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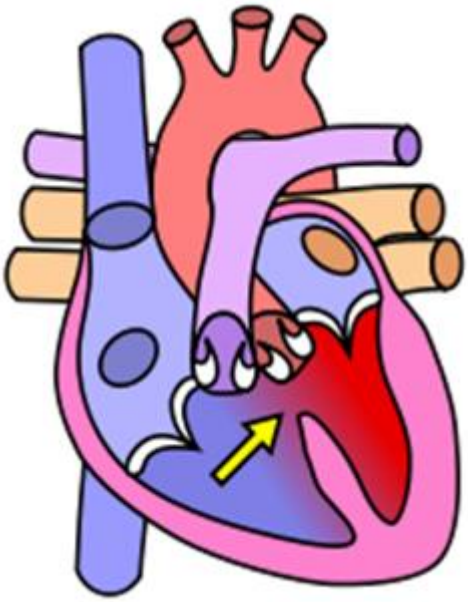
Cardiac Nurses
Current Awareness Bulletin



February 2017

Respecting everyone
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Lunchtime Drop-in Sessions

All sessions last one hour

March (13.00)

Thurs 2nd	**Critical Appraisal**
Fri 10th	**Interpreting Statistics**
Mon 13th	**Literature Searching**
Tues 21st	**Critical Appraisal**
Weds 29th	**Interpreting Statistics**

April (12.00)

Thurs 6th	**Literature Searching**
Mon 10th	**Critical Appraisal**
Tues 18th	**Interpreting Statistics**
Thurs 27th	**Literature Searching**

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New Additions to NICE, the Cochrane Library, and UpToDate®

NICE National Institute for Health and Care Excellence

Cochrane Library

Risom SS, Zwisler AD, Johansen PP, Sibilitz KL, Lindschou J, Gluud C, Taylor RS, Svendsen JH, Berg SK. **Exercise-based cardiac rehabilitation for adults with atrial fibrillation**. Cochrane Database of Systematic Reviews 2017, Issue 2. Art. No.: CD011197. DOI: 10.1002/14651858.CD011197.pub2.

http://onlinelibrary.wiley.com/doi/10.1002/14651858.CD011197.pub2/full

Nyong J, Amit G, Adler AJ, Owolabi OO, Perel P, Prieto-Merino D, Lambiase P, Casas JP, Morillo CA. **Efficacy and safety of ablation for people with non-paroxysmal atrial fibrillation**. Cochrane Database of Systematic Reviews 2016, Issue 11. Art. No.: CD012088. DOI: 10.1002/14651858.CD012088.pub2.

http://onlinelibrary.wiley.com/doi/10.1002/14651858.CD012088.pub2/full

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What's new in cardiovascular medicine

Authors: Gordon M Saperia, MD, FACC; Susan B Yeon, MD, JD, FACC; Brian C Downey, MD, FACC

Literature review current through: Jan 2017. | **This topic last updated:** Feb 22, 2017.

ARRHYTHMIAS

Emergency coronary catheterization following sudden cardiac arrest (February 2017)

Dabigatran combined with certain statins associated with increased risk of major bleeding (February 2017)

Late gadolinium enhancement to risk stratify patients for primary prevention ICD placement (January 2017)

Choice of anticoagulant in AF patients undergoing coronary stenting (December 2016)

Comparison of complications and efficacy between subcutaneous and transvenous ICDs (December 2016)

ICDs for primary prevention of sudden cardiac death in nonischemic cardiomyopathy (September 2016)

CONGENITAL HEART DISEASE, ADULT

Risk factors for mortality in Eisenmenger syndrome (December 2016)

Overview of atrial fibrillation

Author: Kapil Kumar, MD; Section Editor: Peter J Zimetbaum, MD; Deputy Editor: Gordon M Saperia, MD, FACC

Literature review current through: Jan 2017. | **This topic last updated:** Sep 21, 2016.

https://www.uptodate.com/contents/overview-of-atrial-fibrillation?source=search_result&search=atrial%20fibrillation&selectedTitle=1~150

Current Awareness Database

Below is a selection of articles recently added to the healthcare databases.

If you would like any of the following articles in full text, or if you would like a more focused search on your own topic, then get in touch: library@uhbristol.nhs.uk

Atrial fibrillation, inherited channelopathies, cardiac resynchronisation therapy

1. The association of plasma oxidative status and inflammation with the development of atrial fibrillation in patients presenting with ST elevation myocardial infarction.
2. Educational inequalities in mortality of patients with atrial fibrillation in Norway.
3. Biophysical aspects and novel treatments of atrial fibrillation.
4. Aldosterone Pathway Blockade to Prevent Atrial Fibrillation: A Systematic Review and Meta-Analysis.
5. Apixaban to prevent stroke in patients with atrial fibrillation: a review.
6. Edoxaban in patients with atrial fibrillation.
7. Potential new mechanisms of pro-arrhythmia in arrhythmogenic cardiomyopathy: focus on calcium sensitive pathways.
8. Obstructive sleep and atrial fibrillation: Pathophysiological mechanisms and therapeutic implications.
9. The cost savings of newer oral anticoagulants in atrial fibrillation-related stroke prevention .
10. Discovery of new biomarkers for atrial fibrillation using a custom-made proteomics chip.
11. Long-term efficacy of catheter ablation as first-line therapy for paroxysmal atrial fibrillation: 5-year outcome in a randomised clinical trial.
12. Atrial fibrillation, progression of coronary atherosclerosis and myocardial infarction.
13. Perspectives and Challenges of Pluripotent Stem Cells in Cardiac Arrhythmia Research.
14. Silent Atrial Fibrillation and Cryptogenic Strokes.
15. Screening for Obstructive Sleep Apnea in Patients with Atrial Fibrillation.
16. Body mass index, abdominal fatness, fat mass and the risk of atrial fibrillation: a systematic review and dose-response meta-analysis of prospective studies.
17. Exercise-based cardiac rehabilitation for adults with atrial fibrillation.
18. Chronic obstructive pulmonary disease and atrial fibrillation: An unknown relationship.
19. Patient Preferences for Oral Anticoagulation Therapy in Atrial Fibrillation: A Systematic Literature Review.
20. Left Atrial Substrate Modification Targeting Low-Voltage Areas for Catheter Ablation of Atrial Fibrillation: A Systematic Review and Meta-Analysis.
21. Atrial fibrillation in women: treatment.
22. Excess of exercise increases the risk of atrial fibrillation.
23. New oral anticoagulants compared to warfarin for perioperative anticoagulation in patients undergoing atrial fibrillation catheter ablation: a meta-analysis of continuous or interrupted new oral anticoagulants during ablation compared to interrupted or continuous warfarin.
24. Cryoablation vs. radiofrequency ablation for treatment of paroxysmal atrial fibrillation: a systematic review and meta-analysis.
25. Comparison of catheter ablation for paroxysmal atrial fibrillation between cryoballoon and radiofrequency: a meta-analysis.
26. Antithrombotic treatment in anticoagulated atrial fibrillation patients undergoing percutaneous coronary intervention.
27. Update on atrial fibrillation.
28. Perspectives and challenges of antioxidant therapy for atrial fibrillation.
29. Efficacy and safety of the second-generation cryoballoons versus radiofrequency ablation for the treatment of paroxysmal atrial fibrillation: a systematic review and meta-analysis.

1. The association of plasma oxidative status and inflammation with the development of atrial fibrillation in patients presenting with ST elevation myocardial infarction.

Author(s): Bas, Hasan Aydin; Aksoy, Fatih; Icli, Atilla; Varol, Ercan; Dogan, Abdullah; Erdogan, Dogan; Ersoy, Ibrahim; Arslan, Akif; Ari, Hatem; Bas, Nihal; Sutcu, Recep; Ozaydin, Mehmet

Source: Scandinavian journal of clinical and laboratory investigation; Apr 2017; vol. 77 (no. 2); p. 77-82

Publication Type(s): Journal Article

Abstract: Atrial fibrillation (AF) is the most common supraventricular arrhythmia following ST elevation myocardial infarction (STEMI). Oxidative stress and inflammation may cause structural and electrical remodeling in the atria making these critical processes in the pathology of AF. In this study, we aimed to evaluate the association between total oxidative status (TOS), total antioxidative capacity (TAC) and high-sensitivity C-reactive protein (hs-CRP) in the development of AF in patients presenting with STEMI. This prospective cohort study consisted of 346 patients with STEMI. Serum TAC and TOS were assessed by Erel's method. Patients were divided into two groups: those with and those without AF. Predictors of AF were determined by multivariate regression analysis. In the present study, 9.5% of patients developed AF. In the patients with AF, plasma TOS and oxidative stress index (OSI) values were significantly higher and plasma TAC levels were significantly lower compared to those without AF ($p = .003$, $p = .002$, $p < .0001$, respectively). Multivariate regression analysis results showed that, female gender (Odds ratio [OR] = 3.07; 95% Confidence Interval [CI] = 1.26-7.47; $p = .01$), left atrial diameter (OR =1.28; 95% CI =1.12-1.47; $p < .0001$), hs-CRP (OR =1.02; 95% CI =1.00-1.03; $p = .001$) and OSI (OR =1.10; 95% CI =1.04-1.18; $p = .001$) were associated with the development of AF in patients presenting with STEMI. The main finding of this study is that oxidative stress and inflammation parameters were associated with the development of AF in patients presenting with STEMI. Other independent predictors of AF were female gender, left atrial diameter and hs-CRP.

2. Educational inequalities in mortality of patients with atrial fibrillation in Norway.

Author(s): Akerkar, Rupali; Ebbing, Marta; Sulo, Gerhard; Ariansen, Inger; Igland, Jannicke; Tell, Grethe S; Egeland, Grace M

Source: Scandinavian cardiovascular journal : SCJ; Apr 2017; vol. 51 (no. 2); p. 82-87

Publication Type(s): Journal Article

Abstract:OBJECTIVESWe explored the educational gradient in mortality in atrial fibrillation (AF) patients.DESIGNWe prospectively followed patients hospitalized with AF as primary discharge diagnosis in the Cardiovascular Disease in Norway 2008-2012 project. The average length of follow-up was 2.4 years. Mortality by educational level was assessed by Cox proportional hazard models. Population attributable fractions (PAF) were calculated. Analyses stratified by age (≤75 and >75 years of age), and adjusted for age, gender, medical intervention, and Charlson Comorbidity Index.RESULTSOf 42,138 AF patients, 16% died by end of 2012. Among younger patients, those with low education (≤10 years) had a HR of 2.3 (95% confidence interval 2.0, 2.6) for all-cause mortality relative to those with any college or university education. Similar results were observed for cardiovascular mortality. Disparities in mortality were greater among younger than older patients. A PAF of 35.9% (95% confidence interval 27.9, 43.1) was observed for an educational level of high school/vocational school or less versus higher education in younger patients.CONCLUSIONSIncreasing educational level associated with better prognosis suggesting underlying education-related behavioral and medical determinants of mortality. A considerable proportion of mortality within 5 years following hospital discharge could be prevented.

3. Biophysical aspects and novel treatments of atrial fibrillation.

Author(s): Gigli, Lorenzo; Rosa, Gian M; Tagliasacchi, Maria I; Bonaventura, Aldo; Liberale, Luca; Montecucco, Fabrizio; Carbone, Federico; Bertero, Giovanni; Brunelli, Claudio

Source: Minerva cardioangiologica; Apr 2017; vol. 65 (no. 2); p. 157-172

Publication Type(s): Journal Article

Abstract:INTRODUCTIONAtrial fibrillation (AF) is a cardiac arrhythmia caused by various mechanisms, such as multiple re-entering wavelets, high frequency activity, and rotor sources.EVIDENCE ACQUISITIONThis narrative review was based on papers found on PubMed and MEDLINE up to May 2016. The search terms were "atrial fibrillation" in combination with "catheter ablation, pathophysiology, antiarrhythmic drugs".EVIDENCE SYNTHESISAntiarrhythmic drugs are the cornerstone of therapy in AF, but their efficacy and safety might have to be improved. In case of failure of pharmacologic therapies, other treatments can be considered. A better understanding of the important role of the pulmonary veins has led to new approaches, such as ablation procedures, which were initially only surgical, while percutaneous options were later added. However, these strategies may present various technical complications also when performed by skilled operators. A promising field of investigation is the genetics of AF, as highlighted by studies on the role of micro-RNA.CONCLUSIONSRelevant improvement on the knowledge of the electrophysiological basis of genesis and maintenance of AF has been done in order to treat a very common arrhythmia, but further studies, as those in the genetics field, can open new challenging therapeutic horizons.

4. Aldosterone Pathway Blockade to Prevent Atrial Fibrillation: A Systematic Review and Meta-Analysis.

Author(s): Neefs, J; van den Berg, N W E; Limpens, J; Berger, W R; Boekholdt, S M; Sanders, P; de Groot, J R

Source: International journal of cardiology; Mar 2017; vol. 231 ; p. 155-161

Publication Type(s): Journal Article

Abstract:BACKGROUNDDespite advances in therapeutic interventions AF remains a progressive and symptomatic disease. Therefore, novel therapeutic interventions targeting the underlying arrhythmogenic substrate for AF is needed. Atrial fibrosis is an important component of the arrhythmogenic substrate of AF and may be initiated by aldosterone binding to the mineralocorticoid receptor. We hypothesized that aldosterone pathway blockade with mineralocorticoid receptor antagonists (MRA) reduces atrial fibrosis, and thus AF.METHODSWe searched OVID MEDLINE, OVID EMBASE and the Cochrane Central Register of Controlled Trials from inception to June 10th, 2016 for randomized controlled trials (RCT) and observational studies addressing MRA and providing information on AF occurrence. Two independent reviewers selected and appraised the data. We performed random-effects meta-analyses. Summary odds ratios (OR) with 95% confidence intervals (CI) were calculated.RESULTSWe included 14 studies, 5 RCT and 9 observational cohorts, with a cumulative number of 5332 patients (male: 74.9%, age: 65.3years); 2397 (45.0%) received an MRA (spironolactone or eplerenone). During follow-up, 204 (8.5%) patients treated with MRAs, developed AF, compared to 547 (18.6%) patients, without MRA treatment. Meta-analyses showed a significant overall reduction of AF risk in MRA treated patients (OR: 0.48 CI: 0.38-0.60 p<0.001), including a reduction of new-onset AF (OR: 0.52 CI: 0.37-0.74 p<0.001) and recurrent AF (OR: 0.37 CI: 0.24-0.57 p<0.001), but not post-

operative AF (POAF) (OR: 0.60 CI: 0.33-1.09 p=0.09).CONCLUSIONSMRAs significantly reduce new-onset AF and recurrent AF, but not POAF. MRA treatment can be considered an additive therapeutic strategy in AF.

5. Apixaban to prevent stroke in patients with atrial fibrillation: a review.

Author(s): Peterson, Benjamin E; Al-Khatib, Sana M; Granger, Christopher B

Source: Therapeutic advances in cardiovascular disease; Mar 2017; vol. 11 (no. 3); p. 91-104

Publication Type(s): Journal Article

Abstract: Atrial fibrillation is a common, costly and morbid cardiovascular arrhythmia. Stroke prevention remains the mainstay of treatment for atrial fibrillation, and the recent advent of novel oral anticoagulants with direct factor IIa or factor Xa inhibition has significantly revolutionized this aspect of treatment for atrial fibrillation patients. This review focuses on the tolerability and efficacy of apixaban and tackles the generalizability of the findings with apixaban to broader patient populations than those primarily enrolled in the clinical trials, drawing from the AVERROES and ARISTOTLE trials and their subsequent secondary analyses. Taken together, findings from these trials show that apixaban is superior to warfarin in preventing stroke with a lower risk of major bleeding in the general population of patients with atrial fibrillation as well as in several key high-risk patient subgroups.

