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Commentary: Until we take it seriously, the status quo of postoperative atrial fibrillation management will prevail

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New-onset postoperative atrial fibrillation (POAF) is common following cardiac surgery, developing in almost one-third of patients after coronary artery bypass grafting (CABG) and two-thirds of patients after valvular surgery.¹ The long-standing characterization of atrial fibrillation (AF) as a transient and benign postoperative complication may be an underlying reason for the relatively limited progress in terms of its prophylaxis and management.² This assumption has only recently been called into question by new studies reporting varying degrees of association between POAF and mortality, stroke, myocardial infarction, or renal failure.³⁻⁷ Accordingly, Caldonazo and colleagues⁸ sought to synthesize the associations between post-cardiac surgery AF and multiple adverse effects in a meta-analysis of 57 studies pooling 246,340 patients.⁸

Specifically, the authors performed the most recent and comprehensive meta-analysis to date, examining 9 short- and long-term postoperative outcomes. In doing so, they convincingly demonstrated that POAF is not benign by reporting its significant association with the primary outcome of perioperative mortality (odds ratio, 1.92; 95% confidence interval, 1.58-2.33). Furthermore, they also found an increased risk of POAF with the key secondary outcomes of perioperative stroke, myocardial infarction, acute renal

CENTRAL MESSAGE

In a comprehensive review of the literature, postoperative atrial fibrillation after cardiac surgery was found to be associated with short- and long-term harm.

failure, long-term mortality, stroke, and persistent AF, as well as longer hospital and intensive care length of stay. These findings are well summarized and clearly presented in their Table 1. In comparison, previous meta-analyses pooled 10 to 35 studies and focused primarily on stroke and/or mortality.⁹⁻¹²

The authors also performed several subgroup analyses that illuminated differing effect sizes when stratified by cardiac surgery subtypes, study date, and the continuity of postoperative monitoring. Finally, their meta-regression discerned a stronger association between POAF and early mortality in participants with diabetes and previous myocardial infarction.⁸ The authors are to be commended on a meta-analysis that is broad in scope, methodologically robust, and well presented.

Despite the ubiquity and importance of POAF, there remains considerable uncertainty pertaining to its prevention and management. The 2014 American Heart Association (AHA)/American College of Cardiology (ACC)/Heart Rhythm Society (HRS) guidelines recommend rate control with beta-blockers (class I LOE A) as first-line therapy and amiodarone as prophylaxis (class IIa LOE A).¹³ However, the 2019 Focused Update of the AHA/ACC/HRS guidelines provided no specific recommendations for post-cardiac surgery patients despite several recent developments.¹⁴ Gillinov and colleagues¹⁵ addressed the rate versus rhythm control question in 2016 and found no net clinical advantage to either approach. The necessary duration of treatment or window of observation is relevant. Gillinov and colleagues¹⁵ followed patients for 60 days, whereas Caldonazo and colleagues affirmed the importance of POAF long-term. More recently, using the Society of Thoracic Surgeons Adult Cardiac Surgery Database,¹⁶ Matos and colleagues¹⁷ evaluated the postoperative administration of oral anticoagulation and amiodarone and discovered substantial variability in the application of anticoagulation, but increased

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bleeding rates and few short-term benefits associated with its use. The questions arising from this investigation are currently being addressed in a randomized study comparing anticoagulation (warfarin or direct oral anticoagulants) with antiplatelet therapy, the Anticoagulation for New-Onset Post-Operative Atrial Fibrillation After CABG (PACES) trial (NCT04045665).¹⁸ Furthermore, the emergence of wearable miniaturized monitors may better inform the true incidence of POAF postdischarge and the optimal duration of treatment in individual patients compared with surface electrocardiography or short-duration Holter monitoring.¹⁹

That being said, this review should be interpreted in light of several important limitations. Although Caldonazo and colleagues analyzed a variety of baseline variables, the inherent nature of meta-analyses pooling observational studies precludes the formation of causal inferences. Substantial heterogeneity existed across many pooled outcomes, including perioperative and long-term mortality, the sources of which were not explained. Finally, the number of hypotheses tested increases the risk of a type 1 error.⁸ Nevertheless, Caldonazo and colleagues have completed an exhaustive meta-analysis of the available evidence on early and late outcomes associated with POAF. By highlighting its serious impact, this meta-analysis serves as a springboard for randomized trials with the potential to modernize guidelines surrounding POAF management and prophylaxis.

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