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Welcome to issue 22 of Atrial Fibrillation Research Review.

This issue includes a paper reporting on complications associated with PVI comparing RF and cryoballoon ablation, which is followed by a report on seven patients who developed gastroparesis while undergoing such procedures. Two papers reporting Australian-based research have addressed issues of bodyweight in patients with AF – one reported that reductions in bodyweight in patients with AF are associated with favourable changes in structural remodelling and reduce pericardial adipose tissue burden, and the other looked at the long-term effects of sustained bodyweight loss and fluctuations on AF burden and sinus rhythm.

Thank you for all your feedback – I look forward to reading your ideas and views.

Kind Regards,
Dr Andrei Catanchin
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Digoxin use in patients with atrial fibrillation and adverse cardiovascular outcomes

Authors: Washam JB et al., for the ROCKET AF Steering Committee and Investigators

Summary: This research retrospectively investigated the use and outcomes of digoxin among 14,171 ROCKET-AF trial participants, 5239 of whom were receiving the agent at baseline. Digoxin recipients were more likely to be female (42% vs. 38%) and have a history of HF (73% vs. 56%), diabetes (43% vs. 38%) or persistent AF (88% vs. 77% [p<0.0001 for all]). Digoxin use was associated with increased rates of all-cause mortality (5.41 vs. 4.30 events per 100 patients-years; adjusted HR 1.17 [95% CI 1.04–1.32]), vascular death (3.55 vs. 2.69 per 100 patient-years; 1.19 [1.03–1.39]), and sudden death (1.68 vs. 1.12 events per 100 patient-years; 1.36 [1.08–1.70]).

Comment: The relationships between chronic digoxin use and adverse outcomes and mortality appear again in this analysis of ROCKET-AF. Unfortunately, digoxin concentrations were unavailable, and this difficult area remains controversial and poorly outlined in AF management guidelines.

Reference: Lancet 2015;385(9985):2363–70

Abstract

Independent commentary by Dr Andrei Catanchin, a cardiologist/ electrophysiologist specialising in the management of AF and other arrhythmias in private practice in Melbourne. Dr Catanchin has a particular expertise in the management of AF and other rhythm disorders. He performs catheter ablation for AF and other arrhythmias, implants pacemakers and ICDs (defibrillators) and his research interests include alternatives to warfarin in AF management.
Complications in the setting of percutaneous atrial fibrillation ablation using radiofrequency and cryoballoon techniques

Authors: Mugnai G et al.

Summary: This research investigated complications in 1352 consecutive patients who underwent PVI at a single centre during 2008–2014; 642 RF ablation and 591 cryoballoon procedures met the study’s inclusion criteria. Serious adverse events included vascular complications in 14 procedures, cardiac tamponade in 13, thromboembolic events in four and atrial-oesophageal fistula, PV intramural haematoma, retroperitoneal haematoma, pleural haematoma and persisting phrenic nerve palsy each in one procedure; there were no procedure-related deaths. The complication rate for 2014 was significantly lower than for 2008 (1.55% vs. 4.67%). The likelihood of a serious adverse event was increased by 51% with each 1-point increase in CHA₂DS₂VASc score. No significant difference was seen between the RF and cryoballoon groups for complication rates (3.6% vs. 2.2% [p=0.1]).

Comment: Although complications using the cryoballoon were numerically lower, this was not statistically significant. The learning curve is nicely demonstrated with higher complication rates early, falling substantially toward the more recent procedures. Importantly, CHA₂DS₂VASc score predicted complications, something we have observed and suspected for some time.

Reference: Int J Cardiol 2015;196:42–9

Abstract

Gastroparesis as a complication of atrial fibrillation ablation

Authors: Aksu T et al.

Summary: These authors reported on seven cases of gastroparesis in patients who underwent catheter ablation for AF by cryoballoon (n=58) and open-irrigated tip RF catheter (n=46); six cases occurred in the cryoballoon group and one in the RF group. Four of the patients reported complaints related to gastroparesis during their cryoballoon procedures, with the remaining three admitted as outpatients 72–96 hours postprocedure. The mean minimal cryoballoon temperature on inferior PVs was lower and the left atrium diameter smaller in the cryoballoon group. The patients were managed conservatively, and at 6 months follow-up, no residual symptoms were evident in the cryoballoon group, but residual symptoms persisted in the patients who underwent RF ablation.

Comment: This study reminds us of one of the less discussed complications of AF ablation. Gastroparesis and other upper gastrointestinal effects related to ablation are more common than we realise because they are often short-lived but rarely do symptoms persist beyond days–weeks. The cause is presumed damage to regional autonomic nerves and, as such, cryoablation may be less likely to cause long-term effects.


Abstract

Statins and the risk of dementia in patients with atrial fibrillation

Authors: Chao T-F et al.