6. Edoxaban in patients with atrial fibrillation.

Author(s): Eisen, Alon; Ruff, Christian T

Source: Therapeutic advances in cardiovascular disease; Mar 2017; vol. 11 (no. 3); p. 81-90

Publication Type(s): Journal Article

Abstract: Edoxaban, a direct factor Xa inhibitor, was extensively studied in the prevention and treatment of venous thromboembolism and in patients with nonvalvular atrial fibrillation (AF). The aim of this review is to focus specifically on the efficacy and safety profile of edoxaban in patients with AF from preclinical development through the phase III trial that led to regulatory approval.

7. Potential new mechanisms of pro-arrhythmia in arrhythmogenic cardiomyopathy: focus on calcium sensitive pathways.

Author(s): van Opbergen, C J M; Delmar, M; van Veen, T A B

Source: Netherlands heart journal : monthly journal of the Netherlands Society of Cardiology and the Netherlands Heart Foundation; Mar 2017; vol. 25 (no. 3); p. 157-169

Publication Type(s): Journal Article Review

Available in full text at Netherlands Heart Journal - from National Library of Medicine

Abstract: Arrhythmogenic cardiomyopathy, or its most well-known subform arrhythmogenic right ventricular cardiomyopathy (ARVC), is a cardiac disease mainly characterised by a gradual replacement of the myocardial mass by fibrous and fatty tissue, leading to dilatation of the ventricular wall, arrhythmias and progression towards heart failure. ARVC is commonly regarded as a disease of the intercalated disk in which mutations in desmosomal proteins are an important causative factor. Interestingly, the Dutch founder mutation PLN R14Del has been identified to play an additional, and major, role in ARVC patients within the Netherlands. This is remarkable since the phospholamban (PLN) protein plays a leading role in regulation of the sarcoplasmic reticulum calcium load rather than in the establishment of intercellular integrity. In this review we outline the intracellular cardiac calcium dynamics and relate pathophysiological signalling, induced by disturbed calcium handling, with activation of calmodulin dependent kinase II (CaMKII) and calcineurin A (CnA). We postulate a thus far unrecognised role for Ca2+ sensitive signalling proteins in maladaptive remodelling of the macromolecular protein complex that forms the intercalated disk, during pro-arrhythmic remodelling of the heart.

8. Obstructive sleep and atrial fibrillation: Pathophysiological mechanisms and therapeutic implications.

Author(s): Goudis, Christos A; Ketikoglou, Dimitrios G

Source: International journal of cardiology; Mar 2017; vol. 230 ; p. 293-300

Publication Type(s): Journal Article Review

Abstract: Atrial fibrillation (AF) is the commonest arrhythmia in clinical practice and is associated with increased cardiovascular morbidity and mortality. Obstructive sleep apnea (OSA), a common breathing disorder,

is an independent risk factor for AF. Several pathophysiological mechanisms, including apnea-induced hypoxia, intrathoracic pressure shifts, sympathovagal imbalance, atrial remodeling, oxidative stress, inflammation and neurohumoral activation have been implicated in the occurrence of AF in OSA patients. In addition, OSA has been shown to reduce success rates of antiarrhythmic drugs, electrical cardioversion and catheter ablation in AF. Effective prevention of obstructive respiratory events by continuous positive airway pressure ventilation (CPAP) reduces sympathovagal activation and recurrence of AF. The present review describes the relationship between OSA and AF, presents the pathophysiological mechanisms implicating OSA in AF occurrence, and provides an update of the potential therapeutic interventions for patients with OSA and AF.

9. The cost savings of newer oral anticoagulants in atrial fibrillation-related stroke prevention .

Author(s): Masbah, Norliana; Macleod, Mary Joan

Source: International journal of clinical pharmacology and therapeutics; Mar 2017; vol. 55

Publication Type(s): Journal Article

Abstract:BACKGROUNDNewer oral anticoagulants (NOACs) are considered as better alternatives compared to warfarin for stroke prevention in atrial fibrillation (AF) in terms of clinical effectiveness although the drug acquisition cost is more substantial.AIMThis study determined the direct stroke costs based on inpatient hospitalization in a subgroup of the National Health Service (NHS) Grampian, Scotland, stroke patients, to evaluate the differences in costs related to AF stroke, and to ascertain whether the use of NOACs within this study population would produce greater cost savings.METHODSHospitalization records over 5 years involving 3,601 stroke patients were analyzed. Direct costs were based on the costs of inpatient length of stay per day. The potential cost savings if AF patients had been on NOACs were estimated using efficacy data from a landmark clinical trial involving rivaroxaban.RESULTSOut of the total stroke cases, 29.5% of total stroke cases were secondary to AF, and these cases were more severe with longer hospitalizations. Only 254 patients (39.4%) with confirmed AF were anticoagulated with warfarin prior to admission. AF patients incurred higher median costs (£4,719 (interquartile range (IQR) £1,815 - £12,452) compared to non-AF patients (£3,267 (IQR £1,175 - £11,368)), although the association was statistically insignificant. The use of NOACs in AF-related patients with ischemic strokes would potentially prevent more strokes (leading to 58 fewer cases in comparison to warfarin), resulting in 17.1% in total cost reduction.CONCLUSIONAF stroke patients incurred higher total direct costs compared to non-AF cases. However, more cost savings were evident with NOACs, due to more strokes being prevented through the use of NOACs compared to warfarin. .

10. Discovery of new biomarkers for atrial fibrillation using a custom-made proteomics chip.

Author(s): Lind, Lars; Sundström, Johan; Stenemo, Markus; Hagström, Emil; Ärnlöv, Johan

Source: Heart (British Cardiac Society); Mar 2017; vol. 103 (no. 5); p. 377-382

Publication Type(s): Journal Article

Available in full text at Heart - from Highwire Press

Abstract:BACKGROUNDApart from several established clinical risk factors for atrial fibrillation (AF), a number of biomarkers have also been identified as potential risk factors for AF. None of these have so far been adopted in clinical practice.OBJECTIVETo use a novel custom-made proteomics chip to discover new prognostic biomarkers for AF risk.METHODSIn two independent community-based cohorts (Prospective Investigation of the Vasculature in Uppsala Seniors (PIVUS) study (978 participants without AF, mean age 70.1 years, 50% women, median follow-up 10.0 years) and Uppsala Longitudinal Study of Adult Men (ULSAM) (n=725, mean age 77.5 years, median follow-up 7.9 years)), ninety-two plasma proteins were assessed at baseline by a proximity extension assay (PEA) chip. Of those, 85 proteins showed a call rate >70% in both cohorts.RESULTSThirteen proteins were related to incident AF in PIVUS (148 events) using a false discovery rate of 5%. Of those, five were replicated in ULSAM at nominal multivariable p value (123 events, N-terminal pro-B-type natriuretic peptide (NT-pro-BNP), fibroblast growth factor 23 (FGF-23), fatty acid-binding protein 4 (FABP4), growth differentiation factor 15 (GDF-15) and interleukin-6 (IL-6)). Of those, NT-pro-BNP and FGF-23 were also associated with AF after adjusting for established AF risk factors. In a prespecified secondary analysis pooling the two data sets, T-cell immunoglobulin and mucin domain 1 (TIM-1) and adrenomedullin (AM) were also significantly related to incident AF in addition to the aforementioned five proteins (Bonferroni-adjustment). The addition of NT-pro-BNP to a model with established risk factors increased the C-statistic from 0.605 to 0.676 ($p<0.0001$).CONCLUSIONSUsing a novel proteomics approach, we confirmed the previously reported association between NT-pro-BNP, FGF-23, GDF-15 and incident AF, and also discovered four proteins (FABP4, IL-6, TIM-1 and AM) that could be of importance in the development of AF.

11. Long-term efficacy of catheter ablation as first-line therapy for paroxysmal atrial fibrillation: 5-year outcome in a randomised clinical trial.

Author(s): Nielsen, Jens Cosedis; Johannessen, Arne; Raatikainen, Pekka; Hindricks, Gerhard; Walfridsson, Håkan; Pehrson, Steen Michael; Englund, Anders; Hartikainen, Juha; Mortensen, Leif Spange; Hansen, Peter Steen; MANTRA-PAF Investigators

Source: Heart (British Cardiac Society); Mar 2017; vol. 103 (no. 5); p. 368-376

Publication Type(s): Journal Article

Available in full text at Heart - from Highwire Press

Abstract:OBJECTIVEThe Medical ANtiarrhythmic Treatment or Radiofrequency Ablation in Paroxysmal Atrial Fibrillation (MANTRA-PAF) trial compared radiofrequency catheter ablation (RFA) with antiarrhythmic drug therapy (AAD) as first-line treatment for paroxysmal atrial fibrillation (AF). Endpoint of ablation was elimination of electrical activity inside pulmonary veins. We present the results of the 5-year follow-up.METHODSThis pre-specified 5-year follow-up included assessment of any AF and symptomatic AF burden by one 7-day Holter recording and quality of life (QoL) assessment, using SF-36 questionnaire physical and mental component scores. Analysis was intention-to-treat. Imputation was used to compensate for missing Holter data.RESULTS245 of 294 patients (83%) randomised to RFA (n=125) or AAD (n=120) attended the 5-year follow-up, 227 with Holter recording. Use of class I or III AAD was more frequent in AAD group (N=61 vs 13, p<0.001). More patients in the RFA group were free from AF (126/146 (86%) vs 105/148 (71%), p=0.001, relative risk (RR) 0.82; 95% CI 0.73 to 0.93) and symptomatic AF (137/146 (94%) vs 126/148 (85%), p=0.015, $\chi 2$ test, RR 0.91; 95% CI 0.84 to 0.98) in 7-day Holter recording. AF burden was significantly lower in the RFA group (any AF: p=0.003; symptomatic AF: p=0.02). QoL scores did not differ between randomisation groups. QoL scores remained improved from baseline (both components p<0.001), and did not differ from 2-year scores.CONCLUSIONSAt 5 years, the occurrence and burden of any AF and symptomatic AF were significantly lower in the RFA group than in the AAD group. Improved QoL scores observed after 2 years persisted after 5 years without between-group differences.TRIAL REGISTRATION NUMBERNCT00133211; Results.

12. Atrial fibrillation, progression of coronary atherosclerosis and myocardial infarction.

Author(s): Bayturan, Ozgur; Puri, Rishi; Tuzcu, E Murat; Shao, Mingyuan; Wolski, Kathy; Schoenhagen, Paul; Kapadia, Samir; Nissen, Steven E; Sanders, Prashanthan; Nicholls, Stephen J

Source: European journal of preventive cardiology; Mar 2017; vol. 24 (no. 4); p. 373-381

Publication Type(s): Journal Article

Abstract: Background Despite atrial fibrillation representing an established risk factor for stroke, the association between atrial fibrillation and both progression of coronary atherosclerosis and major adverse cardiovascular events is not well characterized. We assessed the serial measures of coronary atheroma burden and cardiovascular outcomes in patients with and without atrial fibrillation. Methods Data were analyzed from nine clinical trials involving 4966 patients with coronary artery disease undergoing serial intravascular ultrasonography at 18-24 month intervals to assess changes in percent atheroma volume (PAV). Using a propensity weighted analysis, and following adjustment for baseline variables, patients with (n = 190) or without (n = 4776) atrial fibrillation were compared with regard to coronary plaque volume and major adverse cardiovascular events (death, myocardial infarction, and stroke). Results Atrial fibrillation patients demonstrated lower baseline PAV (36.0 ± 8.9 vs. 38.1 ± 8.9%, p = 0.002) and less PAV progression (-0.07 ± 0.34 vs. + 0.23 ± 0.34%, p = 0.001) compared with the non-atrial fibrillation group. Multivariable analysis revealed atrial fibrillation to independently predict both myocardial infarction [HR, 2.41 (1.74,3.35), p<0.001] 2.41 (1.74, 3.35), p < 0.00) and major adverse cardiovascular events [HR, 2.2, (1.66, 2.92), p<0.001] 2.20 (1.66, 2.92), p < 0.001]. Kaplan-Meier analysis showed that atrial fibrillation compared with non-atrial fibrillation patients had a significantly higher two-year cumulative incidence of overall major adverse cardiovascular events (4.4 vs. 2.0%, log-rank p = 0.02) and myocardial infarction (3.3 vs. 1.5%, log-rank p = 0.05). Conclusions The presence of atrial fibrillation independently associates with a heightened risk of myocardial infarction despite a lower baseline burden and progression rate of coronary atheroma. Further studies are necessary to define the pathogenesis of myocardial infarction in the setting of atrial fibrillation.

13. Perspectives and Challenges of Pluripotent Stem Cells in Cardiac Arrhythmia Research.

Author(s): Goedel, Alexander; My, Ilaria; Sinnecker, Daniel; Moretti, Alessandra

Source: Current cardiology reports; Mar 2017; vol. 19 (no. 3); p. 23

Publication Type(s): Journal Article Review

Abstract:PURPOSE OF REVIEWThe promises of human-induced pluripotent stem cells (hiPSCs) for modeling arrhythmogenic disease, but also for drug discovery and toxicity tests, are straightforward and exciting. However, the full potential of this new technology has not been fully realized yet. The purpose of this review is to provide an overview of the state-of-the-art research in arrhythmogenic disease modeling and drug discovery and an outlook of what can be expected from the second decade of hiPSC-based arrhythmia research.RECENT FINDINGSRemarkable advances in genomic discoveries, stem cell biology, and genome editing via sequence-specific nucleases have been made in recent years. Together, these breakthroughs have allowed us to progress from studying monogenetic diseases with a direct genotype-phenotype relationship to genetically more complex diseases such as arrhythmogenic right ventricular dysplasia and atrial fibrillation. In addition, newly developed tools for arrhythmia research such as optical action potential recordings have facilitated the use of hiPSCs for drug and toxicity screening and their eventual clinical use. These advances in in vitro assay development, genome editing, and stem cell biology will soon enable the implementation of hiPSC-based findings into clinical practice and provide us with unprecedented insights into mechanisms of complex arrhythmogenic diseases.

14. Silent Atrial Fibrillation and Cryptogenic Strokes.

Author(s): Dalen, James E; Alpert, Joseph S

Source: The American journal of medicine; Mar 2017; vol. 130 (no. 3); p. 264-267

Publication Type(s): Journal Article Review

Abstract:A new suspected cause of cryptic strokes is "silent atrial fibrillation." Pacemakers and other implanted devices allow continuous recording of cardiac rhythm for months or years. They have discovered that short periods of atrial fibrillation lasting minutes or hours are frequent and usually are asymptomatic. A meta-analysis of 50 studies involving more than 10,000 patients with a recent stroke found that 7.7% had new atrial fibrillation on their admitting electrocardiogram. In 3 weeks during and after hospitalization, another 16.9% were diagnosed. A total of 23.7% of these stroke patients had silent atrial fibrillation; that is, atrial fibrillation diagnosed after hospital admission. Silent atrial fibrillation is also frequent in patients with pacemakers who do not have a recent stroke. In a pooled analysis of 3 studies involving more than 10,000 patients monitored for 24 months, 43% had at least 1 day with atrial fibrillation lasting more than 5 minutes. Ten percent had atrial fibrillation lasting at least 12 hours. Despite the frequency of silent atrial fibrillation in these patients with multiple risk factors for stroke, the annual incidence of stroke was only 0.23%. When silent atrial fibrillation is detected in patients with recent cryptogenic stroke, anticoagulation is indicated. In patients without stroke, silent atrial fibrillation should lead to further monitoring for clinical atrial fibrillation rather than immediate anticoagulation, as some have advocated.

