830-3105 / eISSN: 2964-7304
doi: 10.30701/ijc.1734

Long-Term Left Ventricular Ejection Fraction Outcomes in Right Ventricular Septal (RVS) versus Right Ventricular Apical (RVA) Pacing for Patients Requiring Pacemaker: A Meta-Analysis of Randomized Controlled Trials

A.M. Yapanto[1], K.A. Lestari[1], A.F. Chandranegara[2]
[1]Faculty of Medicine, YARSI University, Jakarta, Indonesia
[2]Department of Cardiology, Pasar Rebo General Hospital, Jakarta, Indonesia

Background and aims: The optimal site for pacemaker lead placement is debated, with conflicting evidence on the benefits of right ventricular septal (RVS) versus right ventricular apical (RVA) pacing on long-term cardiac function. This meta-analysis aims to compare the long-term effects of RVS versus RVA pacing on left ventricular ejection fraction (LVEF) in patients requiring pacemakers.
Materials and methods: A systematic search was conducted in Cochrane, PubMed, and Embase databases. The initial search yielded 3,048 records, which were screened for relevance. After removing duplicates and screening titles and abstracts, 90 full-text articles were assessed for eligibility. Of these, 82 were excluded based on predefined criteria, resulting in 8 studies included in the final analysis. Data extraction and quality assessment were performed independently by two reviewers, adhering to PRISMA guidelines. The risk of bias assessment was conducted using the Cochrane RoB 2.0 tool, and analyses were performed using RevMan 5.4 software.
Results: The meta-analysis included data from 8 randomized controlled trials, encompassing a total of 826 patients (RVS: 419, RVA: 407). The individual study outcomes showed varying results the combined effect size from the fixed-effects model (MD 1.03; 95% CI; -0.10-2.14; p = 0.07; Figure 1), indicating no statistically significant difference between RVS and RVA pacing. The overall test for effect (Z = 1.79, P = 0.07) was not significant. Heterogeneity among studies was moderate (Chi^2 = 20.53, df = 7, P = 0.005; I^2 = 66%).
Conclusion: While individual studies show varied results, the overall analysis indicates a slight improvement in LVEF with RVS pacing compared to RVA pacing, though this did not reach statistical significance. These findings suggest that further research with larger sample sizes and more rigorous designs may be needed to confirm the potential benefits of RVS pacing. Future studies should also explore long-term clinical outcomes and identify patient subgroups that may benefit most from RVS pacing.

Keywords: Right Ventricular Septal Pacing, Right Ventricular Apical Pacing, Left Ventricular Ejection Fraction, Pacemakers, Meta-Analysis, Randomized Controlled Trials.

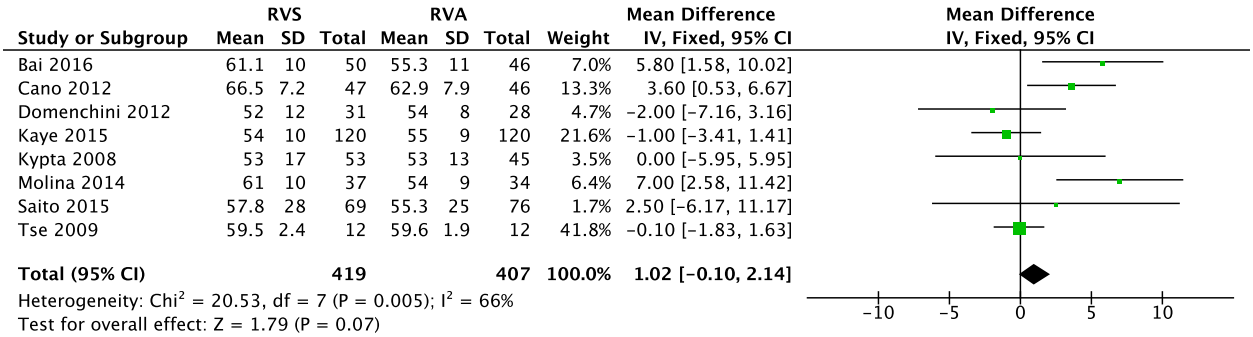


Figure 2. Forest Plot of the Meta-Analysis Comparing Long-Term Left Ventricular Ejection Fraction Outcomes Between Right Ventricular Septal (RVS) and Right Ventricular Apical (RVA) Pacing in Patients Requiring Pacemakers.

