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Abbreviations used in this issue:

AF = atrial fibrillation; BMI = body mass index; COVID = coronavirus disease; CRT = cardiac resynchronisation therapy; HR = hazard ratio; ICE = intracardiac echocardiography; NOAC = nonvitamin K oral anticoagulant; PVI = pulmonary vein isolation; TIA = transient ischaemic attack.

Welcome to issue 47 of Atrial Fibrillation Research Review.

Highlights for this issue include research reporting postoperative AF outcomes following noncardiac surgery, the incidental detection of subclinical AF in patients with syncope being monitored with implanted devices, and the impact of obesity on procedural characteristics and clinical outcomes in patients with AF undergoing cryoballoon PVI. We also have a report from Denmark on the impact their COVID-19 lockdown had on presentations for new-onset AF.

In addition to the ten articles selected for this issue, we’d like to highlight the 2020 ESC guidelines for the diagnosis and management of AF, which have been developed in collaboration with the EACTS (European Association of Cardio-Thoracic Surgery). The full manuscript (Eur Heart J. Published online Aug 29, 2020) is freely available to everyone, and is a highly recommended reference for the best management of AF.

We hope you enjoy this update in AF research. We look forward to any comments or suggestions you would like to send us.

Kind Regards,
Dr Andrei Catanchin
andrei.catanchin@researchreview.com.au

Association of new-onset atrial fibrillation after noncardiac surgery with subsequent stroke and transient ischemic attack

Authors: Siontis KC et al.

Summary: Relationships between new-onset postoperative AF versus no AF following noncardiac surgery and nonfatal and fatal outcome risk were explored in a retrospective cohort of 452 patients with a first-ever AF occurring ≤30 days postoperatively, each matched to a patient with noncardiac surgery and no AF ≤30 days postoperatively; the postoperative AF group had a higher median CHA2DS2-VASc score (4 vs. 3 [p<0.001]). There were 71 ischaemic strokes/TIAs, 266 subsequent AF episodes and 571 deaths (172 cardiovascular-related) over a median of 5.4 years of follow-up. Compared with the patients without postoperative AF, the postoperative AF group had greater incidence rates of ischaemic stroke/TIA (18.9 vs. 10.0 per 1000 person-years; HR 2.69 [95% CI 1.35–5.37]), subsequent AF (136.4 vs. 21.6 per 1000 person-years; HR 7.94 [4.85–12.98]) and death from any cause (133.2 vs. 86.8 per 1000 person-years; 1.51 [0.97–2.34]).

Comment: Unfortunately, how best to manage this common cause for cardiology referral remains unclear, with postoperative AF predicting future AF and acting as both a marker of risk and a risk factor for stroke and all-cause mortality. In high risk-patients, anticoagulation is often used, but randomised controlled trials are in progress.

Reference: JAMA 2020;324:871–8

High incidence of subclinical atrial fibrillation in patients with syncope monitored with implantable cardiac monitor

Authors: Francisco-Pascual J et al.

Summary: This prospective observational study investigated subclinical AF in 208 patients undergoing prolonged ECG monitoring with implantable cardiac monitors for the aetiological workup of syncope. AF was detected by the cardiac monitors in 20.2% of the patients (incidence 11.7 cases per 100 person-years), and the median AF burden was 0.2%. Predictors of AF were age, hypertension, chronic kidney disease, size of the septum and left atrium and presence of broad QRS on baseline ECG in a univariate analysis.

Comment: This highlights an important and increasingly frequent clinical scenario – how to best manage subclinical AF which may be detected by loop recorders inserted for syncope as in this study, pacemakers/implantable cardioverter-defibrillators and other electronic equipment, including blood pressure machines, portable ECGs and smartwatches.


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Pulmonary vein isolation with the cryoballoon in obese atrial fibrillation patients – does weight have an impact on procedural parameters and clinical outcome?

Authors: Weinmann K et al.

Summary: The impact overweight/obesity has in AF patients undergoing cryoballoon PVI on procedural characteristics and clinical outcomes was assessed in 600 patients, 41% and 34% of whom were overweight and obese, respectively (BMI 25.0–29.9 and ≥30.0 kg/m²). Overweight and obese patients required significantly longer fluoroscopy area dose products and obese patients had a significantly longer fluoroscopy time. Ablation-related procedural characteristic analyses revealed no relevant differences for number and duration of ablation, time to isolation and nadir temperature. Atrial arrhythmia recurrence rates did not differ when normal bodyweight, overweight and obese patients were compared.

Comment: We know obesity is an important risk factor for AF, and rhythm control is more challenging in these patients. Here we have the interesting finding that all three BMI groups had similar outcomes from cryoballoon ablation; ongoing attention to lifestyle modification remains very important to prevent subsequent recurrence of AF in all.