15. Screening for Obstructive Sleep Apnea in Patients with Atrial Fibrillation.

Author(s): Genta, Pedro R; Drager, Luciano F; Lorenzi Filho, Geraldo

Source: Sleep medicine clinics; Mar 2017; vol. 12 (no. 1); p. 99-105

Publication Type(s): Journal Article Review

Abstract: Obstructive sleep apnea (OSA) and atrial fibrillation (AF) are common conditions in the adult population and independently associated with increased morbidity and mortality. There is evidence, although not definitive, that OSA independently contributes to AF incidence and recurrence. Full polysomnography is expensive and may not be readily available to diagnose all patients with OSA and AF. Several patients with OSA do not present the classical signs and symptoms of OSA, impairing the accuracy of screening questionnaires for OSA. In this context, home sleep test is a promising alternative to screen and diagnose OSA in AF patients. However, the cost-effectiveness of such approach need to be studied.

16. Body mass index, abdominal fatness, fat mass and the risk of atrial fibrillation: a systematic review and dose-response meta-analysis of prospective studies.

Author(s): Aune, Dagfinn; Sen, Abhijit; Schlesinger, Sabrina; Norat, Teresa; Janszky, Imre; Romundstad, Pål; Tonstad, Serena; Riboli, Elio; Vatten, Lars J

Source: European journal of epidemiology; Feb 2017

Publication Type(s): Journal Article Review

Abstract: Different adiposity measures have been associated with increased risk of atrial fibrillation, however, results have previously only been summarized for BMI. We therefore conducted a systematic review and meta-

analysis of prospective studies to clarify the association between different adiposity measures and risk of atrial fibrillation. PubMed and Embase databases were searched up to October 24th 2016. Summary relative risks (RRs) were calculated using random effects models. Twenty-nine unique prospective studies (32 publications) were included. Twenty-five studies (83,006 cases, 2,405,381 participants) were included in the analysis of BMI and atrial fibrillation. The summary RR was 1.28 (95% confidence interval: 1.20-1.38, I2 = 97%) per 5 unit increment in BMI, 1.18 (95% CI: 1.12-1.25, I2 = 73%, n = 5) and 1.32 (95% CI: 1.16-1.51, I2 = 91%, n = 3) per 10 cm increase in waist and hip circumference, respectively, 1.09 (95% CI: 1.02-1.16, I2 = 44%, n = 4) per 0.1 unit increase in waist-to-hip ratio, 1.09 (95% CI: 1.02-1.16, I2 = 94%, n = 4) per 5 kg increase in fat mass, 1.10 (95% CI: 0.92-1.33, I2 = 90%, n = 3) per 10% increase in fat percentage, 1.10 (95% CI: 1.08-1.13, I2 = 74%, n = 10) per 5 kg increase in weight, and 1.08 (95% CI: 0.97-1.19, I2 = 86%, n = 2) per 5% increase in weight gain. The association between BMI and atrial fibrillation was nonlinear, p nonlinearity < 0.0001, with a stronger association at higher BMI levels, however, increased risk was observed even at a BMI of 22-24 compared to 20. In conclusion, general and abdominal adiposity and higher body fat mass increase the risk of atrial fibrillation.

17. Exercise-based cardiac rehabilitation for adults with atrial fibrillation.

Author(s): Risom, Signe S; Zwisler, Ann-Dorthe; Johansen, Pernille P; Sibilitz, Kirstine L; Lindschou, Jane; Gluud, Christian; Taylor, Rod S; Svendsen, Jesper H; Berg, Selina K

Source: The Cochrane database of systematic reviews; Feb 2017; vol. 2 ; p. CD011197

Publication Type(s): Journal Article Review

Available in full text at Cochrane Library, The - from John Wiley and Sons

Abstract:BACKGROUNDExercise-based cardiac rehabilitation may benefit adults with atrial fibrillation or those who had been treated for atrial fibrillation. Atrial fibrillation is caused by multiple micro re-entry circuits within the atrial tissue, which result in chaotic rapid activity in the atria.OBJECTIVESTo assess the benefits and harms of exercise-based rehabilitation programmes, alone or with another intervention, compared with no-exercise training controls in adults who currently have AF, or have been treated for AF.SEARCH METHODSWe searched the following electronic databases; CENTRAL and the Database of Abstracts of Reviews of Effectiveness (DARE) in the Cochrane Library, MEDLINE Ovid, Embase Ovid, PsycINFO Ovid, Web of Science Core Collection Thomson Reuters, CINAHL EBSCO, LILACS Bireme, and three clinical trial registers on 14 July 2016. We also checked the bibliographies of relevant systematic reviews identified by the searches. We imposed no language restrictions.SELECTION CRITERIAWe included randomised controlled trials (RCT) that investigated exercise-based interventions compared with any type of no-exercise control. We included trials that included adults aged 18 years or older with atrial fibrillation, or post-treatment for atrial fibrillation.DATA COLLECTION AND ANALYSISTwo authors independently extracted data. We assessed the risk of bias using the domains outlined in the Cochrane Handbook for Systematic Reviews of Interventions. We assessed clinical and statistical heterogeneity by visual inspection of the forest plots, and by using standard Chi² and I² statistics. We performed meta-analyses using fixed-effect and random-effects models; we used standardised mean differences where different scales were used for the same outcome. We assessed the risk of random errors with trial sequential analysis (TSA) and used the GRADE methodology to rate the quality of evidence, reporting it in the 'Summary of findings' table.MAIN RESULTSWe included six RCTs with a total of 421 patients with various types of atrial fibrillation. All trials were conducted between 2006 and 2016, and had short follow-up (eight weeks to six months). Risks of bias ranged from high risk to low risk.The exercise-based programmes in four trials consisted of both aerobic exercise and resistance training, in one trial consisted of Qi-gong (slow and graceful movements), and in another trial, consisted of inspiratory muscle training.For mortality, very low-quality evidence from six trials suggested no clear difference in deaths between the exercise and no-exercise groups (relative risk (RR) 1.00, 95% confidence interval (CI) 0.06 to 15.78; participants = 421; I² = 0%; deaths = 2). Very low-quality evidence from five trials suggested no clear difference between groups for serious adverse events (RR 1.01, 95% CI 0.98 to 1.05; participants = 381; I² = 0%; events = 8). Low-quality evidence from two trials suggested no clear difference in health-related quality of life for the Short Form-36 (SF-36) physical component summary measure (mean difference (MD) 1.96, 95% CI -2.50 to 6.42; participants = 224; I² = 69%), or the SF-36 mental component summary measure (MD 1.99, 95% CI -0.48 to 4.46; participants = 224; I² = 0%). Exercise capacity was assessed by cumulated work, or maximal power (Watt), obtained by cycle ergometer, or by six minute walking test, or ergospirometry testing measuring VO2 peak. We found moderate-quality evidence from two studies that exercise-based rehabilitation increased exercise capacity, measured by VO2 peak, more than no exercise (MD 3.76, 95% CI 1.37 to 6.15; participants = 208; I² = 0%); and very low-quality evidence from four studies that exercise-based rehabilitation increased exercise capacity more than no exercise, measured by the six-minute walking test (MD 75.76, 95% CI 14.00 to 137.53; participants = 272; I² = 85%). When we combined the different assessment tools for exercise capacity, we found very low-quality evidence from six trials that exercise-based rehabilitation increased exercise capacity more

than no exercise (standardised mean difference (SMD) 0.86, 95% CI 0.46 to 1.26; participants = 359; I^2 = 65%). Overall, the quality of the evidence for the outcomes ranged from moderate to very-low.AUTHORS' CONCLUSIONSDue to few randomised patients and outcomes, we could not evaluate the real impact of exercise-based cardiac rehabilitation on mortality or serious adverse events. The evidence showed no clinically relevant effect on health-related quality of life. Pooled data showed a positive effect on the surrogate outcome of physical exercise capacity, but due to the low number of patients and the moderate to very low-quality of the underpinning evidence, we could not be certain of the magnitude of the effect. Future high-quality randomised trials are needed to assess the benefits and harms of exercise-based cardiac rehabilitation for adults with atrial fibrillation on patient-relevant outcomes.

18. Chronic obstructive pulmonary disease and atrial fibrillation: An unknown relationship.

Author(s): Goudis, Christos A

Source: Journal of cardiology; Feb 2017

Publication Type(s): Journal Article Review

Abstract: Chronic obstructive pulmonary disease (COPD) is independently associated with atrial fibrillation (AF). Decreased oxygenation, hypercapnia, pulmonary hypertension, diastolic dysfunction, oxidative stress, inflammation, changes in atrial size by altered respiratory physiology, increased arrhythmogenicity from nonpulmonary vein foci commonly located in the right atrium, and respiratory drugs have been implicated in the pathogenesis of AF in COPD. The understanding of the relationship between COPD and AF is of particular importance, as the presence of the arrhythmia has significant impact on mortality, especially in COPD exacerbations. On the other hand, COPD in AF is associated with AF progression, success of cardioversion, recurrence of AF after catheter ablation, and increased cardiovascular and all-cause mortality. Treatment of the underlying pulmonary disease and correction of hypoxia and acid-base imbalance represents first-line therapy for COPD patients who develop AF. Cardioselective β-blockers are safe and can be routinely used in COPD. In addition, AF ablation was proved to be efficient and safe, and improves quality of life in these patients. This review presents the association between COPD and AF, describes the pathophysiological mechanisms implicated in AF development in COPD, underlines the prognostic significance of AF in COPD patients and vice versa, and highlights emerging therapeutic approaches in this setting.

19. Patient Preferences for Oral Anticoagulation Therapy in Atrial Fibrillation: A Systematic Literature Review.

Author(s): Wilke, Thomas; Bauer, Sabine; Mueller, Sabrina; Kohlmann, Thomas; Bauersachs, Rupert

Source: The patient; Feb 2017; vol. 10 (no. 1); p. 17-37

Publication Type(s): Journal Article Review

Abstract:OBJECTIVESSince the introduction of non-vitamin K antagonist (VKA) oral anticoagulants (NOACs), an additional treatment option, apart from VKAs, has become available for stroke prevention in patients with atrial fibrillation (AF). For various reasons, it is important to consider patients' preferences regarding type of medication, particularly in view of the established relationship between preferences towards treatment, associated burden of treatment, and treatment adherence. This review aimed to systematically analyse the scientific literature assessing the preferences of AF patients with regard to long-term oral anticoagulant (OAC) treatment.METHODSWe searched the MEDLINE, Scopus and EMBASE databases (from 1980 to 2015), added records from reference lists of publications found, and conducted a systematic review based on all identified publications. Outcomes of interest included any quantitative information regarding the opinions or preferences of AF patients towards OAC treatment, ideally specified according to different clinical or convenience attributes describing different OAC treatment options.RESULTSOverall, 27 publications describing the results of studies conducted in 12 different countries were included in our review. Among these, 16 studies analysed patient preferences towards OACs in general. These studies predominantly assessed which benefits (mainly lower stroke risk) AF patients would require to tolerate harms (mainly higher bleeding risk) associated with an OAC. Most studies showed that patients were willing to accept higher bleeding risks if a certain threshold in stroke risk reduction could be reached. Nevertheless, most of the publications also showed that the preferences of AF patients towards OACs may differ from the perspective of clinical guidelines or the perspective of physicians. The remaining 11 studies included in our review assessed the preferences of AF patients towards specific OAC medication options, namely NOACs versus VKAs. Our review showed that AF patients prefer easy-to-administer treatments, such as treatments that are applied once daily without any food/drug interactions and without the need for bridging and frequent blood controls.CONCLUSIONStroke risk reduction and a moderate increase in the risk of bleeding are the most important attributes for an AF patient when deciding whether they are for or against OAC treatment. If different anticoagulation options have similar

clinical characteristics, convenience attributes matter to patients. In this review, AF patients favour attribute levels that describe NOAC treatment.

20. Left Atrial Substrate Modification Targeting Low-Voltage Areas for Catheter Ablation of Atrial Fibrillation: A Systematic Review and Meta-Analysis.

Author(s): Blandino, Alessandro; Bianchi, Francesca; Grossi, Stefano; Biondi-Zoccai, Giuseppe; Conte, Maria Rosa; Gaido, Luca; Gaita, Fiorenzo; Scaglione, Marco; Rametta, Francesco

Source: Pacing and clinical electrophysiology : PACE; Feb 2017; vol. 40 (no. 2); p. 199-212

Publication Type(s): Journal Article Review

Abstract:BACKGROUNDThis meta-analysis aims to assess the impact of a voltage-guided substrate modification by targeting low-voltage area (LVA) in addition to pulmonary vein isolation (PVI) in patients undergoing catheter ablation for atrial fibrillation (AF).METHODSMEDLINE/PubMed, Cochrane Library, and references reporting AF ablation and "voltage* OR substrate* OR fibrosis OR fibrotic area*" were screened and studies included if matching inclusion and exclusion criteria.RESULTSSix studies were included. Patients enrolled were 885 (517 in the study group and 368 in the control group). Median age was 60 years; 92% had nonparoxysmal AF. At a mean follow-up of 17 months, 70% of patients in the study group vs. 43% in the control group were free from AF/atrial tachycardia (AT) recurrences (odds ratio [OR] = 3.41, 95% confidence interval [CI] 2.22-5.24). LVA ablation in addition to PVI was more effective than PVI alone and PVI + conventional wide empirical ablation (70% vs. 43%, OR = 3.41, 95% CI 2.22-5.24), without increasing the adverse event rate (2.5% vs. 6%, OR = 0.43, 95% CI 0.15-1.26). Compared to PVI + conventional wide empirical ablation, LVA ablation reduced the occurrence of postablation AT (14% vs. 46%, OR = 0.16, 95% CI 0.07-0.37), procedure time (176 min vs. 220 min, OR = 0.36, 95% CI 0.24-0.56), fluoroscopy time (25 min vs. 31 min, OR = 0.22, 95% CI 0.12-0.39), and radiofrequency time (55 min vs. 90 min, OR = 0.49, 95% CI 0.27-0.90).CONCLUSIONSA voltage-guided substrate modification by targeting LVA in addition to PVI is more effective, safer, and holds a lower proarrhythmic potential than conventional ablation approaches. Further randomized studies are necessary to confirm these findings.