The 11th Annual Scientific Meeting InaHRS 2024

Indonesian Journal of Cardiology
Indonesian J Cardiol 2024:45:suppl_B
pISSN: 2830-3105 / eISSN: 2964-7304
doi: 10.30701/ijc.1734

From Mind to Heart: Unravelling the Unexpected Relationship of Neuroticism and Atrial Fibrillation - A Systematic Review

W. Widiarti[1+], O. P. Atsira[1+], R. T. Yomara[2], A. D. Lamara[2], R. A. Putra[2], R. Julario[2]
[1]Faculty of Medicine, Universitas Airlangga, Surabaya; [2]Department of Cardiology and Vascular Medicine, Faculty of Medicine, Universitas Airlangga – Dr. Soetomo General Hospital, Surabaya; [+]Authors contributed equally to this manuscript

Background and aims: Recent guidelines emphasise the importance of early AF detection and prevention due to its rising prevalence and related comorbidities. This study explores the rising significance of neuroticism and its influence on AF.

Materials and methods: A comprehensive literature search up to April 25th 2024 was performed to identify relevant studies. Studies involving AF patients aged ≥ 18 years and investigating the relationship between neuroticism and AF were included.
Results: Neuroticism was assessed using various scales, with higher scores linked to increased AF symptom burden, poorer quality of life, and greater AF severity. Neuroticism was identified as the strongest independent predictor of symptomatic AF, increasing the likelihood of antiarrhythmic and antidepressant prescriptions. Mendelian randomization studies demonstrated a causal relationship between higher neuroticism and increased AF risk. Psychological factors, such as perceived stress and Type D personality, were also significant predictors of AF severity and quality of life.
Conclusion: These findings indicate that neuroticism affects AF both directly and indirectly. Future assessments should incorporate symptoms and genetic factors to enhance understanding. Implications for prevention and intervention strategies include the need for integrated management, encompassing psychological assessment, to improve AF outcomes.

Keywords Atrial fibrillation (AF); AF Severity; Quality of life; Neuroticism; Psychological factors

The 11th Annual Scientific Meeting InaHRS 2024

Indonesian Journal of Cardiology

Indonesian J Cardiol 2024:45:suppl_B
pISSN: 2830-3105 / eISSN: 2964-7304
doi: 10.30701/ijc.1734

Precision and Reliability of Wearable Devices in Arrhythmia Detection: A Systematic Review

N. Albert[1], T. Victoryno[1], M. M. A. Sumampow[1], W. S. Kartono[1], M. Z. Sabran[1], A. Zebua[1], K. Y. Rubismo[1], E. W Mokalu[1], A. Kurniawan[2]

[1]Faculty of Medicine, Pelita Harapan University, Indonesia, [2]Department of Internal Medicine, Faculty of Medicine, Pelita Harapan University, Indonesia

Background and aims: Wearable electronic gadgets are frequently used to continuously monitor health, particularly for detecting cardiac arrhythmias. This study systematically assesses the utility, precision, and clinical significance of wearable devices for detecting arrhythmias. The evaluation evaluates new inquiries and technological advancements to determine the reliability of these technologies and their prospective impact on contemporary healthcare.

Materials and methods: The studies for this review wer extracted from PubMed, Cochrane, and Science Direct using keywords such as “arrythmia,” “monitoring, physiologic,”, and “wearable electronic devices.” Inclusion criteria were RCTs, clinical trials, and cohorts from the last 5 years. We excluded animal trials, systematic reviews, and meta-analyses. The ROB tool was used to assess bias. Metrics include device sensitivity, specificity, and positive predictive value, and accuracy.

Results: Seven studies are included, and based on the RoB 2.0., the studies show low risk of bias. Wearable technologies for arrhythmia detection have greatly improved, thanks to considerable advances in sensors, data processing, and communication. These developments enable wearable electronics devices to predict and interpret atrial fibrillation with excellent accuracy, sensitivity, and specificity. Furthermore, the emergence of wearable electronic devices allows patients to monitor their heart health from home, minimizing the need for hospital visits. After considering the findings, it appears that wearable devices are effective for screening and managing at-risk populations.

Conclusion: Wearable gadgets, such as the Apple Watch and Fitbit, provide ease of use, continuous monitoring, and timely intervention for detecting arrhythmias. They offer good sensitivity and specificity for detecting atrial fibrillation, which makes them useful for risk management. However, it is critical to evaluate false positives and inform consumers about restrictions. Advances in technology and clinical validation are likely to increase the importance of wearable devices in cardiac care.