Summary: The reduced risk of nonvascular dementia with statin use was investigated in a cohort of 51,253 statin recipients aged ≥60 years with AF each matched to four statin nonrecipients in this Taiwanese population-based study. Nonvascular dementia was recorded for 17,201 of the patients during follow-up, and the annual incidence was significantly lower among statin recipients than nonrecipients (1.89% vs. 2.20%; adjusted HR 0.832 [95% CI 0.801–0.864]), with rosuvastatin use conferring the greatest level of protection among the various statins (adjusted HR 0.661). An inverse relationship was seen between statin exposure duration and nonvascular dementia risk.

Comment: Although a very large-scale study (250,000 AF patients aged >60 years), it was observational and relied on accurate classification as to type of dementia and other factors including comorbidities by the treating doctors at the time of routine data entry. Matching was only performed for age, sex and CHA₂DS₂VASc score. Nevertheless, there appears to be a clear relationship with duration and potency of statin therapy – longer time on rosuvastatin being associated with the greatest risk reduction.

Reference: Int J Cardiol 2015;196:91–7

Abstract

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a RESEARCH REVIEW publication
The CHADS₂ and CHA₂DS₂-VASc scores for predicting ischemic stroke among East Asian patients with atrial fibrillation

Authors: Xiong Q et al.

Summary: This systematic review and meta-analysis of six cohort studies focusing on patients from Asian regions compared the CHADS₂ and CHA₂DS₂-VASc scores for predicting ischemic stroke. Patients with CHA₂DS₂-VASc scores 0–1 had a lower absolute event rate than those with CHADS₂, scores 0–1; compared with the corresponding low-risk CHA₂DS₂-VASc scores, CHADS₂ scores of 0 and 1 were associated with 1.71- and 1.40-fold increased risks of stroke, respectively. While CHADS₂ scores ≥2 were associated with a 1.19-fold increased event risk compared with CHA₂DS₂-VASc, total stroke/thromboembolic events were numerically higher with CHA₂DS₂-VASc scores ≥2.

Comment: This review assessed the validity of the CHA₂DS₂-VASc score in East Asian populations who are generally at higher risk of haemorrhagic complications (in particular intracerebral haemorrhage) with anticoagulation than their Western counterparts. As in Western patients, the CHADS₂ score underestimated stroke risk and a score of 0 is not truly low risk, supporting the generalised adoption of the CHA₂DS₂-VASc scoring system.


Abstract

Clinical outcomes and management associated with major bleeding in patients with atrial fibrillation treated with apixaban or warfarin

Authors: Held C et al.

Summary: This ancillary study reported the clinical consequences of major bleeds, their management and treatment effects of warfarin versus apixaban in ARISTOTLE trial participants, among whom 848 experienced major bleeds with a 30-day mortality rate of 14.9%. The respective 30-day mortality rates among the 176 participants with an intracranial haemorrhage and the 695 with a major nonintracranial haemorrhage were 43.2% and 9.2%. There was an approximately 12-fold increased 30-day risk of death, ischaemic stroke or MI following a major nonintracranial bleeding event, whereas the mortality and stroke/MI risks following an intracranial haemorrhage were markedly increased (respective HRs 121.5 [95% CI 91.3–161.8] and 21.95 [9.88–48.81]). Vitamin K and/or related medications were administered to 20.8% of participants with major bleeds and 37% required blood transfusions. No interaction was seen between apixaban and warfarin and major bleeding on the mortality, stroke or MI risk.

Comment: While there was no significant difference in outcomes of major bleeding between warfarin and apixaban patients, major bleeding (and in particular intracerebral haemorrhage) was a very strong predictor of morbidity and mortality. Note the lack of a ‘reversal agent’ for apixaban did not lead to poorer outcomes (also seen with rivaroxaban in ROCKET-AF); a trend to lower mortality was seen with major bleeding on dabigatran versus warfarin in ReLY.

Reference: Eur Heart J 2015;36(20):1264–72

Abstract

Impact of weight reduction on pericardial adipose tissue and cardiac structure in patients with atrial fibrillation

Authors: Abed HS et al.

Summary: These researchers prospectively measured pericardial adipose tissue, atrial and ventricular volumes and myocardial mass with cardiac MRI (magnetic resonance imaging) at baseline and 12 months in patients with AF assigned to a structured bodyweight management intervention (evaluable n=36) or general lifestyle advice (controls; evaluable n=33). Compared with controls, intervention participants had reductions over 12 months for bodyweight (from 101.5 to 80.5kg vs.102.6 to 98.7kg), LA volumes (from 105.0 to 96.4mL vs. 108.8 to 108.9mL), pericardial adipose tissue (from 140.9 to 118.8 cm³ vs. 143.2 to 147.2 cm³) and myocardial mass (from 137.6 to 123.1g vs. 138.3 to 140.7g); p<0.001 for time-group interaction, for all.