21. Atrial fibrillation in women: treatment.

Author(s): Ko, Darae; Rahman, Faisal; Martins, Maria A P; Hylek, Elaine M; Ellinor, Patrick T; Schnabel, Renate B; Benjamin, Emelia J; Christophersen, Ingrid E

Source: Nature reviews. Cardiology; Feb 2017; vol. 14 (no. 2); p. 113-124

Publication Type(s): Journal Article Review

Abstract: Sex-specific differences in the epidemiology, pathophysiology, presentation, prognosis, and treatment of atrial fibrillation (AF) are increasingly recognized. Women with AF generally experience worse symptoms, poorer quality of life, and have higher risk of stroke and death than men with AF. Effective treatment of the arrhythmia in women is critical to reduce the rate of adverse events. We review the current evidence on sex-specific differences in the utilization and outcomes of treatments for AF, including rate-control and rhythm-control strategies, and stroke-prevention therapy. In addition, we provide a critical evaluation of potential disparities and biases in health-care use that might be associated with differences in the outcomes between women and men. We underscore current knowledge gaps that need to be addressed in future studies to improve the management of AF in women. In particular, we suggest several strategies to produce high-quality evidence from randomized clinical trials for women with AF.

22. Excess of exercise increases the risk of atrial fibrillation.

Author(s): Müssigbrodt, A; Weber, A; Mandrola, J; van Belle, Y; Richter, S; Döring, M; Arya, A; Sommer, P; Bollmann, A; Hindricks, G

Source: Scandinavian journal of medicine & science in sports; Jan 2017

Publication Type(s): Journal Article Review

Abstract: An interesting and still not well-understood example for old medical wisdom "Sola dosis facit venenum" is the increased prevalence of atrial fibrillation (AF) in athletes. Numerous studies have shown a fourfold to eightfold increased risk of AF in athletes compared to the normal population. Analysis of the existing data suggests a dose-dependent effect of exercise. Moderate exercise seems to have a protective effect and decreases the risk of AF, whereas excessive exercise seems to increase the risk of AF. The described cases illustrate clinical manifestations within the spectrum of AF in elderly athletes, that is, exercise-induced AF, vagal AF, chronic AF, and atrial flutter. As the arrhythmia worsened quality of life and exercise capacity in all

patients, recovery of sinus rhythm was desired in all described cases. As the atrial disease was advanced on different levels, different treatment regimes were applied. Lifestyle modification and temporary anti-arrhythmic drug therapy could stabilize sinus rhythm in one patient, whereas others needed radiofrequency ablation to achieve a stable sinus rhythm. The patient with the most advanced atrial disease necessitated anti-arrhythmic drug therapy and another left atrial ablation. All described patients remained in sinus rhythm during the long-term follow-up.

23. New oral anticoagulants compared to warfarin for perioperative anticoagulation in patients undergoing atrial fibrillation catheter ablation: a meta-analysis of continuous or interrupted new oral anticoagulants during ablation compared to interrupted or continuous warfarin.

Author(s): Zhao, Yue; Yang, Yuan; Tang, Xuejiao; Yu, Xiang; Zhang, Lei; Xiao, Hua

Source: Journal of interventional cardiac electrophysiology : an international journal of arrhythmias and pacing; Jan 2017

Publication Type(s): Journal Article Review

Abstract:BACKGROUNDNew oral anticoagulants (NOACs) have been shown to be comparable to warfarin in patients with non-valvular atrial fibrillation (AF). This meta-analysis was performed to evaluate the efficacy and safety of NOACs for perioperative anticoagulation of AF catheter ablation.METHODSPubMed, Embase, the Cochrane Library, CNKI, VIP, and SinoMed were searched for articles published up to August 30, 2015. The data were calculated with RevMan 5.2 using a fixed-effects model.RESULTSNineteen studies with a total of 7996 patients were included in this meta-analysis. NOAC treatment was associated with fewer overall bleeding events than continuous warfarin treatment (RR = 0.78, 95% CI = 0.64-0.95, P = 0.01); similarly, there were fewer overall bleeding events with NOAC treatment than interrupted warfarin treatment (RR = 0.58, 95% CI = 0.44-0.77, P = 0.0002). In the subgroup analyses, the incidence of overall bleeding events (RR = 0.67, 95% CI = 0.48-0.92, P = 0.01) and minor bleeding events (RR = 0.56, 95% CI = 0.37-0.86, P = 0.007) in the interrupted NOAC group was lower than that in the continuous warfarin group. NOAC treatment did not increase the risk of thromboembolic complications compared with warfarin treatment (P > 0.05).CONCLUSIONSThe findings of this meta-analysis suggested that periprocedural NOAC therapy was as effective as continuous warfarin therapy for preventing thromboembolism and had a lower incidence of bleeding complications. Interrupted NOAC therapy during the periprocedural period might result in a lower incidence of bleeding complications compared with continuous NOAC therapy.

24. Cryoablation vs. radiofrequency ablation for treatment of paroxysmal atrial fibrillation: a systematic review and meta-analysis.

Author(s): Chen, Yi-He; Lu, Zhao-Yang; Xiang, Yin-; Hou, Jian-Wen; Wang, Qian; Lin, Hui; Li, Yi-Gang

Source: Europace : European pacing, arrhythmias, and cardiac electrophysiology : journal of the working groups on cardiac pacing, arrhythmias, and cardiac cellular electrophysiology of the European Society of Cardiology; Jan 2017

Publication Type(s): Journal Article Review

Abstract:AIMSCryoablation is a promising alternative technique to RF ablation for treating paroxysmal AF with encouraging results. However, data about the efficacy and safety comparison between cryoablation and RF ablation is still lacking.METHODS AND RESULTSWe systematically search the PubMed, the Cochrane Library, MEDLINE and Google Scholar databases, and finally identify 16 eligible studies including 7195 patients (2863 for cryoablation; 4332 for RF ablation). Freedom from AF/atrial tachycardial replase is slightly higher in cryoablation than RF ablation during a median 12 months of follow-up, with no statistical significant (RR: 1.05, 95% CI: 0.98-1.13, P = 0.159). In cryoablation, the procedure time is substantially shortened (WMD: -27.66, 95% CI: -45.24 to - 10.08, P = 0.002), whereas the fluoroscopy time is identical to RF ablation (WMD: -0.37, 95% CI: -2.78 to 2.04, P = 0.763). Procedure-related adverse events in cryoablation are parallel with that in RF ablation (RR: 1.08, 95% CI: 0.86-1.35, P = 0.159).CONCLUSIONSCompared with RF ablation, cryoablation present a comparable long-term AF/atrial tachycardial-free survival and procedure-related adverse events. Meanwhile, cryoablation markedly shorten the procedure time, nonetheless, with negligible impact on the fluoroscopy time.

25. Comparison of catheter ablation for paroxysmal atrial fibrillation between cryoballoon and radiofrequency: a meta-analysis.

Author(s): Chen, Chao-Feng; Gao, Xiao-Fei; Duan, Xu; Chen, Bin; Liu, Xiao-Hua; Xu, Yi-Zhou

Source: Journal of interventional cardiac electrophysiology : an international journal of arrhythmias and pacing; Jan 2017

Publication Type(s): Journal Article Review

Abstract:PURPOSEThe present systematic review and meta-analysis aimed to assess and compare the safety and efficacy of radiofrequency (RF) and cryoballoon (CB) ablation for paroxysmal atrial fibrillation (PAF). RF and CB ablation are two frequently used methods for pulmonary vein isolation in PAF, but which is a better choice for PAF remains uncertain.METHODSA systematic review was conducted in Medline, PubMed, Embase, and Cochrane Library. All trials comparing RF and CB ablation were screened and included if the inclusion criteria were met.RESULTSA total of 38 eligible studies, 9 prospective randomized or randomized controlled trials (RCTs), and 29 non- RCTs were identified, adding up to 15,496 patients. Pool analyses indicated that CB ablation was more beneficial in terms of procedural time [standard mean difference = -0.58; 95% confidence interval (CI), -0.85 to -0.30], complications without phrenic nerve injury (PNI) [odds ratio (OR) = 0.79; 95% CI, 0.67-0.93; I 2 = 16%], and recrudescence (OR = 0.83; 95% CI, 0.70-0.97; I 2 = 63%) for PAF; however, the total complications of CB was higher than RF. The subgroup analysis found that, compared with non-contact force radiofrequency (non-CF-RF), both first-generation cryoballoon (CB1) and second-generation cryoballoon (CB2) ablation could reduce complications with PNI, procedural time, and recrudescence. However, the safety and efficacy of CB2 was similar to those of CF-RF.CONCLUSIONAvailable overall and subgroup data suggested that both CB1 and CB2 were more beneficial than RF ablation, and the main advantages were reflected in comparing them with non-CF-RF. However, CF-RF and CB2 showed similar clinical benefits.

26. Antithrombotic treatment in anticoagulated atrial fibrillation patients undergoing percutaneous coronary intervention.

Author(s): Dézsi, Csaba András; Dézsi, Balázs Bence; Dézsi, Döme András

Source: European journal of internal medicine; Jan 2017

Publication Type(s): Journal Article Review

Abstract: Coronary artery disease coexists in a clinically relevant number of patients with atrial fibrillation and it often requires percutaneous coronary intervention. These patients represent a particular challenge for clinicians in terms of antithrombotic management. They require combined antiplatelet-anticoagulant therapy to reduce the risk of recurrent ischemic cardiac events and stroke; however, this antithrombotic strategy is associated with an increased risk of bleeding complications. In the absence of randomized, controlled clinical trials, the majority of current recommendations rely on the results of cohort studies, meta-analyses, post-hoc analyses and subgroup analyses of large, phase III studies. Based on the available evidence, the present review discusses the optimal antithrombotic strategy for patients receiving chronic anticoagulant therapy due to atrial fibrillation who require antiplatelet treatment after acute coronary syndrome and/or percutaneous coronary intervention, and discusses the issue of dental procedures. The correct planning of therapy significantly reduces the risk of bleeding complications and thromboembolic events.KEY MESSAGESIn order to reduce the occurrence of recurrent cardiac ischemic events and stroke, anticoagulated patients with acute coronary syndrome and/or percutaneous coronary intervention require a combination of therapies including anticoagulants and antiplatelet drugs. Using the newest optimal combination of therapeutic strategies reduces the risk of haemorrhagic complications.

27. Update on atrial fibrillation.

Author(s): Khaji, Amanulla; Kowey, Peter R

Source: Trends in cardiovascular medicine; Jan 2017; vol. 27 (no. 1); p. 14-25

Publication Type(s): Journal Article Review

Abstract: Atrial fibrillation (AF) is the most common arrhythmia with a substantial effect on individual morbidity and mortality as well as healthcare expenditure. The management of AF is complex and fraught with many uncertain and contentious issues. We have seen substantial progress in AF management in the last two decades including better understanding of the epidemiology, genomics, monitoring, drug and non-pharmacological treatment of the arrhythmia, its complications and stroke risk reduction. In this review, we present a comprehensive discussion on AF with emphasis on most recent updates.

28. Perspectives and challenges of antioxidant therapy for atrial fibrillation.

Author(s): Gasparova, Iveta; Kubatka, Peter; Opatrilova, Radka; Caprnda, Martin; Filipova, Slavomira; Rodrigo, Luis; Malan, Leone; Mozos, Ioana; Rabajdova, Miroslava; Nosal, Vladimir; Kobyliak, Nazarii; Valentova, Vanda; Petrovic, Daniel; Adamek, Mariusz; Kruzliak, Peter

Source: Naunyn-Schmiedeberg's archives of pharmacology; Jan 2017; vol. 390 (no. 1); p. 1-14

Publication Type(s): Journal Article Review

Abstract: Atrial fibrillation (AF) is the most common sustained arrhythmia associated with significant morbidity and mortality. The mechanisms underlying the pathogenesis of AF are poorly understood, although electrophysiological remodeling has been described as an important initiating step. There is growing evidence that oxidative stress is involved in the pathogenesis of AF. Many known triggers of oxidative stress, such as age, diabetes, smoking, and inflammation, are linked with an increased risk of arrhythmia. Numerous preclinical studies and clinical trials reported the importance of antioxidant therapy in the prevention of AF, using vitamins C and E, polyunsaturated fatty acids, statins, or nitric oxide donors. The aim of our work is to give a current overview and analysis of opportunities, challenges, and benefits of antioxidant therapy in AF.

29. Efficacy and safety of the second-generation cryoballoons versus radiofrequency ablation for the treatment of paroxysmal atrial fibrillation: a systematic review and meta-analysis.

Author(s): Jiang, Jingbo; Li, Jinyi; Zhong, Guoqiang; Jiang, Junjun

Source: Journal of interventional cardiac electrophysiology : an international journal of arrhythmias and pacing; Jan 2017; vol. 48 (no. 1); p. 69-79

Publication Type(s): Journal Article Review

Abstract:PURPOSECurrently, radiofrequency (RF) and cryoballoon are the most commonly used ablation technologies for atrial fibrillation (AF). We performed a meta-analysis to assess the efficacy and safety of the second-generation cryoballoons (CB-2) compared with RF for paroxysmal atrial fibrillation (PAF) ablation.METHODSThe PubMed, Cochrane Library, and Embase databases were searched and qualified studies were identified. The primary clinical outcome was the recurrence rate of atrial tachyarrhythmia (AT), and the secondary clinical outcomes were procedure time, fluoroscopy time, and the complications that followed.RESULTSNine observational studies (2336 patients) with a mean follow-up period ranging from 8.8 to 16.8 months were included. The CB-2 group was associated with a significantly lower recurrence rate of ATs (20.8 versus 29.8 %, $p = 0.01$). In subgroup analysis, compared with non-contact force sensing (NCF) catheter, using CB-2 showed significantly reduced incidence of ATs (22.0 versus 38.5 %, $p < 0.00001$). However, the difference became negligible in contrast with contact force sensing (CF) catheter. Moreover, the CB-2 group had a tendency to decrease procedure time (weighted mean difference -39.72 min, $p = 0.0003$), whereas fluoroscopy time was similar between the two groups. The total complication rate showed no statistical difference (8.8 versus 4.4 %, $p = 0.08$). Almost all the cases of phrenic nerve palsy occurred in the CB-2 group, whereas pericardial tamponade was seldom manifested in the CB-2 group.CONCLUSIONSCB-2 tended to be more effective in comparison to NCF catheter and at least non-inferior to CF catheter, with shorter procedure time and similar safety endpoint.

30. The role of empiric superior vena cava isolation in atrial fibrillation: a systematic review and meta-analysis of randomized controlled trials.

Author(s): Sharma, Sharan Prakash; Sangha, Rajbir S; Dahal, Khagendra; Krishnamoorthy, Parasuram

Source: Journal of interventional cardiac electrophysiology : an international journal of arrhythmias and pacing; Jan 2017; vol. 48 (no. 1); p. 61-67

Publication Type(s): Journal Article Review

Abstract:BACKGROUNDIt is not clear whether additional empiric superior vena cava isolation (SVCI) to pulmonary vein isolation (PVI) results in low recurrences of atrial fibrillation. We aimed to perform a systematic review and meta-analysis of all randomized controlled trials (RCTs) that evaluated role of empiric SVCI in atrial fibrillation ablation.METHODSWe searched PubMed, EMBASE, Cochrane, Scopus, and relevant references for RCTs (inception April 15, 2016 without language restrictions) and performed meta-analysis using random effects model. Recurrence rates of atrial fibrillations, procedural times, fluoroscopic times, and adverse events were the measured outcomes.RESULTSThree RCTs with a total population of 526 were analyzed. There was no difference in the recurrence rate between PVI plus SVCI versus PVI alone when comparison was made across all types of AF (39 vs 60; odds ratio 0.68; 95 % CI 0.43-1.07; $P = 0.73$; $I 2 = 0$ %). When analysis was restricted only to paroxysmal AF, there was a trend towards low recurrence rate in combination group without statistical significance (19 vs 35, OR 0.54; 95 % CI 0.29-1.00; $P = 0.05$; $I 2 = 0$). Similarly, no difference was noted between two groups in procedural (weighted mean difference [WMD] 10.12;

95 % CI -9.84 to 30.08; P = 0.32; I 2 = 85 %) and fluoroscopic time (WMD 4.66; 95 % CI -0.92 to 10.25; P = 0.1; I 2 = 94). Adverse events were similar in both groups.CONCLUSIONEmpiric SVCI does not provide additional benefit to PVI alone for atrial fibrillation ablation.