Keywords: wearable devices, monitoring, physiologic, arrythmia

The 11th Annual Scientific Meeting InaHRS 2024

Indonesian Journal of Cardiology
Indonesian J Cardiol 2024:45:suppl_B
pISSN: 2830-3105 / eISSN: 2964-7304
doi: 10.30701/ijc.1734

Monocyte to High Density Lipoprotein-Cholesterol Ratio as a Novel Biomarker in Predicting Post-Ablation Atrial Fibrillation Recurrence: A Systematic Review and Meta-Analysis

P. P. Siahaan[1], W. Widiarti[1], P. B.T. Saputra[2], H. Siahaan[1], Firas F. Alkaff [3, 4]

[1]Faculty of Medicine, Universitas Airlangga, Surabaya, Indonesia; [2]Dr. Soetomo Regional General Hospital, Surabaya, Indonesia; [3]Faculty of Medicine, Universitas Kristen Indonesia, Jakarta, Indonesia; [3]Division of Nephrology, Department of Internal Medicine, University of Groningen, University Medical Center Groningen, Groningen, The Netherlands; [4]Division of Pharmacology and Therapy, Department of Anatomy, Histology, and Pharmacology, Faculty of Medicine Universitas Airlangga, Surabaya, Indonesia

Background and aims: Atrial fibrillation (AF) is the most common type of arrhythmia. In persistent cases, it often treated with ablation. This study aims to evaluate the role of the monocyte-to-HDL cholesterol ratio (M/H) ratio as risk stratification in predicting post-ablation AF recurrence, highlights the potential of the M/H ratio to improve treatment outcomes, through linking inflammation and oxidative stress with cardiovascular risk.
Materials and methods: A comprehensive literature search was conducted until June 11th, 2024 in scientific databases such as PubMed, ScienceDirect, Web of Science, ProQuest, Cochrane. A bivariate random-effects meta-analysis using the Rutter and Gatsonis hierarchical summary receiver operating characteristic (HSROC) parameterization model was performed to measure predictive value. Quality assessment of each individual studies was carried out to minimize risk of bias.
Results: Four eligible studies were included in the analysis. The predictive value of M/H ratio in predicting post-ablation AF recurrence result in pooled sensitivity of 85.8% (95% CI 79.5-90.4%), specificity of 70.4% (95% CI 55.2-88.1%), AUC of 0.871 (95%CI 0.737-0.903), positive likelihood ratio of 2.900 (1.960-4.770), negative likelihood ratio of 0.206 (0.147-0.284), and diagnostic odds ratio of 14.30 (8.01-26.00). Additional outcomes of the included studies were reviewed, focusing on the average recurrence time in specific cut-offs and MHR in specific AF type.
Conclusion: Findings indicate that a higher M/H ratio effectively predicts AF recurrence, suggesting its potential as a clinical tool for risk stratification and guiding tailored therapeutic strategies.

Keywords Monocyte-to-HDL Cholesterol Ratio, Atrial fibrillation, Atrial fibrillation recurrence, catheter ablation