Reference: Int J Cardiol 2020;316:137–42

Abstract

Catheter ablation vs. thoracoscopic surgical ablation in long-standing persistent atrial fibrillation

Authors: Halder S et al., CASA-AF Investigators

Summary: The CASA-AF trial randomised 120 patients with long-standing persistent AF to undergo thoracoscopic surgical ablation (n=54) or catheter ablation (n=66); all participants underwent predetermined lesion sets and had an implantable loop recorder inserted. There was no significant difference between the surgical and catheter ablation arms for the 12-month single-procedure freedom from AF/atrial tachycardia rate (primary outcome; 26% vs. 28% [p=0.83]), the proportion of patients who had a reduction in AF/atrial tachycardia burden of ≥75% (67% vs. 77% [p=0.3]) or the 30-day procedure-related serious adverse event rate (15% vs. 10% [p=0.46]). There was one death (in the surgical ablation arm). Catheter ablation was associated with greater improvements in AF symptoms and was cheaper with greater quality-adjusted life-years (0.78 vs. 0.85 [p=0.02]) over 12 months than surgical ablation.

Comment: Although conceptually surgical ablation via thoracotomy might be felt to be preferable to endovascular catheter ablation (and also permits resection of the left atrial appendage, thus removing its thrombotic and arrhythmogenic potential), this was not demonstrated in these patients with longstanding persistent AF; note the very poor freedom from any AF in these longstanding persistent AF patients with either approach, but a good reduction in AF burden.

Reference: Eur Heart J 2020;41:3072–9

Abstract

New-onset atrial fibrillation: incidence, characteristics, and related events following a national COVID-19 lockdown of 5.6 million people

Authors: Holt A et al.

Summary: These researchers reported on the incidence, patient characteristics and related events for patients aged 18–90 years who developed new-onset AF during an early-2020 3-week COVID-19 lockdown in Denmark. Compared with data from the corresponding period in 2019, there was a lower incidence of new-onset AF during the lockdown period with a 47% decrease in total numbers (562 vs. 1053). Patients diagnosed with new-onset AF during lockdown were younger and had a lower CHADS2-VASc score, but were more likely to have a history of cancer, heart failure or vascular disease. For patients who developed new-onset AF during lockdown and during the corresponding 2019 period, the respective proportions who experienced ischaemic stroke were 5.3% and 4.3%, and the respective mortality rates were 2.7% and 1.3%; the adjusted odds ratio for either event among patients who developed new-onset AF during lockdown was 1.41 (95% CI 0.93–2.12).

Comment: As with cancer diagnoses, AF diagnoses were markedly reduced during the COVID-19 lockdown period for obvious reasons. The findings here are explained by younger patients being more likely to present with symptomatic paroxysmal AF (as opposed to asymptomatic persistent AF diagnosed during routine medical care in older patients), and patients with comorbidities being more likely to attend for medical care (and therefore be assessed and diagnosed) than those without.

Reference: Eur Heart J 2020;41:3072–9

Abstract

Impact of diabetes mellitus on stroke and survival in patients with atrial fibrillation

Authors: Patiolla SH et al.

Summary: The impact of diabetes mellitus on ischaemic stroke and all-cause mortality was evaluated in this retrospective research. Compared with patients without diabetes, those with diabetes had significantly worse cumulative survival over median follow-up of 5.4 years. In a propensity score-matched comparison of 509 patients with incident AF and diabetes and 909 without diabetes, the patients with diabetes had significantly greater mortality and stroke risks (respectively HRs 1.25 [95% CI 1.12–1.69] and 1.32 [1.02–1.69]); these associations were not affected by duration of diabetes.

Comment: These findings are not surprising; i.e. duration of diabetes predicts the presence/development of generalised vascular disease, but the presence of diabetes and its accompanying procoagulant and inflammatory state confers a 25% higher mortality and a 32% higher stroke risk in AF patients.

Reference: Am J Cardiol 2020;131:33–9

Abstract

Periprocedural and long-term safety and feasibility of direct oral anticoagulants in patients with biological valve undergoing radiofrequency catheter ablation for atrial fibrillation

Authors: Di Biase L et al.

Summary: The safety and feasibility of periprocedural and long-term rivaroxaban or apixaban use were prospectively investigated in 127 patients with biological cardiac valves who had undergone catheter ablation for AF; each matched to a similar patient receiving uninterrupted warfarin; all participants received anticoagulation for 3–4 weeks prior to their catheter ablation procedure. There was no significant difference between NOAC and warfarin recipients for the proportion who underwent aortic and mitral valve replacements, or for the proportion with CHADS2 scores ≥2. In the NOAC group, 70% and 30% of the participants underwent ablation predominantly with uninterrupted rivaroxaban and apixaban, respectively. Two periprocedural groin haematomas occurred in each group, and there were no cases of stroke or TIA, either periprocedurally or at long-term follow-up, in either group.

Comment: Anticoagulation with NOACs is standard of care in AF patients with bioprosthetic heart valves, and this applies to the peri-ablation setting also.