31. Efficacy and safety of vitamin C for atrial fibrillation after cardiac surgery: A meta-analysis with trial sequential analysis of randomized controlled trials.

Author(s): Hu, Xiaolan; Yuan, Linhui; Wang, Hongtao; Li, Chang; Cai, Junying; Hu, Yanhui; Ma, Changhua

Source: International journal of surgery (London, England); Jan 2017; vol. 37 ; p. 58-64

Publication Type(s): Meta-analysis Journal Article Review

Abstract:OBJECTIVESAntioxidant supplement is an option in preventing postoperative atrial fibrillation (AF) after cardiac surgery. However, the benefits and adverse effects of vitamin C have not been well assessed. We aimed to systematically evaluate the efficacy and safety of vitamin C in preventing postoperative AF in adult patients after cardiac surgery.METHODSPubMed, EMBASE, and the Cochrane library databases from inception to September 2016 were searched. Randomized controlled trials (RCTs) that evaluated the efficacy and safety of vitamin C in preventing postoperative AF in adult patients after cardiac surgery were identified. The primary outcome was the incidence of postoperative AF. Secondary outcomes included the length of intensive care unit (ICU) stay, length of hospital stay, and stroke events.RESULTSEight RCTs incorporating 1060 patients were included. Compared with placebo group, vitamin C treatment was associated with a substantial reduction in postoperative AF (OR, 0.47; 95% CI, 0.36-0.62; evidence rank: moderate), with no significant heterogeneity (I2 44%; P = 0.09). Trial sequential analysis showed that the cumulative Z-curve crossed the trial sequential monitoring boundary for benefit, establishing sufficient and conclusive evidence. In addition, vitamin C administration was not associated with any length of stay, including in the ICU (evidence rank: low) and hospital (evidence rank: low), respectively.CONCLUSIONSShort-term treatment with vitamin C is safe, and may reduce the incidence of postoperative AF after cardiac surgery. Future studies as well as more high quality RCTs are still warranted to confirm the effects of different durations of vitamin C on cardiac surgery.

32. Clinical relevance of pharmacokinetic and pharmacodynamic properties of edoxaban when treating patients with atrial fibrillation and heart failure.

Author(s): Aspromonte, Nadia; Colivicchi, Furio

Source: Expert opinion on drug metabolism & toxicology; Jan 2017; vol. 13 (no. 1); p. 113-122

Publication Type(s): Journal Article Review

Abstract:INTRODUCTIONAtrial fibrillation (AF) is an independent risk factor for stroke. It is most prevalent in the elderly and frequently coexists with heart failure (HF). The joint occurrence of AF and HF further worsens prognosis. The prevention of thromboembolism is crucial in the management of AF. In recent years, new oral anticoagulants (NOACs) have been licensed for the prevention of stroke and systemic embolism in patients with AF. Areas covered: This article reviews the key published studies on the pharmacology, clinical efficacy and safety of edoxaban, the latest NOAC to receive approval for the AF indication. This potent and selective inhibitor of factor Xa shows predictable pharmacokinetic and pharmacodynamic profiles. Its efficacy and safety have been demonstrated in the pivotal, phase III, warfarin-controlled ENGAGE AF-TIMI 48 trial in 21,105 AF patients. Expert opinion: NOACs will likely improve the management of AF, with or without HF. Edoxaban has a favorable pharmacokinetic profile that supports its use in special patient populations, including patients aged ≥75 years, with HF, renal impairment, poor adherence, and on polypharmacy. Proven strategies of edoxaban dose-reduction for optimal use in the presence of moderate renal impairment, and/or use of strong P-gp inhibitors are available.

33. Rationale and design of AXAFA-AFNET 5: an investigator-initiated, randomized, open, blinded outcome assessment, multi-centre trial to comparing continuous apixaban to vitamin K antagonists in patients undergoing atrial fibrillation catheter ablation.

Author(s): Di Biase, Luigi; Callans, David; Georg Hæusler, Karl; Hindricks, Gerhard; Al-Khalidi, Hussein; Mont, Lluis; Cosedis Nielsen, Jens; Piccini, Jonathan P; Schotten, Ulrich; Kirchhof, Paulus

Source: Europace : European pacing, arrhythmias, and cardiac electrophysiology : journal of the working groups on cardiac pacing, arrhythmias, and cardiac cellular electrophysiology of the European Society of Cardiology; Jan 2017; vol. 19 (no. 1); p. 132-138

Publication Type(s): Journal Article Review

Available in full text at Europace - from Highwire Press

Abstract:AIMSCatheter ablation is the most efficacious rhythm control therapy in atrial fibrillation (AF) patients. There is growing evidence that catheter ablation procedures are best performed during continuous oral anticoagulation, but outcomes are variable depending on the anticoagulation strategy or agent chosen. Specifically, there is a need to evaluate the peri-procedural use of non-vitamin K antagonist oral anticoagulants (NOACs) in patients undergoing catheter ablation of AF. The AXAFA-AFNET 5 trial will test whether peri-procedural anticoagulation therapy using apixaban is a safe alternative to vitamin K antagonist (VKA) therapy for patients undergoing catheter ablation of AF.METHODS AND RESULTSAXAFA-AFNET 5 is a randomized, prospective multi-centre study conducted in Europe and the USA. A total of 650 patients scheduled for AF ablation will be randomized 1:1 to undergo AF ablation on continuous treatment with the NOAC apixaban or with a VKA. Patients can undergo AF ablation after at least 30 days of continuous effective anticoagulation or after exclusion of atrial thrombi by transoesophageal echocardiogram. The trial includes a post-ablation magnetic resonance imaging substudy that will quantify silent brain lesions that can occur in neurologically asymptomatic patients after AF ablation. Patients will be followed on continuous anticoagulation for 3 months after the ablation. The primary outcome parameter of AXAFA-AFNET 5 is a composite of all-cause death, stroke, and major bleeding events.CONCLUSIONThe results of AXAFA-AFNET 5 will provide evidence informing about the safety of apixaban in ablation patients and on its efficacy including effects on silent brain lesions. AXAFA - AFNET 5 is an investigator-initiated trial sponsored by AFNET. The trial is supported by the DZHK (German Centre for Cardiovascular Research) and by the BMBF (German Ministry of Education and Research) and by Bristol-Myers Squibb/Pfizer Alliance.

34. Application of Biomarkers for Risk Stratification in Patients with Atrial Fibrillation.

Author(s): Hijazi, Ziad; Oldgren, Jonas; Siegbahn, Agneta; Wallentin, Lars

Source: Clinical chemistry; Jan 2017; vol. 63 (no. 1); p. 152-164

Publication Type(s): Journal Article Review

Abstract:BACKGROUNDAtrial fibrillation is the most common sustained arrhythmia and an important contributor to cardiovascular morbidity and mortality. Several strategies have been proposed for prediction of outcomes and individualization of treatments to better balance the benefits of stroke prevention and risks of bleeding during anticoagulation.CONTENTThe availability of analytically more specific and sensitive methods to measure circulating biomarkers of cellular and organ stress and dysfunction has led to testing of their utility in several cardiovascular conditions. In patients with atrial fibrillation, biomarkers of myocardial injury (troponin) and cardiovascular stress and dysfunction (natriuretic peptides, growth differentiation factor 15), myocardial fibrosis (galectin-3), renal dysfunction (creatinine, cystatin C), inflammation (C-reactive protein, cytokines) and coagulation activity (d-dimer) have been found associated with underlying pathophysiology, clinical outcomes and effects of treatment. Measurements of these markers might therefore expand the understanding of the pathophysiology, improve risk assessment and optimize treatment in individual patients with atrial fibrillation.SUMMARYBiomarkers for risk stratification have potential roles as tools for evaluation of patients with atrial fibrillation and for selection of the best treatment strategies to prevent stroke, major bleeding, and mortality.

35. Practical Considerations for the Use of Direct Oral Anticoagulants in Patients With Atrial Fibrillation.

Author(s): Stacy, Zachary; Richter, Sara

Source: Clinical and applied thrombosis/hemostasis : official journal of the International Academy of Clinical and Applied Thrombosis/Hemostasis; Jan 2017; vol. 23 (no. 1); p. 5-19

Publication Type(s): Journal Article Review

Abstract: Atrial fibrillation (AF) is a significant risk factor for stroke and peripheral thromboembolic events (TEs). Preventing blood clots in the heart to reduce stroke and TE risk is a key goal of AF therapy. Traditional stroke risk assessment tools for patients with nonvalvular AF include the CHADS2 and CHA(2)DS(2)-VASc scores, while long-term outcome data with the newer direct oral anticoagulants (DOACs) are emerging. The goals of this review were to assess traditional therapies and existing treatment guidelines and to discuss key pharmacologic properties of the DOACS, noting how these may benefit at-risk patients with AF. This narrative review was developed on the basis of the authors' clinical knowledge, extensive reading of the literature, and broad pharmacy experience in the management of patients with AF. Limitations of oral vitamin K antagonists (VKAs) include slow onset of action, the need for regular monitoring of their anticoagulation effect, significant food and drug interactions, and unpredictable dose-response properties. Key clinical trial data led to the

approvals of apixaban, dabigatran etexilate, edoxaban, and rivaroxaban in the United States to reduce the risk of stroke and systemic embolism in patients with nonvalvular AF. With predictable pharmacologic properties and limited drug and/or dietary interactions, the DOACs offer several benefits over traditional oral anticoagulation therapy with VKA. However, they have limitations, including the absence of immediate reversal agents and limited options for monitoring their anticoagulation effects in clinical practice. As experience with the use of DOACs grows, optimized treatment regimens and improved patient care are expected.

36. Fall risk and anticoagulation for atrial fibrillation in the elderly: A delicate balance.

Author(s): Hagerty, Tracy; Rich, Michael W

Source: Cleveland Clinic journal of medicine; Jan 2017; vol. 84 (no. 1); p. 35-40

Publication Type(s): Journal Article Review

Abstract: Guidelines for managing atrial fibrillation recommend systemic anticoagulation for almost all patients age 65 and older, but in practice up to 50% of older patients do not receive maintenance anticoagulation therapy. The most common reason physicians cite for withholding anticoagulation in older patients with atrial fibrillation is a perception of a high risk of falling and associated bleeding, especially intracranial hemorrhage.

Database: Medline

37. Cardiac Channelopathies and Sudden Death: Recent Clinical and Genetic Advances.

Author(s): Fernández-Falgueras, Anna; Sarquella-Brugada, Georgia; Brugada, Josep; Brugada, Ramon; Campuzano, Oscar

Source: Biology; Jan 2017; vol. 6 (no. 1)

Publication Type(s): Journal Article Review

Abstract: Sudden cardiac death poses a unique challenge to clinicians because it may be the only symptom of an inherited heart condition. Indeed, inherited heart diseases can cause sudden cardiac death in older and younger individuals. Two groups of familial diseases are responsible for sudden cardiac death: cardiomyopathies (mainly hypertrophic cardiomyopathy, dilated cardiomyopathy, and arrhythmogenic cardiomyopathy) and channelopathies (mainly long QT syndrome, Brugada syndrome, short QT syndrome, and catecholaminergic polymorphic ventricular tachycardia). This review focuses on cardiac channelopathies, which are characterized by lethal arrhythmias in the structurally normal heart, incomplete penetrance, and variable expressivity. Arrhythmias in these diseases result from pathogenic variants in genes encoding cardiac ion channels or associated proteins. Due to a lack of gross structural changes in the heart, channelopathies are often considered as potential causes of death in otherwise unexplained forensic autopsies. The asymptomatic nature of channelopathies is cause for concern in family members who may be carrying genetic risk factors, making the identification of these genetic factors of significant clinical importance.

38. An insertion/deletion polymorphism within 3'UTR of RYR2 modulates sudden unexplained death risk in Chinese populations.

Author(s): Wang, Shouyu; Zhang, Zhixiang; Yang, Ya; Wang, Chaoqun; Tao, Ruiyang; Hu, Shuxiang; Yin, Zhixia; Zhang, Qing; Li, Lijuan; He, Yan; Zhu, Shaohua; Li, Chengtao; Zhang, Suhua; Zhang, Jianhua; Sheng, Lihui; Wu, Fangyu; Luo, Bin; Gao, Yuzhen

Source: Forensic science international; Jan 2017; vol. 270 ; p. 165-172

Publication Type(s): Journal Article

Abstract: Sudden unexplained death (SUD) constitutes a part of the overall sudden death that can not be underestimated. Over the last years, genetic testing on SUD has revealed that inherited channelopathies might play important roles in the pathophysiology of this disease. Ryanodine receptor type-2 (RYR2) is a kind of ion channel extensively distributed in the sarcoplasmic reticulum (SR) of myocardium. Studies on RYR2 have suggested that either dysfunction or abnormal expression of it could lead to arrhythmia, which may cause cardiac arrest. In this study, we conducted a case-control study to evaluate the association of a 4-base pair (4-bp) Indel polymorphism (rs10692285) in the 3'UTR of RYR2 with the risk of SUD and sudden cardiac death induced by coronary heart disease (SCD-AS) in a Chinese population. Logistic regression analysis showed that the insertion allele of rs10692285 had significantly increased the risk of SUD [OR=2.03; 95% confidence interval (CI)=1.08-3.77; P=0.0161; statistical power=0.743]. No relevance was observed between rs10692285 and SCD-AS. Further genotype-phenotype association analysis suggested that the expression level of RYR2 in human myocardium tissues with the insertion allele was higher than that with the deletion allele at both mRNA and protein levels. Dual-Luciferase activity assay system was used to detect the effect of rs10692285 on the

transcription activity of RYR2. As expected, the result indicated that the transcription activity of RYR2 with the ins/ins genotype was higher than that with the del/del genotype. Finally, in-silico prediction revealed that different alleles of rs10692285 could alter the local structure of RYR2 mRNA and microRNA (miRNA) binding. In summary, our findings provided evidence that rs10692285 might contribute to SUD susceptibility through affecting the expression of RYR2, which suggest that abnormal ion channel activity is very likely to be the underlying mechanism of SUD, but not for SCD-AS. Thus, rs10692285 may become a potential marker for molecular diagnosis and genetic counseling of SUD.