Authors' ID	Study Design	Sample Size	AF Type/Type of Ablation/Onset of Occurence)	CHA_2DS_2-VASc score/LAD/EF	Outcome
Adili et al., 2020	Retrospective Cohort	Recurrence: 70 Sinus rhythm: 61	Persistent AF/ Radiofrequency/ Early recurrence	Recurrence: 2(2-3) / 5.3 (4.9-6.3) / 51(44-58) Sinus rhythm: 2 (2-3) / 5 (4.5-5.4) / 55 (50-57)	Positive correlation of M/H ratio with CRP (r = 0.387, P < .001) and WBC (r = 0.3, P = .001)
Canpolat et al., 2015	Prospective Cohort	Recurrence: 95 Sinus rhythm: 307	Paroxysmal (325, 80.8%) and Persistent AF (77, 19.2%)/ Cryobaloon/ Late recurrence	Recurrence: 2 (1–5)/ 39.4±5.6 / 51 (44-58) Sinus rhythm: 2 (0–5) / 37.3±4.5 / 55 (50-57)	Pre-ablation MHR due to occurrence of AF recurrence (median M/H ratio, 15.6 (IQR:12.7–19.9) in patients with recurrence vs. 9.98 (IQR: 8.2–11.6) in patients with no recurrence, P , 0.001) Median M/H ratio was significantly higher in paroxysmal AF compared with the persistent AF group [10.03 (IQR: 8.2–12.1) vs. 15.1 (IQR: 12.1–19.9), P , 0.001]
Chen et al., 2020	Retrospective Cohort	Recurrence: 47 Sinus rhythm: 78	Persistent AF/ Radiofrequency/ Late recurrence	Recurrence: 2.0 (2.0) / 38 (6.0) / 61 (3.0) Sinus rhythm: 2.0 (2.0) / 34 (6.0) / 62 (1.25)	- Forty-seven patients had developed late recurrence during follow-up - The AF recurrence event rates were significantly increased in the highest pre-ablation MHR tertile compared with those in the lowest MHR tertile (22.0% vs. 57.1%; P < 0.05). - On multivariate logistic regression analysis, the preablation MHR (OR = 1.34; 95% CI = 1.12 ~ 1.60; P = 0.001) and left atrial diameter (LAD) (OR = 1.21, 95% CI = 1.08 ~ 1.35; P = 0.001) were independent risk factors predicting the recurrence of AF after radiofrequency ablation.
Ruan et al., 2022	Prospective Cohort	Recurrence: 59 Sinus rhythm: 162	Paroxysmal (139, 63%) and Persistent AF (82, 37%)/ Radiofrequency/ Early recurrence	Recurrence: 2.33 ± 1.45 / 44.77 ± 6.08 / NA Sinus rhythm: 2.43 ± 1.54 / 42.59 ± 5.76 / NA	The average recurrence time of AF after RFCA according to MHR stratification: 1. <0.5629, average recurrence time 22.579 months SE 0.429 (95% CI 21.738 - 23.419) 2. ≥0.5629, average recurrence time 13.852 months SE 0.707 (95%CI 12.466 - 15.238)

The 11th Annual Scientific Meeting InaHRS 2024

Indonesian Journal of Cardiology

Indonesian J Cardiol 2024:45:suppl_B
pISSN: 2830-3105 / eISSN: 2964-7304
doi: 10.30701/ijc.1734

Mortality Comparison of Beta Blockers versus Digoxin in Patients with Atrial Fibrillation and Heart Failure: A Systematic Review and Meta-Analysis

M. A. R. Ayusha[1], S. I. Adhimulia[1], B. I. L. Saputro[1], D. Saisa[1]

[1]Faculty of Medicine, Universitas Indonesia, Jakarta, Indonesia

Background and aims: Atrial fibrillation (AF) is a prevalent and urgent health issue, often coexisting with heart failure (HF). This combination complicates treatment and raises risks of hospitalization and mortality. The primary treatments for this condition are beta blockers and digoxin. Beta blockers are commonly used due to their benefits in various cardiovascular conditions, but their efficacy in AF is inconsistent, especially concerning their effectiveness in patients with HF. Digoxin, while has been proved to reduce hospitalizations in patients with HF, has safety concerns and an unclear impact on mortality. Several studies have compared both in terms of mortality, but results have been varied. Hence, a meta-analysis is needed to evaluate clinical outcomes, including adverse events, among patients with AF and HF by comparing digoxin and beta blockers.

Materials and methods: A systematic literature search was conducted across PubMed, Cochrane Library, ClinicalKey, ClinicalTrials.gov, ProQuest, and ScienceDirect, supplemented by hand searches. Inclusion criteria ensured studies matched the PICO framework, with a focus on randomized controlled trials (RCTs) comparing digoxin and beta blockers. Outcome assessed was mortality, in a minimum 1 year of follow-up. Meta-analysis employed odds ratios (OR), 95% confidence intervals (CI), assessed heterogeneity, and evaluated risk of bias.

Result: We included a total of 3 studies with a total of 2619 patients diagnosed with AF and HF, with 817 patients receiving digoxin and 1802 receiving beta blockers for rate control. Our findings reveal that beta blocker therapy was associated with significantly higher odds of all-cause mortality compared to digoxin therapy (OR = 1.95; 95% CI: 1.56 - 2.44). However, there was substantial heterogeneity among the studies (I^2 = 86%; p = 0.0009), likely due to diverse patient demographics, varying treatment protocols, and methodological differences in study design. There was no evidence of publication bias.

Conclusion: Beta blocker therapy in AF and HF patients demonstrates a significantly higher mortality risk compared to digoxin therapy. The observed heterogeneity underscores the necessity for further research to clarify contributing factors.