Comment: Prominent local authors have demonstrated the clear link between obesity and AF; including reduction in arrhythmia burden with diet and exercise. This MRI study demonstrated that reductions in atrial volume, pericardial fat and myocardial mass were directly linked to kilogram weight lost (which was most effective in patients undergoing a structured weight loss programme, as compared with lifestyle advice).


Abstract

Long-term effect of goal-directed weight management in an atrial fibrillation cohort

Authors: Pathak RK et al.

Summary: The long-term impact of bodyweight loss and fluctuation on rhythm control was investigated in 355 patients with AF with BMI ≥27 kg/m² who undertook bodyweight management in the LEGACY study. Compared with participants who lost <3% and 3–9% of their bodyweight, those who lost ≥10% had greater decreases in their AF burden and symptom severity and longer arrhythmia-free survival with and without rhythm control strategies (p<0.001 for all). Multivariate analyses revealed that outcomes were independently predicted by bodyweight loss and fluctuation (<0.001 for both). Participants who lost ≥10% of their bodyweight had a 6-fold greater probability of arrhythmia-free survival than those who lost less (p<0.001), but this was partially offset by bodyweight fluctuation >5%, which doubled the risk of arrhythmia recurrence (p=0.02).

Comment: This is another important local study assessing the link between weight (loss in this case) and AF. While there are many benefits of sustained weight loss, including markers of overall ‘wellbeing’, there is a clear and marked impact on rhythm control. Regaining weight removed some of this benefit.

Reference: J Am Coll Cardiol 2015;65(20):2159–69

Abstract

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This page contains a RESEARCH REVIEW publication.
New-onset versus prior history of atrial fibrillation

Authors: Damluji AA et al.

Summary: This research compared outcomes between AFFIRM trial participants with new-onset AF (n=1391; 34%) versus prior AF. Compared with participants with prior AF, those with new-onset AF were more likely to have a history of HF. No significant difference was seen between participants with new-onset AF randomised to rate control versus rhythm control in the trial (17% vs. 20% [p=0.152]). While participants with new-onset AF had a greater risk of mortality than those with a history of AF in univariate models, the risks became nonsignificant in multivariate models in participants assigned both to rate and rhythm control (respective adjusted HRs 1.14 [p=0.370] and 1.16 [p=0.248]). Compared with participants with a history of HF in the rhythm control arm, those with new-onset AF were significantly more likely to remain in normal sinus rhythm at follow-up (adjusted HR 0.79 [p=0.012]).

Comment: This new analysis of an old study showed (not surprisingly) that rhythm control was more likely to be successful in recent AF than in established AF. Rate and rhythm control approaches in new-onset AF had the same mortality risk.


Left atrial appendage closure as an alternative to warfarin for stroke prevention in atrial fibrillation

Authors: Holmes DR et al.

Summary: This patient-level meta-analysis of 2406 participants with nonvalvular AF (5931 patient-years of follow-up) from the PROTECT-AF and PREVAIL trials and their respective registries assessed composite data regarding LAA closure. Compared with warfarin therapy, LAA closure with the Watchman device was associated with significantly fewer haemorrhagic strokes (0.15 vs. 0.96 events per 100 patient-years; HR 0.22 [p=0.004]), cardiovascular/unexplained deaths (1.1 vs. 2.3 events per 100 patient-years; 0.48 [p=0.006]) and nonprocedural bleeding (6.0% vs. 11.3%; 0.51 [p=0.006]), but more ischaemic strokes (1.6 vs. 0.9 events per 100 patient-years; 1.95 [p=0.05]) and no significant difference in all-cause stroke or systemic embolism (1.75 vs. 1.87 events per 100 patient-years; 1.02 [p=0.94]). The event rates were similar and device effects consistent in multiple subsets across the two trials and their registries.

Comment: This is the most comprehensive Watchman analysis to date and resulted in US FDA approval. The results remain reassuring when compared with warfarin (we know NOACs [nonvitamin K oral anticoagulants] are associated with markedly less intracerebral haemorrhage and other factors driving the endpoints in this analysis). Of note, 95% of Watchman patients were able to stop warfarin by 12 months and if periprocedural bleeding was excluded, warfarin carried a significantly higher bleeding risk than Watchman. More device patients had ischaemic stroke and more warfarin patients had bleeding. Persisting unknowns include strokes unrelated to the LAA (or unrelated to AF) and the lack of long-term safety data (e.g. late ischaemic stroke). Nevertheless, for patients unable to take warfarin, the Watchman device remains a reasonable alternative.

Reference: J Am Coll Cardiol 2015;65(24):2614–23

Abstract

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