39. Sex-specific outcomes with addition of defibrillation to resynchronisation therapy in patients with heart failure.

Author(s): Barra, Sérgio; Providência, Rui; Duehmke, Rudolf; Boveda, Serge; Marijon, Eloi; Reitan, Christian; Borgquist, Rasmus; Klug, Didier; Defaye, Pascal; Sadoul, Nicolas; Deharo, Jean-Claude; Sadien, Iannish; Patel, Kiran; Looi, Khang-Li; Begley, David; Chow, Anthony W; Le Heuzey, Jean-Yves; Agarwal, Sharad; French-UK-Sweden CRT Network

Source: Heart (British Cardiac Society); Jan 2017

Publication Type(s): Journal Article

Available in full text at Heart - from Highwire Press

Abstract:OBJECTIVEAmong primary prevention patients with heart failure receiving cardiac resynchronisation therapy (CRT), the impact of additional implantable cardioverter defibrillator (ICD) treatment on outcomes and its interaction with sex remains uncertain. We aim to assess whether the addition of the ICD functionality to CRT devices offers a more pronounced survival benefit in men compared with women, as previous research has suggested.METHODSObservational multicentre cohort study of 5307 consecutive patients with ischaemic or non-ischaemic dilated cardiomyopathy and no history of sustained ventricular arrhythmias having CRT implantation with (cardiac resynchronisation therapy defibrillator (CRT-D), n=4037) or without (cardiac resynchronisation therapy pacemaker (CRT-P), n=1270) defibrillator functionality. Using propensity score (PS) matching and weighting and cause-of-death data, we assessed and compared the outcome of patients with CRT-D versus CRT-P. This analysis was stratified according to sex.RESULTSAfter a median follow-up of 34 months (interquartile range 22-60 months) no survival advantage, of CRT-D versus CRT-P was observed in both men and women after PS matching (HR=0.95, 95% CI 0.77 to 1.16, p=0.61, and HR=1.30, 95% CI 0.83 to 2.04, p=0.25, respectively). With inverse-probability weighting, a benefit of CRT-D was seen in male patients (HR 0.78, 95% CI 0.65 to 0.94, p=0.012) but not in women (HR 0.87, 95% CI 0.63 to 1.19, p=0.43). The excess unadjusted mortality of patients with CRT-P compared with CRT-D was related to sudden cardiac death in 7.4% of cases in men but only 2.2% in women.CONCLUSIONSIn primary prevention patients with CRT indication, the addition of a defibrillator might convey additional benefit only in well-selected male patients.

40. A framework for combining a motion atlas with non-motion information to learn clinically useful biomarkers: Application to cardiac resynchronisation therapy response prediction.

Author(s): Peressutti, Devis; Sinclair, Matthew; Bai, Wenjia; Jackson, Thomas; Ruijsink, Jacobus; Nordsletten, David; Asner, Liya; Hadjicharalambous, Myrianthi; Rinaldi, Christopher A; Rueckert, Daniel; King, Andrew P

Source: Medical image analysis; Jan 2017; vol. 35 ; p. 669-684

Publication Date: Jan 2017

Publication Type(s): Journal Article

Abstract: We present a framework for combining a cardiac motion atlas with non-motion data. The atlas represents cardiac cycle motion across a number of subjects in a common space based on rich motion descriptors capturing 3D displacement, velocity, strain and strain rate. The non-motion data are derived from a variety of sources such as imaging, electrocardiogram (ECG) and clinical reports. Once in the atlas space, we apply a novel supervised learning approach based on random projections and ensemble learning to learn the relationship between the atlas data and some desired clinical output. We apply our framework to the problem of predicting response to Cardiac Resynchronisation Therapy (CRT). Using a cohort of 34 patients selected for CRT using conventional criteria, results show that the combination of motion and non-motion data enables CRT response to be predicted with 91.2% accuracy (100% sensitivity and 62.5% specificity), which compares favourably with the current state-of-the-art in CRT response prediction.

41. Nursing-Based Dysrhythmia Detection on a Dedicated Stroke Unit Using a Unit-Based Cardiac Telemetry Monitoring System.

Author(s): Jastrzebski, Cheryl; Hernandez, Erika; Nadis, Susan; Lichtenberg, Robert

Source: The Journal of cardiovascular nursing; ; vol. 32 (no. 2); p. 190-195

Publication Type(s): Journal Article

Available in full text at Journal of Cardiovascular Nursing - from EBSCOhost

Abstract:BACKGROUNDAcute stroke care includes cardiac rhythm monitoring in the first 24 hours. The method of monitoring varies, as do the reported findings. The nurses' role in this process can be intensive, including primary response and review of all data. Competency is critical as the acute stroke setting can be associated with life-threatening dysrhythmias as well as the detection of atrial fibrillation that affects therapy. Limited studies exist to evaluate the effectiveness of a unit-based cardiac monitoring system for which the bedside nurse has primary responsibility.OBJECTIVEThe goal was to determine if a unit-based cardiac monitoring system for which the bedside nurse was responsible detected clinically significant dysrhythmias.METHODSStroke unit nurses completed a mandatory education program on identifying common dysrhythmias and using the monitoring equipment along with a structured algorithm for cardiac dysrhythmia detection. The nurse was responsible for all alarms as well as review of their patients' data. Their findings were recorded and reviewed by a cardiology team after the 24-hour monitoring was completed. A total of 300 consecutive stokes, transient ischemic attack, and possible stroke patients were enrolled.RESULTSNurses identified 96% of all significant dysrhythmias. Twenty-eight percent of the stroke patients had a dysrhythmia, of which 79% were atrial fibrillation/atrial flutter. The bedside nurses did identify all 8 new atrial fibrillation cases.CONCLUSIONStroke unit nurses who complete an educational program can identify dysrhythmias on their patients' unit-based cardiac monitoring systems and can improve patient outcomes.

42. Barriers and enablers to adherence to anticoagulation in heart failure with atrial fibrillation: patient and provider perspectives.

Author(s): Ferguson, Caleb; Inglis, Sally C; Newton, Phillip J; Middleton, Sandy; Macdonald, Peter S; Davidson, Patricia M

Source: Journal of clinical nursing; Feb 2017

Publication Type(s): Journal Article

Abstract:AIMS & OBJECTIVESThe purpose of this study was to elucidate the barriers and enablers to adherence to anticoagulation in individuals with chronic heart failure (CHF) with concomitant atrial fibrillation (AF) from the perspective of patients and providers.BACKGROUNDCHF and AF commonly coexist and are associated with increased stroke risk and mortality. Oral anticoagulation significantly reduces stroke risk and improves outcomes. Yet, in approximately 30% of cases anticoagulation is not commenced for a variety of reasons.DESIGNQualitative study using narrative inquiry.METHODSData from face to face individual interviews with patients and information retrieved from healthcare file note review documented the clinician perspective. This study is a synthesis of the two data sources, obtained during patient clinical assessments as part of the Atrial Fibrillation And Stroke Thromboprophylaxis in hEart failuRe (AFASTER) Study.RESULTSPatient choice and preference were important factors in anticoagulation decisions, including treatment burden, unfavourable or intolerable side effects and patient refusal. Financial barriers included cost of travel, medication cost and reimbursement. Psychological factors included psychiatric illness, cognitive impairment and depression. Social barriers included homelessness and the absence of a caregiver or lack of caregiver assistance. Clinician reticence included fear of falls, frailty, age, fear of bleeding and the challenges of multi-morbidity. Facilitators to successful prescription and adherence were caregiver support, reminders and routine, self-testing and the use of technology.CONCLUSIONSMany barriers remain to high risk individuals being prescribed anticoagulation for stroke prevention. There are a number of enabling factors that facilitate prescription and optimize treatment adherence. Nurses should challenge these treatment barriers and seek enabling factors to optimise therapy. This article is protected by copyright. All rights reserved.

43. Outcomes Among Older Patients Receiving Implantable Cardioverter-Defibrillators for Secondary Prevention: From the NCDR ICD Registry.

Author(s): Betz, Jarrod K; Katz, David F; Peterson, Pamela N; Borne, Ryan T; Al-Khatib, Sana M; Wang, Yongfei; Hansen, Carolina Malta; McManus, David D; Mathew, Jehu S; Masoudi, Frederick A

Source: Journal of the American College of Cardiology; Jan 2017; vol. 69 (no. 3); p. 265-274

Publication Type(s): Journal Article

Abstract:BACKGROUNDClinical trials of implantable cardioverter-defibrillators (ICDs) for secondary prevention of sudden cardiac death were conducted nearly 2 decades ago and enrolled few older

patients.OBJECTIVESThis study assessed morbidity and mortality of older patients receiving ICDs for secondary prevention in contemporary clinical practice.METHODSWe identified 12,420 Medicare beneficiaries from the National Cardiovascular Data Registry ICD Registry undergoing first-time secondary prevention ICD implantation between 2006 and 2009 in 956 U.S. hospitals. Risks of death, hospitalization, and admission to a skilled nursing facility (SNF) were assessed over 2 years in age strata (65 to 69, 70 to 74, 75 to 79, and ≥80 years of age) using Medicare claims. The adjusted association between age and outcomes was evaluated using multivariable models.RESULTSThe mean age was 75 years at the time of implantation; 25.3% were <70 years of age and 25.7% were ≥80 years of age. Overall, the risk of death at 2 years was 21.8%, ranging from 14.7% among those <70 years of age to 28.9% among those ≥80 years of age (adjusted risk ratio [aRR]: 2.01; 95% confidence interval [CI]: 1.85 to 2.33; p for trend <0.001). The cumulative incidence of hospitalizations was 65.4%, ranging from 60.5% in those <70 years of age to 71.5% in those ≥80 years of age (aRR: 1.27; 95% CI: 1.19 to 1.36; p for trend <0.001). The cumulative incidence of admission to a SNF ranged from 13.1% among those <70 years of age to 31.9% among those ≥80 years of age (aRR: 2.67; 95% CI: 2.37 to 3.01; p for trend <0.001); SNF admission risk was highest in the first 30 days.CONCLUSIONSAlmost 1 in 5 older patients receiving a secondary prevention ICD survives at least 2 years. High hospitalization and SNF admission rates, particularly among the oldest patients, identify substantial care needs after device implantation.

44. Living with cardiac resynchronization therapy: Challenges for people with heart failure.

Author(s): Dehghanzadeh, Shadi; Dehghan Nayeri, Nahid; Varaei, Shokoh; Kheirkhah, Jalal

Source: Nursing & health sciences; Jan 2017

Publication Type(s): Journal Article

Abstract: The number of people with heart failure requiring implantation of a cardiac resynchronization device is increasing in Iran. Although this intervention is an effective life-saving treatment, several challenges are associated with patients' lifestyle after insertion. This study identified the challenges and coping mechanisms of Iranians with heart failure living with cardiac resynchronization therapy. A qualitative approach using conventional content analysis was adopted. Seventeen people with heart failure and three nurses were recruited between December 2014 and November 2015 from a teaching hospital and a private clinic in Rasht, Iran. Participants were interviewed using semi-structured interviews lasting 30-60 min. Five themes emerged: (i) fear of implantation, (ii) the panic of receiving a shock from the device, (iii) lack of control over life, (iv) inadequacies of the healthcare system, and (v) psychosocial coping. A heightened understanding of these challenges and coping strategies could prepare healthcare professionals to provide better routine care, education, and support to the recipients of cardiac resynchronization therapy prior to implantation, during the recovery period, and for long-term management.

45. Design and validation of a three-instrument toolkit for the assessment of competence in electrocardiogram rhythm recognition.

Author(s): Hernández-Padilla, José M; Granero-Molina, José; Márquez-Hernández, Verónica V; Suthers, Fiona; López-Entrambasaguas, Olga M; Fernández-Sola, Cayetano

Source: European journal of cardiovascular nursing : journal of the Working Group on Cardiovascular Nursing of the European Society of Cardiology; Jan 2017 ; p. 1474515116687444

Publication Type(s): Journal Article

Abstract:BACKGROUND Rapid and accurate interpretation of cardiac arrhythmias by nurses has been linked with safe practice and positive patient outcomes. Although training in electrocardiogram rhythm recognition is part of most undergraduate nursing programmes, research continues to suggest that nurses and nursing students lack competence in recognising cardiac rhythms. In order to promote patient safety, nursing educators must develop valid and reliable assessment tools that allow the rigorous assessment of this competence before nursing students are allowed to practise without supervision.AIMThe aim of this study was to develop and psychometrically evaluate a toolkit to holistically assess competence in electrocardiogram rhythm recognition.METHODSFollowing a convenience sampling technique, 293 nursing students from a nursing faculty in a Spanish university were recruited for the study. The following three instruments were developed and psychometrically tested: an electrocardiogram knowledge assessment tool (ECG-KAT), an electrocardiogram skills assessment tool (ECG-SAT) and an electrocardiogram self-efficacy assessment tool (ECG-SES). Reliability and validity (content, criterion and construct) of these tools were meticulously examined.RESULTSA high Cronbach's alpha coefficient demonstrated the excellent reliability of the instruments (ECG-KAT=0.89; ECG-SAT=0.93; ECG-SES=0.98). An excellent context validity index (scales' average content validity index>0.94) and very good criterion validity were evidenced for all the tools. Regarding construct validity, principal component analysis revealed that all items comprising the instruments contributed

to measure knowledge, skills or self-efficacy in electrocardiogram rhythm recognition. Moreover, known-groups analysis showed the tools' ability to detect expected differences in competence between groups with different training experiences.CONCLUSIONThe three-instrument toolkit developed showed excellent psychometric properties for measuring competence in electrocardiogram rhythm recognition.

46. Performance of handheld electrocardiogram devices to detect atrial fibrillation in a cardiology and geriatric ward setting.

Author(s): Desteghe, Lien; Raymaekers, Zina; Lutin, Mark; Vijgen, Johan; Dilling-Boer, Dagmara; Koopman, Pieter; Schurmans, Joris; Vanduynhoven, Philippe; Dendale, Paul; Heidbuchel, Hein

Source: Europace : European pacing, arrhythmias, and cardiac electrophysiology : journal of the working groups on cardiac pacing, arrhythmias, and cardiac cellular electrophysiology of the European Society of Cardiology; Jan 2017; vol. 19 (no. 1); p. 29-39

Publication Type(s): Journal Article

Available in full text at Europace - from Highwire Press

Abstract:AIMSTo determine the usability, accuracy, and cost-effectiveness of two handheld single-lead electrocardiogram (ECG) devices for atrial fibrillation (AF) screening in a hospital population with an increased risk for AF.METHODS AND RESULTSHospitalized patients (n = 445) at cardiological or geriatric wards were screened for AF by two handheld ECG devices (MyDiagnostick and AliveCor). The performance of the automated algorithm of each device was evaluated against a full 12-lead or 6-lead ECG recording. All ECGs and monitor tracings were also independently reviewed in a blinded fashion by two electrophysiologists. Time investments by nurses and physicians were tracked and used to estimate cost-effectiveness of different screening strategies. Handheld recordings were not possible in 7 and 21.4% of cardiology and geriatric patients, respectively, because they were not able to hold the devices properly. Even after the exclusion of patients with an implanted device, sensitivity and specificity of the automated algorithms were suboptimal (Cardiology: 81.8 and 94.2%, respectively, for MyDiagnostick; 54.5 and 97.5%, respectively, for AliveCor; Geriatrics: 89.5 and 95.7%, respectively, for MyDiagnostick; 78.9 and 97.9%, respectively, for AliveCor). A scenario based on automated AliveCor evaluation in patients without AF history and without an implanted device proved to be the most cost-effective method, with a provider cost to identify one new AF patient of €193 and €82 at cardiology and geriatrics, respectively. The cost to detect one preventable stroke per year would be €7535 and €1916, respectively (based on average CHA2DS2-VASc of 3.9 ± 2.0 and 5.0 ± 1.5, respectively). Manual interpretation increases sensitivity, but decreases specificity, doubling the cost per detected patient, but remains cheaper than sole 12-lead ECG screening. CONCLUSION Using AliveCor or MyDiagnostick handheld recorders requires a structured screening strategy to be effective and cost-effective in a hospital setting. It must exclude patients with implanted devices and known AF, and requires targeted additional 12-lead ECGs to optimize specificity. Under these circumstances, the expenses per diagnosed new AF patient and preventable stroke are reasonable.