Keyword: atrial fibrillation, heart failure, beta blockers, digoxin, mortality

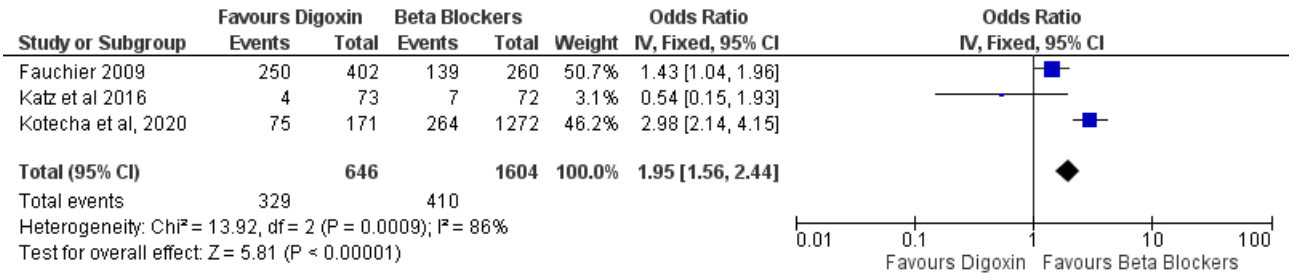


Figure 1. Forest plot comparing mortality outcome between digoxin and beta blockers in patients with AF and HF population

The 11th Annual Scientific Meeting InaHRS 2024

Indonesian Journal of Cardiology

Indonesian J Cardiol 2024:45:suppl_B
pISSN: 2830-3105 / eISSN: 2964-7304
doi: 10.30701/ijc.1734

Rate or Rhythm? The Ultimate Strategy for Atrial Fibrillation in Patients Undergoing Transcatheter Edge-to-Edge Mitral Valve Repair – A Systematic Review

J. N. Hariyanto[1], J. A. Setiawan[1], C. J. Hardi[1]

[1]*Faculty of Medicine, Universitas Pelita Harapan, Tangerang*

Background and aims: AF is the most common comorbidity in severe MR, but data on TEER patients are scarce. The optimal strategy—rate or rhythm control—remains unclear. This systematic review compares these approaches.

Materials and methods: PubMed, Scopus, and Cochrane were reviewed for studies regarding treatment strategies in AF patients undergoing TEER.

Results: We included 5 observational studies with 2374 patients, 70.6% with AF. Jabs 2017 found AF was not a significant predictor of 30-day mortality (p=0.055; HR 1.74, 95% CI: 0.99-3.07). Waechter 2020 found AF did not affect procedural success (OR 0.62, 95% CI: 0.29–1.39; p=0.27), with rate control mainly with beta-blockers (BB), predominant in 57%.

Waechter 2021 reported lower 3-year survival for AF patients vs. non-AF (47.3% vs. 58.3%, HR 1.4, 95% CI 1.004–2.03, p=0.047) but no impact on procedural success or adverse events. Rate control was superior, as rhythm control reduced 3-year survival (46.7% vs. 56.5%, HR 1.5, 95% CI: 03-2.06, p=0.032). Amiodarone predicted higher mortality (HR 1.5, 95% CI 1.1–2.1, p=0.02) while digoxin was not a significant predictor.

Ausbuettel 2023 showed pharmacological rhythm control had lower 3-year survival than catheter ablation (CA) (49.4% vs. 75.5%, p = 0.009). CA had better outcomes than pharmacological rhythm control (HR 0.6, p = 0.03) and rate control (HR 0.45, p = 0.006), with no significant survival difference compared to non-AF patients at 3 years (68.3% vs. 75.5%, p = 0.36). Lee 2020 revealed successful DC cardioversion in AF patients significantly improved 6MWT (p = 0.047) It reduced NT-proBNP at 1 month (p = 0.026) but showed no significant difference in 1-year survival between cardioverted and non-cardioverted groups (p = 0.52).

Conclusion: In AF patients undergoing TEER, rate control showed superior survival and outcome compared to rhythm control. However, rhythm control via DC cardioversion improved exercise capacity at 1 month. Further research is needed to determine the long-term benefits of respective strategies.

Keywords: Transcatheter Edge-to-Edge Mitral Valve Repair, atrial fibrillation

The 11th Annual Scientific Meeting InaHRS 2024

Indonesian Journal of Cardiology

Indonesian J Cardiol 2024:45:suppl_B
pISSN: 2830-3105 / eISSN: 2964-7304
doi: 10.30701/ijc.1734

Comparative effectiveness of cryoballoon versus radiofrequency ablation for persistent atrial fibrillation: a systematic review

S. T. Lim[1], E. Huang[1], A. Kurniawan[2]

[1]Faculty of Medicine, Pelita Harapan University, Tangerang, Indonesia; [2]Department of Internal Medicine, Faculty of Medicine, Pelita Harapan University, Tangerang, Indonesia

Background and aim: Persistent atrial fibrillation (PersAF) may weaken the heart and in extreme cases lead to heart failure. Cryoballoon ablation (CBA) and radiofrequency ablation (RFA) are the 2 common techniques to achieve pulmonary vein isolation (PVI), a cornerstone of the nonpharmacological treatment of atrial fibrillation (AF). This systematic review aims to evaluate and compare the efficacy of CBA versus RFA in patients with persistent AF.