Reference: J Interv Card Electrophysiol; Published online Sept 7, 2020

Abstract
XARELTO is approved for use in NVAF*, DVT or PE† patients with a CrCl as low as 15mL/min¹

*Prevention of stroke and systemic embolism in patients with NVAF and at least one additional risk factor for stroke. Please refer to the Xarelto PI for full list of indications.

†Treatment of DVT and PE and for the prevention of recurrent DVT and PE. Please refer to the Xarelto PI for full list of indications.

Contraindicated in CrCl <15mL/min. Use with caution in patients with CrCl = 15–29mL/min.

CrCl: Creatinine clearance; DVT: Deep vein thrombosis; NVAF: Non-valvular atrial fibrillation; OD: Once daily; PE: Pulmonary embolism.

PBS Information: Authority Required (STREAMLINED). Refer to PBS Schedule for full authority information.
Does the use of intracardiac echocardiography during atrial fibrillation catheter ablation improve outcomes and cost?

Authors: Isath A et al.

Summary: These researchers queried a national inpatient sample database for diagnoses of AF with a catheter ablation procedure during the same hospitalisation over a 14-year period (2001–2014) to assess trends of ICE use, the impact on complications and in-hospital outcomes. An estimated 299,152 patients underwent AF ablation during the period assessed, among which ICE was used in 15.6%. ICE use increased significantly over this time period (from 0.06% to 15.7%). Compared with patients without ICE use, those with ICE use had a significantly lower in-hospital mortality rate (0.11% vs. 0.54% \((p<0.0001)\)) and a lower risk of complications (HR 0.48 [95% CI 0.44–0.51]), including cardiac complications (3.67% vs. 4.51% \((p=0.025)\)). ICE use was associated with significantly greater hospitalisation costs that were offset by significantly shorter hospital stays.

Comment: As opposed to the USA, most Australian operators would use transesophageal echocardiography rather than ICE, and although a direct comparison is not available, it’s expected this would confer the same safety advantages (but with far less cost).

Reference: J Interv Card Electrophysiol; Published online Aug 2, 2020

Safety and efficacy of catheter ablation for atrial fibrillation in patients with percutaneous atrial septal closure device

Authors: Garg J et al.

Summary: This research from the Electrophysiology Collaborative Consortium for Meta-analysis Investigators included data from three studies (n=64) reporting results for a total of 64 patients with percutaneous atrial septal defect occluders who had undergone AF ablation. The trans-septal puncture success rate was 100%, with all but one patient undergoing the procedure under fluoroscopic and ICE guidance. The freedom from AF rate was 77.7%. There was no significant difference between septal versus device puncture for AF recurrence (23.07% vs. 16.66 \((p=0.79)\)), and there was no significant difference between trans-septal puncture via native septum versus device for total fluoroscopy time (43.50 vs. 70.67 min \((p=0.44)\)). Trans-septal puncture via the closure device versus native septum was associated with a longer total procedural time (237.3 vs. 180 min \((p=0.004)\)). No device dislodgements or residual interatrial shunts were recorded during follow-up.

Comment: Left atrial access in patients with closure devices (patent foramen ovale or atrial septal defect) is technically possible, and devices shouldn’t preclude left atrial procedures such as AF ablation. Done with imaging guidance (transesophageal echocardiography or ICE), trans-septal puncture and procedural success were in this study the same as patients without closure devices.

Reference: J Cardiovasc Electrophysiol 2020;31:2393–402

Probability of sinus rhythm conversion and maintenance in cardiac resynchronization therapy patients with atrial fibrillation during 5-year follow-up

Authors: Ziegelhoeffer T et al.

Summary: These researchers reported outcomes and the course of rhythm for 328 consecutive patients with a history of AF who underwent CRT implantation; 132 patients had preoperative paroxysmal AF, 70 had persistent AF and 126 had long-standing persistent AF. Atrial leads were received by 277 of the patients at the time of CRT implantation, and nine received them during follow-up. There were no major lead implantation-associated complications. In the paroxysmal AF group, 78.8%, 95.5% and 85.7% were in sinus rhythm at admission, discharge and at 5 years follow-up, respectively, the respective proportions in the persistent AF group were 28.6%, 91.4% and 69.7%, and the respective proportions in the longstanding persistent AF group were 100%, 50.8% and 44.1%; the differences for the discharge and 5-year follow-up proportions were statistically significant.

Comment: This supports the insertion of an atrial pacing lead in all CRT devices – even in longstanding persistent AF patients they saw sinus rhythm in 44% at 5 years. Atrioventricular synchrony can be just as important as interventricular synchrony. Note that current Australian MBS requirements include sinus rhythm as one of the four requirements for CRT (biventricular) pacing – the others are clinical heart failure, ejection fraction <35% and QRS complex >120 msec.

Reference: J Cardiovasc Electrophysiol 2020;31:2328–34

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