Adult Congenital Heart Disease

1. Advance Care Planning in Adults with Congenital Heart Disease: A Patient Priority.
2. Pregnancy in women with complete transposition of the great arteries following the atrial switch procedure. A study from three of the largest Adult Congenital Heart Disease centers in Poland.
3. Hopelessness among adults with congenital heart disease: Cause for despair or hope?
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7. Readiness for Transition to Adult Health Care for Young Adolescents with Congenital Heart Disease.
8. Increased risk of thromboembolic events in adult congenital heart disease patients with atrial tachyarrhythmias.
9. Shone Complex: An Under-recognized Congenital Heart Disease With Substantial Morbidity in Adulthood.
10. Prognostic Value of N-Terminal Pro-B-Type Natriuretic Peptide, Troponin-T, and Growth-Differentiation Factor 15 in Adult Congenital Heart Disease.
11. Incidence, risk factors, and predictors of infective endocarditis in adult congenital heart disease: focus on the use of prosthetic material.
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13. Use of 3D models of congenital heart disease as an education tool for cardiac nurses.
14. Neurocognitive and executive functioning in adult survivors of congenital heart disease.

15. Long-Term Outcome of Patients with Perimembranous Ventricular Septal Defect: Results from the Belgian Registry on Adult Congenital Heart Disease.

1. Advance Care Planning in Adults with Congenital Heart Disease: A Patient Priority.

Author(s): Deng, Lisa X; Gleason, Lacey P; Khan, Abigail M; Drajpuch, David; Fuller, Stephanie; Goldberg, Leah A; Mascio, Christopher E; Partington, Sara L; Tobin, Lynda; Kim, Yuli Y; Kovacs, Adrienne H

Source: International journal of cardiology; Mar 2017; vol. 231 ; p. 105-109

Publication Type(s): Journal Article

Abstract:BACKGROUNDAdult congenital heart disease (ACHD) patients with moderate or great defect complexity are at risk for premature death. Although early engagement in advance care planning (ACP) is recommended, previous research suggests that it seldom occurs.METHODSThis study investigated ACHD patient preferences for ACP and factors that impact preferences. ACHD patients completed an ACP preferences questionnaire, the Hospital Anxiety and Depression Scale and a measure of attachment styles.RESULTSOf 152 ACHD patients (median age 33years, 50% female), 13% reported previous ACP discussions with providers and 21% had completed advance directives. On a 0-10 scale, the median rating for the importance of discussing ACP with providers was 7; 18years was identified as the most appropriate age to initiate this dialogue. Higher ratings for the importance of discussing ACP with providers was observed in patients who were female (p=0.03), had lower disease complexity (p=0.03), and had elevated anxiety symptoms (p=0.001); elevated anxiety remained significant in a multivariable model. Interest in receiving information about life expectancy (61% overall) was greater among patients with lower disease complexity (p=0.04) and a history of ≥2 cardiac surgeries (p=0.01); disease complexity remained significant in a multivariable model. CONCLUSIONSAs a group, ACHD patients value the opportunity for ACP discussions and prefer earlier communication. Although some clinicians might avoid ACP discussions in patients who are generally more anxious or have less complex CHD, such avoidance does not appear to be warranted.

2. Pregnancy in women with complete transposition of the great arteries following the atrial switch procedure. A study from three of the largest Adult Congenital Heart Disease centers in Poland.

Author(s): Lipczyńska, Magdalena; Szymański, Piotr; Trojnarska, Olga; Tomkiewicz-Pająk, Lidia; Pietrzak, Bronisława; Klisiewicz, Anna; Kumor, Magdalena; Podolec, Piotr; Hoffman, Piotr

Source: The journal of maternal-fetal & neonatal medicine : the official journal of the European Association of Perinatal Medicine, the Federation of Asia and Oceania Perinatal Societies, the International Society of Perinatal Obstetricians; Mar 2017; vol. 30 (no. 5); p. 563-567

Publication Type(s): Journal Article

Abstract:OBJECTIVEWe sought to identify maternal/neonatal and cardiovascular complications in pregnant women with complete transposition of great arteries (D-TGA) following atrial switch.METHODSClinical records of all women with D-TGA after the Mustard/Senning (M/S) operation who were followed at the three largest Adult Congenital Heart Disease (ACHD) centers in Poland were reviewed.RESULTSFifteen of the fifty-nine women followed had a total of 24 pregnancies, including two spontaneous miscarriages. Twenty-two pregnancies (92%) resulted in a live birth, 91% were by cesarean section. During 5 (23%) of the 22 completed pregnancies obstetric complications were observed (one gestational diabetes, one hypertension in pregnancy, one placenta increta and two preterm labors). The mean pregnancy duration was 37.2 weeks (range: 26-41 weeks).We observed one neonatal death due to extreme prematurity. Six (25%) children had a birth weight of ≤2500 g. None of women had severe cardiac complications during pregnancy nor in the postpartum period.CONCLUSIONSIn our study, we demonstrated a large number of obstetric complications and low birth weight in the presence of a systemic right ventricle. However, from a cardiologist's point of view pregnancy after the M/S operation was well-tolerated and relatively safe.

3. Hopelessness among adults with congenital heart disease: Cause for despair or hope?

Author(s): Eslami, Bahareh; Kovacs, Adrienne H; Moons, Philip; Abbasi, Kyomars; Jackson, Jamie L

Source: International journal of cardiology; Mar 2017; vol. 230 ; p. 64-69

Publication Type(s): Journal Article

Abstract:BACKGROUNDAdults with congenital heart disease (CHD) face unique life courses and challenges that may negatively influence their psychological functioning. The aims of this study were to (1) examine the level of hopelessness among adults with CHD in comparison with non-CHD participants and (2) identify correlates of elevated hopelessness among adults with CHD.METHODSWe enrolled 347 patients with CHD

(18-64years, 52.2% female) and 353 matched (by sex/age) non-CHD persons in this cross-sectional study. Hopelessness was assessed by Beck Hopelessness Scale. Hierarchical multiple logistic regression analyses were performed to explore correlates of elevated hopelessness.RESULTSThe mean total hopelessness score did not significantly differ between the CHD and non-CHD groups. Twenty-eight percent of CHD patients had elevated hopelessness scores. Within the CHD patient sample, regression analyses revealed that being male (odds ratio=2.62), not having children (odds ratio=3.57), being unemployed (odds ratio=2.27), and elevated depressive symptoms (odds ratio=1.21) were significantly associated with hopelessness. Regular physical activity (odds ratio=0.36) emerged as a protective factor and all CHD disease parameters were unrelated to hopelessness. The final model explained 43% of the variance in hopelessness.CONCLUSIONSAdult CHD teams are encouraged to continue to explore strategies to support patients to live as rich and full as lives as possible by pursuing relationships, employment and physical activity, as well as managing depression and hopelessness.

4. Management of Pregnancy in Patients With Complex Congenital Heart Disease: A Scientific Statement for Healthcare Professionals From the American Heart Association.

Author(s): Canobbio, Mary M; Warnes, Carole A; Aboulhosn, Jamil; Connolly, Heidi M; Khanna, Amber; Koos, Brian J; Mital, Seema; Rose, Carl; Silversides, Candice; Stout, Karen; American Heart Association Council on Cardiovascular and Stroke Nursing; Council on Clinical Cardiology; Council on Cardiovascular Disease in the Young; Council on Functional Genomics and Translational Biology; and Council on Quality of Care and Outcomes Research

Source: Circulation; Feb 2017; vol. 135 (no. 8); p. e50

Publication Type(s): Journal Article Review

Abstract: Today, most female children born with congenital heart disease will reach childbearing age. For many women with complex congenital heart disease, carrying a pregnancy carries a moderate to high risk for both the mother and her fetus. Many such women, however, do not have access to adult congenital heart disease tertiary centers with experienced reproductive programs. Therefore, it is important that all practitioners who will be managing these women have current information not only on preconception counseling and diagnostic evaluation to determine maternal and fetal risk but also on how to manage them once they are pregnant and when to refer them to a regional center with expertise in pregnancy management.

5. The adult patient with congenital heart disease.

Author(s): Testa, Paola; Mainardi, Arpes; Piovaccari, Giancarlo

Source: Journal of cardiovascular medicine (Hagerstown, Md.); Feb 2017

Publication Type(s): Journal Article

6. Social Independence among Adult Congenital Heart Disease Patients in Japan.

Author(s): Ochiai, Ryota; Ikeda, Yukitaka; Kato, Hitoshi; Shiraishi, Isao; Parents' Association of Heart Disease Children

Source: Pediatrics international : official journal of the Japan Pediatric Society; Feb 2017

Publication Type(s): Journal Article

Abstract:BACKGROUNDAs treatment outcomes for congenital heart disease have improved, the social independence of adult congenital heart disease patients has become a key goal. We aimed to (1) determine the relationship between social independence and psychological profiles in these patients, and (2) identify patient anxieties, difficulties, and demands related to life in society.METHODSA total of 143 patients aged ≥15 years who had physical disability certificates were selected using a questionnaire distributed by a patients association. Each participant was asked about employment status, income, and receipt of a disability pension as a social independence index and about financial and psychological distress as a psychological status index. Furthermore, each participant was asked to freely describe his or her difficulties, anxieties, and needs pertaining to life in society.RESULTSThe subjects were 15-73 years old. Seventy-one (50%) were female, and 94 (66%) had a grade 1 physical disability certificate. Fifty-nine subjects (41%) were employed, 37 (26%) were unemployed, and 45 (31%) were students. Of those employed, 34 subjects (58%) reported annual individual annual incomes of ≤2 million yen. Frequent hospital visits, low total household income, low individual annual income, work dissatisfaction, and receipt of a disability pension were associated with poorer psychological profile. In an open description section, subjects expressed desires for better pension systems, support for medical fees, and employment support.CONCLUSIONSBecause financial issues can adversely affect the psychological profiles of

adult congenital heart disease patients, enhancements in social welfare and employment support may improve their social independence. This article is protected by copyright. All rights reserved.

Database: Medline

7. Readiness for Transition to Adult Health Care for Young Adolescents with Congenital Heart Disease.

Author(s): Stewart, Kimberly T; Chahal, Nita; Kovacs, Adrienne H; Manlhiot, Cedric; Jelen, Ahlexxi; Collins, Tanveer; McCrindle, Brian W

Source: Pediatric cardiology; Feb 2017

Publication Type(s): Journal Article

Abstract: This study evaluates transition readiness, medical condition knowledge, self-efficacy, and illness uncertainty in young adolescents (ages 12 to 15 years) with congenital heart disease (CHD), and medical, patient, and parental factors associated with transition readiness. We enrolled 82 patients with moderate or complex CHD (n = 36, 44% male; mean age 13.6 ± 1.3 years), and their parents. Patients completed standardized self-report measures: Transition Readiness Assessment Questionnaire (TRAQ), MyHeart scale, General Self-Efficacy scale, and Children's Uncertainty in Illness Scale. Parents completed the MyHeart scale and demographic information. Many young adolescents had not discussed transfer with a health care provider (n = 20, 24%) or parent (n = 34, 41%). Transition readiness was higher among patients who were older, more knowledgeable about their condition, had a history of primary cardiac repair and greater self-efficacy, and was lower for boys and patients on cardiac medications. Transition readiness was unrelated to CHD diagnosis and patients' illness uncertainty. Patients' self-advocacy skills were superior to their chronic disease self-management skills. Increased parental medical condition knowledge was positively correlated with patient knowledge, and patient-parent discussion of transfer was associated with increased patient's self-management skills. Transition is not uniformly discussed with young adolescent CHD patients. Parental involvement is correlated with increased transition readiness and patient disease self-management skills. Young adolescent transition programs should focus on education around improving patient medical condition knowledge, promote chronic disease self-management skills development, and include parental involvement.

8. Increased risk of thromboembolic events in adult congenital heart disease patients with atrial tachyarrhythmias.

Author(s): Masuda, Keita; Ishizu, Tomoko; Niwa, Koichiro; Takechi, Fumie; Tateno, Shigeru; Horigome, Hitoshi; Aonuma, Kazutaka

Source: International journal of cardiology; Feb 2017

Publication Type(s): Journal Article

Abstract:BACKGROUNDAtrial tachyarrhythmias are a major morbidity in patients with adult congenital heart disease (ACHD). However, few studies have investigated risk stratification of thromboembolic events in ACHD patients with atrial tachyarrhythmias.METHODS AND RESULTSThis retrospective cohort study reviewed the clinical records of 2314 ACHD patients from 1977 to 2014. We found 242 (10.4%) patients with atrial tachyarrhythmias and excluded 84 patients already being treated with anticoagulant therapy. The remaining 158 patients without anticoagulant therapy were retrospectively followed up from the onset of atrial tachyarrhythmia to the incidence of thromboembolic events. Fourteen thromboembolic events and 5 hemorrhagic events occurred. All patients with thromboembolic events had atrial fibrillation (AF). Thromboembolic events occurred even in the patients with low or intermediate risk as indicated by CHADS2 or CHA2DS2-VASc score. Event rates were higher than those in data from the general adult population in previous studies. Univariate analysis revealed that age≥60years (OR 4.54, 95% CI 1.47-14.06, P=0.009), vascular disease (OR 7.83, 95% CI 1.19-51.53, P=0.032), and persistent AF (OR 5.60, 95% CI 1.73-18.11, P=0.004) were the independent risk factors of thromboembolic events.CONCLUSIONSACHD patients with atrial tachyarrhythmias and even those with low or intermediate risk as indicated by the CHADS2 or CHA2DS2-VASc score had a higher risk of thromboembolic events. Therefore, anticoagulation should be considered earlier than in the general population in patients with risk factors of age≥60years, vascular disease, or persistent AF.

9. Shone Complex: An Under-recognized Congenital Heart Disease With Substantial Morbidity in Adulthood.

Author(s): Aslam, Sajid; Khairy, Paul; Shohoudi, Azadeh; Mercier, Lise-Andrée; Dore, Annie; Marcotte, François; Miró, Joaquim; Avila-Alonso, Pablo; Ibrahim, Réda; Asgar, Anita; Poirier, Nancy; Mongeon, François-Pierre

Source: The Canadian journal of cardiology; Feb 2017; vol. 33 (no. 2); p. 253-259

Publication Type(s): Journal Article

Abstract:BACKGROUNDShone complex consists of a constellation of left-sided, usually obstructive, cardiac lesions, including supravalvar mitral ring, parachute mitral valve, subaortic stenosis, and aortic coarctation. Incomplete Shone complex consists of a mitral valve anomaly associated with lesions involving the subaortic region, aortic valve, or thoracic aorta. There is a paucity of data regarding long-term outcomes in adults with Shone complex.METHODSWe reviewed records of adults with complete or incomplete Shone complex followed at the Montreal Heart Institute between 1982 and 2014.RESULTSAmong 4189 adults with congenital heart disease, 28 (0.67%) patients (mean age, 35 ± 11 years; 50% women) had complete or incomplete Shone complex and were followed for a median of 8 years. Only 39% were previously diagnosed as having Shone complex. The most common defects were congenital mitral stenosis (93%), aortic coarctation (75%), and bicuspid aortic valve (71%). Heart transplantation was required in 2 patients (7.1%) at age 22 and 28 years, respectively. Overall, 48% had cardiovascular hospitalizations during adulthood, predominantly for arrhythmias or heart failure. Freedom from cardiovascular intervention was 55%, 18%, and 8% at 10, 20, and 30 years of age, respectively. Although aortic coarctation was the most common indication for initial intervention (61%), adult interventions occurred predominantly for aortic valve/left ventricular outflow tract (60%) and mitral valve (33%) lesions.CONCLUSIONSShone complex is an under-recognized entity associated with relatively low mortality in adulthood but substantial morbidity related to arrhythmias, heart failure, and interventions. Increased awareness of this condition and associated complications may allow for more tailored follow-up.