Materials and methods: A systematic search in the PubMed, Europe PMC and ScienceDirect databases was conducted up to 28 June 2024 using the keywords “cryoballoon ablation", "persistent atrial fibrillation" and "radiofrequency ablation". Randomised controlled trials (RCTs), clinical trials and cohort studies comparing the efficacy of CBA and RFA based on the recurrence of arrhythmia or AF in patients with PersAF were included. Systematic review, meta-analysis and trials on animals were excluded. The risk of bias for randomised trials was measured using the Revised Cochrane Risk of Bias Tool (RoB 2) and the ROBINS-I tool was used to assess non-randomised trials.

Results: 6 studies were included from 193 studies with a total of 2993 patients with PersAF. 1 RCT was included with some concerns of bias based on ROB 2. 1 controlled clinical trial had low risk of bias, 2 cohort studies had low risk of bias and 2 cohort studies had moderate risk of bias when assessed with the ROBIN-I tool. 2 RCTs were excluded as the full text was not available despite reaching out to the author. 4 studies found that CBA and RFA have similar efficacy in preventing the recurrence of arrhythmia in patients with PersAF. However, 2 studies had found that CBA was inferior to RFA. This contradiction could be caused by both studies being a single center study, thus the result may not represent the general PersAF patients.

Conclusion: In conclusion, CBA has shown comparable efficacy to RFA. However, more multi-centre studies are required to validate these findings.

Keywords: cryoballoon ablation, efficacy, persistent atrial fibrillation, radiofrequency ablation

The 11th Annual Scientific Meeting InaHRS 2024

Indonesian Journal of Cardiology

Indonesian J Cardiol 2024:45:suppl_B
pISSN: 2830-3105 / eISSN: 2964-7304
doi: 10.30701/ijc.1734

Navigating Treatment Choices: Anticoagulants or Atrial Appendage Closure for Atrial Fibrillation Patients

A.Z. Thendiana[1], M.Z. Sabran[1],C. Zefanya[1], C.E.O.L. Hutauruk[1]
[1]Faculty of Medicine, University of Pelita Harapan, Tangerang, Indonesia

Background and aims: Atrial fibrillation (AF) is a common cardiac arrhythmia characterised by irregular and rapid heartbeats which commonly causes poor blood flow. It increases the risk of stroke and other cardiovascular complications which leads to death. Anticoagulants reduce stroke risk in AF, however some challenges such as bleeding and drug intolerance may hinder long-term use. Atrial appendage closure has emerged to reduce the risk of stroke by blocking or closing the left atrial appendage's opening, preventing blood clots entering the bloodstream. The aim of this study is to compare atrial appendage closure and anticoagulants to minimise stroke, bleeding and mortality in AF.

Materials and methods: Included studies were derived from PubMed, PubMed Central (PMC), and Elsevier databases by keywords "Anticoagulants" and "Atrial Appendage Closure" and "Atrial Fibrillation" that is conducted from January 2015 - January 2024. Two independent investigators searched, extracted, and evaluated the studies from 1st till 14th June 2024 with inclusion criteria such as patients with atrial fibrillation on RCT above 18 years old. We excluded studies on patients under 18 years old and studies on animals, meta analysis, systematic reviews and case reports. Revised cochrane risk-of-bias tool for randomized trials (RoB 2) was used to determine the quality and the risk of bias of the included studies analysis.

Results: Five out of eight randomized controlled trials were extracted with a total of 4329 patients with atrial fibrillation being analysed. All of the studies are well conducted. Derived from our analysis we found out two studies stating that atrial appendage closure is noninferior to anticoagulants. The rest of the studies express that atrial appendage closure is reducing risk of stroke, bleeding rate, and cardiovascular mortality compared to anticoagulants.

Conclusion: Two studies found atrial appendage closure as effective as anticoagulants, while others reported it reduces stroke, bleeding, and cardiovascular death.

Keyword: anticoagulants, atrial appendage closure, atrial fibrillation