10. Prognostic Value of N-Terminal Pro-B-Type Natriuretic Peptide, Troponin-T, and Growth-Differentiation Factor 15 in Adult Congenital Heart Disease.

Author(s): Baggen, Vivan J M; van den Bosch, Annemien E; Eindhoven, Jannet A; Schut, Anne-Rose W; Cuypers, Judith A A E; Witsenburg, Maarten; de Waart, Monique; van Schaik, Ron H N; Zijlstra, Felix; Boersma, Eric; Roos-Hesselink, Jolien W

Source: Circulation; Jan 2017; vol. 135 (no. 3); p. 264-279

Publication Type(s): Journal Article

Abstract:BACKGROUNDThe number of patients with adult congenital heart disease (ACHD) is rapidly increasing. To optimize patient management, there is a great need to accurately identify high-risk patients. Still, no biomarker has been firmly established as a clinically useful prognostic tool in this group. We studied the association of N-terminal pro-B-type natriuretic peptide (NT-proBNP), high-sensitive troponin-T, and growth-differentiation factor 15 with cardiovascular events in ACHD.METHODSClinically stable patients with ACHD who routinely visited the outpatient clinic between April 2011 and April 2013 underwent clinical assessment, electrocardiography, echocardiography, and biomarker measurement (NT-proBNP, high-sensitive troponin-T, and growth-differentiation factor 15) at the time of study inclusion. Patients were prospectively followed for the occurrence of cardiovascular events (death, heart failure, hospitalization, arrhythmia, thromboembolic events, and reintervention). Survival curves were derived by the Kaplan-Meier method, and Cox regression was performed to investigate the relation between biomarkers and events with adjustment for multiple clinical and echocardiographic variables.RESULTSIn total, 595 patients were included (median age, 33 years; interquartile range, 25-41 years; 58% male; 90% New York Heart Association class I). Patients were followed during a median of 42 (interquartile range, 37-46) months. Of the 3 evaluated biomarkers, NT-proBNP in the upper quartile (>33.3 pmol/L) was most strongly associated with cardiovascular events (n=165, adjusted hazard ratio, 9.05 [3.24-25.3], P14 pmol/L), elevated high-sensitive troponin-T (>14 ng/L), and elevated growth-differentiation factor 15 (>1109 ng/L) identified those patients at highest risk of cardiovascular events (log-rank P<0.0001).CONCLUSIONSNT-proBNP provides prognostic information beyond a conventional risk marker model in patients with ACHD and can reliably exclude the risk of death and heart failure. Elevated levels of NT-proBNP, high-sensitive troponin-T, and growth-differentiation factor 15 identify patients at highest risk of cardiovascular events. These biomarkers therefore may play an important role in the monitoring and management of patients with ACHD.

11. Incidence, risk factors, and predictors of infective endocarditis in adult congenital heart disease: focus on the use of prosthetic material.

Author(s): Kuijpers, Joey M; Koolbergen, Dave R; Groenink, Maarten; Peels, Kathinka C H; Reichert, Constant L A; Post, Marco C; Bosker, Hans A; Wajon, Elly M C J; Zwinderman, Aeilko H; Mulder, Barbara J M; Bouma, Berto J

Source: European heart journal; Jan 2017

Publication Type(s): Journal Article

Abstract:AIMSAdult congenital heart disease (ACHD) predisposes to infective endocarditis (IE). Surgical advancements have changed the ACHD population, whereas associated prosthetic material may constitute additional IE targets. We aimed to prospectively determine contemporary incidence, risk factors, and predictors of IE in a nationwide ACHD cohort, focusing on the presence of prosthetics.METHODS AND RESULTSWe identified 14 224 patients prospectively followed in the CONCOR ACHD registry (50.5% female, median age 33.6years). IE incidence was determined using Poisson regression, risk factors and predictors using Cox regression. Overall incidence was 1.33 cases/1000 person-years (124 cases in 93 562 person-years). For risk-factor analysis, presence of prosthetics was forced-as separate time-updated variables for specific prosthetics-into a model with baseline characteristics univariably associated with IE. Valve-containing prosthetics were independently associated with greater risk both short- and long term after implantation [0-6 months: hazard ratio (HR) = 17.29; 7.34-40.70, 6-12 months: HR = 15.91; 6.76-37.45, beyond 12 months: HR = 5.26; 3.52-7.86], non-valve-containing prosthetics, including valve repair, only in the first 6 months after implantation (HR = 3.34; 1.33-8.41), not thereafter. A prediction model was derived and validated using bootstrapping techniques. Independent predictors of IE were baseline valve-containing prosthetics, main congenital heart defect, multiple defects, previous IE, and sex. The model had fair discriminative ability and provided accurate predictions up to 10 years.CONCLUSIONSThis study provides IE incidence estimates, and determinants of IE risk in a nationwide ACHD cohort. Our findings, essentially informing IE prevention guidelines, indicate valve-containing prosthetics as a main determinant of IE risk whereas other prosthetics, including valve-repair, are not associated with increased risk long term after implantation.

12. Acquired coronary artery disease in adult patients with congenital heart disease: a true or a false problem?

Author(s): Giamberti, Alessandro; Lo Rito, Mauro; Conforti, Erika; Varrica, Alessandro; Carminati, Mario; Frigiola, Alessandro; Menicanti, Lorenzo; Chessa, Massimo

Source: Journal of cardiovascular medicine (Hagerstown, Md.); Jan 2017

Publication Type(s): Journal Article

Abstract:BACKGROUNDThe population of adults with congenital heart disease (ACHD) is increasing and aging, and a large percentage of this population is now over 65 years of age. For this reason, it is probable that acquired coronary artery disease (CAD) will become an important issue that needs to be addressed also in these patients. We retrospectively analyzed all ACHD patients who underwent surgery in our Institution with the aim to investigate the incidence of associated CAD and the results of surgical treatment.METHODSFrom January 2000 to December 2015, a total of 1154 ACHD underwent surgery in our center. Fifty patients (4.3%) were diagnosed with acquired CAD and required coronary artery bypass grafting. The mean age at surgery was 66 years (range 41-78 years). The primary diagnosis were atrial septal defect (n=40 patients), Tetralogy of Fallot (n=4 patients), ventricular septal defect (n=2 patients), partial AV canal (n=1), partial anomalous pulmonary venous drainage (n=1), Ebstein's anomaly (n=1), and subaortic stenosis (n=1).RESULTSHospital mortality was 2% (one patient). During a mean follow-up of 9 years (maximum follow-up: 15 years), seven patients died (14%). The actuarial survival was 83% at 5 years and 77% at 10 years. Freedom from reoperation for coronary artery bypass grafting or percutaneous coronary intervention was 88% at 5 years and 82% at 10 years.CONCLUSIONAcquired CAD may coexist with congenital heart defects but the association is quite rare. It typically occurs later during adulthood and it is usually associated with atrial septal defect. Acquired CAD and congenital heart defects can be treated contemporarily with good early and late results.

13. Use of 3D models of congenital heart disease as an education tool for cardiac nurses.

Author(s): Biglino, Giovanni; Capelli, Claudio; Koniordou, Despina; Robertshaw, Di; Leaver, Lindsay-Kay; Schievano, Silvia; Taylor, Andrew M; Wray, Jo

Source: Congenital heart disease; Jan 2017; vol. 12 (no. 1); p. 113-118

Publication Type(s): Journal Article

Abstract:BACKGROUNDNurse education and training are key to providing congenital heart disease (CHD) patients with consistent high standards of care as well as enabling career progression. One approach for improving educational experience is the use of 3D patient-specific models.OBJECTIVESTo gather pilot data to assess the feasibility of using 3D models of CHD during a training course for cardiac nurses; to evaluate the potential of 3D models in this context, from the nurses' perspective; and to identify possible improvements to optimise their use for teaching.DESIGNA cross-sectional survey.SETTINGA national training week for cardiac nurses.PARTICIPANTSOne hundred cardiac nurses (of which 65 pediatric and 35 adult).METHODSNurses

were shown nine CHD models within the context of a specialized course, following a lecture on the process of making the models themselves, starting from medical imaging. Participants were asked about their general learning experience, if models were more/less informative than diagrams/drawings and lesion-specific/generic models, and their overall reaction to the models. Possible differences between adult and pediatric nurses were investigated. Written feedback was subjected to content analysis and quantitative data were analyzed using nonparametric statistics.RESULTSGenerally models were well liked and nurses considered them more informative than diagrams. Nurses found that 3D models helped in the appreciation of overall anatomy (86%), spatial orientation (70%), and anatomical complexity after treatment (66%). There was no statistically significant difference between adult and pediatric nurses' responses. Thematic analysis highlighted the need for further explanation, use of labels and use of colors to highlight the lesion of interest amongst improvements for optimizing 3D models for teaching/training purposes.CONCLUSION3D patient-specific models are useful tools for training adult and pediatric cardiac nurses and are particularly helpful for understanding CHD anatomy after repair.

14. Neurocognitive and executive functioning in adult survivors of congenital heart disease.

Author(s): Klouda, Leda; Franklin, Wayne J; Saraf, Anita; Parekh, Dhaval R; Schwartz, David D

Source: Congenital heart disease; Jan 2017; vol. 12 (no. 1); p. 91-98

Publication Type(s): Journal Article

Abstract:OBJECTIVECongenital heart disease (CHD) can affect the developing central nervous system, resulting in neurocognitive and behavioral deficits. Preoperative neurological abnormalities as well as sequelae of the open heart operations required to correct structural abnormalities of the heart contribute to these deficits. There are few studies examining the neurocognitive functioning of adults with CHD. This study sought to investigate multiple domains of neurocognitive functioning in adult survivors of CHD who had childhood cardiac surgery with either moderate or severe disease complexity.DESIGNA total of 48 adults (18-49 years of age) who had undergone cardiac surgery for CHD prior to five years of age participated in the study. CHD severity was classified as moderate or severe according to the 32nd Bethesda Guidelines. A computerized battery of standardized neurocognitive tests (CNS-Vital Signs), a validated rating scale of executive functioning, and demographic questionnaires were administered.RESULTSThere were no significant differences between the moderate CHD group and normative data on any cognitive measure. In contrast, the severe CHD group differed from norms in multiple domains: psychomotor speed, processing speed, complex attention, reaction time, and on the overall neurocognitive index. Number of surgeries was strongly related to worse executive functioning. There was no association between age at first surgery or time since last surgery and neuropsychological functioning. Number of surgeries was also unrelated to neurocognitive test performance.CONCLUSIONSPatients with severe CHD performed significantly worse on measures of processing speed, attention, and executive functioning. These findings may be useful in the long-term care of adults with congenital heart disease.

15. Long-Term Outcome of Patients with Perimembranous Ventricular Septal Defect: Results from the Belgian Registry on Adult Congenital Heart Disease.

Author(s): Gabriels, Charlien; De Backer, Julie; Pasquet, Agnes; Paelinck, Bernard P; Morissens, Marielle; Helsen, Frederik; Van De Bruaene, Alexander; Budts, Werner

Source: Cardiology; 2017; vol. 136 (no. 3); p. 147-155

Publication Type(s): Journal Article

Abstract:OBJECTIVESStudies evaluating the long-term outcome of adults with ventricular septal defect (VSD) are important to inform patients about prognosis. This study investigated the long-term outcome of patients with perimembranous VSD (pmVSD) followed in the Belgian Registry on Adult Congenital Heart Disease.METHODSAll pmVSD patients in the registry were analyzed.RESULTSTwo hundred and sixty-six patients were studied. Fifteen patients had Eisenmenger syndrome. One hundred and seventy-three had isolated pmVSD and 78 had pmVSD with concomitant lesions. Of the patients with isolated pmVSD, 52% were male, median age was 29 years (IQR 24-35 years) and median follow-up duration was 18 years (IQR 10-25 years). Fifty-three (31%) patients underwent VSD closure and 10 (19%) had a residual shunt. Most (93%) patients were in NYHA class I. No patients died. Two (4%) patients developed atrial arrhythmia and 2 (4%) required pacemaker implantation. Seven (14%) developed left ventricular outflow tract obstruction (LVOTO). In the unrepaired pmVSD group, 4 developed endocarditis. In the entire group, moderate or severe aortic regurgitation (AR) occurred in 9 (5%) patients.CONCLUSIONSLong-term survival in patients with isolated pmVSD was not uneventful. Moderate or severe AR might develop and endocarditis occurred in patients without VSD repair. Complications after VSD closure included atrial arrhythmia, pacemaker implantation and LVOTO.

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Journal of the American College of Cardiology

February 28 2017, Volume 69, Issue 8

Circulation

February 21 2017, Volume 135, Issue 8

European Heart Journal

February 21 2017, Volume 38, Issue 8

Exercise: Creating a search strategy

Scenario: A 64 year old obese male who has tried many ways to lose weight presents with a newspaper article about 'fat-blazer' (chitosan). He asks for your advice.

1. **What would your PICO format be?**

Population/problem	
Intervention/indicator	
Comparator	
Outcome	

2. **What would your research question be?**

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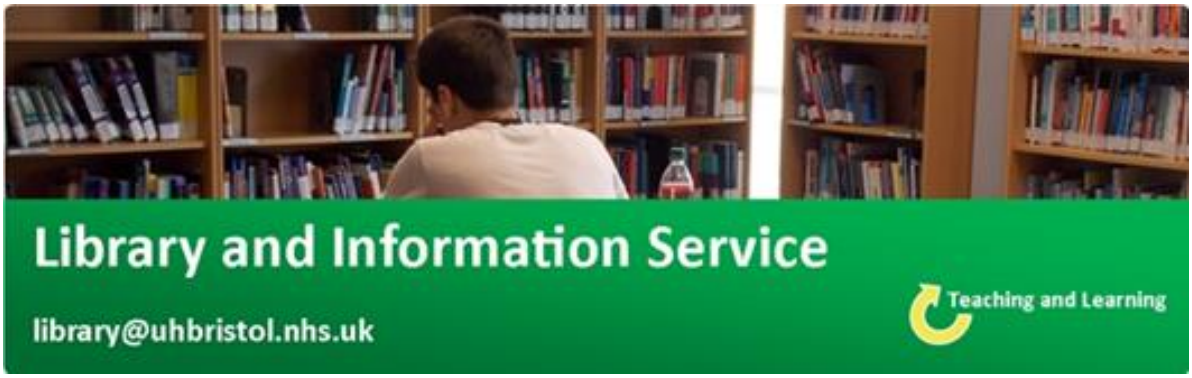
PICO: P = obese patients; I = chitosan; C = placebo; O = decrease weight
Research question: In obese patients, does chitosan, compared to a placebo, decrease weight?



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