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1. Association between markers of arterial stiffness and atrial fibrillation in the Circulatory Risk in Communities Study (CIRCS).

**Authors**
Cui, Renzhe; Yamagishi, Kazumasa; Muraki, Isao; Hayama-Terada, Mina; Umesawa, Mitsumasa; Imano, Hirronori; Li, Yuanying; Eshak, Ehab S; Ohira, Tetsuya; Kiyama, Masahiko; Okada, Takeo; Kitamura, Akihiko; Tanigawa, Takeshi; Iso, Hiroyasu; CIRCS investigators

**Source**
Atherosclerosis; Aug 2017; vol. 263; p. 244-248

**Abstract**
BACKGROUND AND AIMSLimited evidence is available on the association between markers of arterial stiffness and the prevalence of atrial fibrillation among Asian populations. Therefore, we examined those associations in the Japanese population.METHODSWe conducted a cross-sectional population-based study of 4264 men and women aged 40-79 years. The augmentation index (AI), a marker of arterial stiffness, was calculated as the ratio of central pulse pressure/brachial pulse pressure, where the AI and central aortic pressure were measured by an automated tonometer: the HEM-9000AI device (Omron Healthcare co., Kyoto, Japan). Atrial fibrillation was estimated by the Minnesota codes using resting electrocardiograph (ECG).RESULTSThe prevalence of atrial fibrillation and total arrhythmia were higher with larger AI values. These associations did not change after adjustment for known cardiovascular risk factors. The multivariable odd ratios (95% confidence intervals) in the highest versus lowest tertiles of AI were 3.4 (1.4-8.6, p for trend \(=\) 0.008) for atrial fibrillation and 1.8 (1.2-2.7, p for trend \(=\) 0.004) for total arrhythmia. There was no association of central or brachial pulse pressure levels with the prevalence of atrial fibrillation or total arrhythmia.CONCLUSIONSAI values, but not brachial or central pulse pressures, were positively associated with the prevalence of atrial fibrillation and total arrhythmia, independent of cardiovascular risk factors.

2. Atrial arrhythmia after transcatheter closure of secundum atrial septal defects in patients ≥40 years of age.

**Authors**
Duong, Phuoc; Ferguson, Lee Patrick; Lord, Stephen; Murray, Stephen; Shepherd, Ewen; Bourke, John Pius; Crossland, David; O’Sullivan, John

**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; Aug 2017; vol. 19 (no. 8); p. 1322-1326

**Abstract**
AimData on arrhythmia outcome following device closure of atrial septal defect (ASD) are lacking. This study provides medium-term follow-up data on atrial arrhythmias in patients who were ≥40 years of age at the time of transcatheter ASD closure.Methods and resultsIt is a retrospective review. Mean age of the 159 patients was 57 years. Median follow-up was 3.6 years (range 6 months-10.9 years). Patients were classified, according to arrhythmia status prior to ASD closure, into Group I, no history of atrial arrhythmia (n = 119, mean age 55.5 years); Group II, paroxysmal atrial arrhythmia (n = 18, mean age 55.7 years); and Group III, persistent atrial fibrillation (n = 22, mean age 65.7 years). Group III patients were significantly older, had larger left atrial size, and had higher mean pulmonary arterial pressure than Group I and II patients (P < 0.001). Prior to closure, radiofrequency ablation was carried out in 12/18 (66%) of Group II and 3/22 (14%) of Group III. After device closure, 7 patients (6%) of Group I developed new atrial fibrillation. Fifty per cent (9/18) of Group II but only 9% (2/22) of Group III were in sinus rhythm on follow-up.ConclusionDevice closure alone in patients with persistent atrial arrhythmia is not likely to restore sinus rhythm in the medium term. New atrial arrhythmia occurred in 6% of patients who were in sinus rhythm prior to device closure. At least 50% of the patients with paroxysmal atrial arrhythmia continue to have significant atrial arrhythmia following device closure, and the role of ablation prior to closure in patients with a history of atrial fibrillation requires refinement.

3. Adverse outcomes in patients with atrial fibrillation and peripheral arterial disease: a report from the EURObservational research programme pilot survey on atrial fibrillation.

**Authors**
Proietti, Marco; Raparelli, Valeria; Laroche, Cécile; Dan, Georgeh-Andrei; Janion, Marianna; Popescu, Raluca; Sinagra, Gianfranco; Vijgen, Johan; Boriani, Giuseppe; Maggioni, Aldo P; Tavazzi, Luigi; Lip, Gregory Y H; EORP-AF Gen Pilot Investigators

**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; Sep 2017; vol. 19 (no. 9); p. 1439-1448
Aims Peripheral arterial disease (PAD) is highly prevalent in general population. Data on the prevalence of symptomatic PAD in patients with atrial fibrillation (AF) are limited, and the impact of PAD on adverse outcomes in AF patients is controversial. Our aims were: (i) to define the prevalence of symptomatic PAD in European AF patients and describe its associated clinical risk factors and (ii) to establish the relationship of PAD to adverse events in AF, especially all-cause death. Methods and results Atrial fibrillation patients enrolled in the EORP-AF Pilot study with data about PAD status were included in this analysis. Event rates were determined at 1-year follow-up. Peripheral arterial disease was recorded in 328 (11%) patients. Age ($P < 0.0001$), hypertension ($P = 0.0059$), diabetes mellitus ($P = 0.0001$), chronic heart failure ($P < 0.0001$), previous stroke/transient ischaemic attack ($P = 0.0060$), and antiplatelet drug treatment ($P = 0.0001$) were associated with the presence of PAD, while female gender was inversely associated ($P = 0.0002$). Peripheral arterial disease patients had higher absolute rates of both cardiovascular (CV) and all-cause death (both $P < 0.0001$). On Kaplan-Meier analysis, risk of all-cause death was higher in PAD patients compared with those without PAD ($P < 0.0001$), but PAD did not emerge as an independent risk factor for mortality on Cox regression analysis. A lower risk of all-cause death was associated with the prescription of statins ($P = 0.0019$), angiotensin-converting enzyme inhibitors ($P = 0.0008$), and calcium-channel blockers ($P = 0.0071$). Conclusion Peripheral arterial disease is prevalent in 11% of AF patients and related to various atherosclerotic risk factors. Even if PAD is associated with higher risk of all-cause death on univariate analysis, this risk was significantly lowered and was no longer evident after adjusting for the use of CV prevention drugs.


**Authors** Lakhal, Karim; Martin, Maëlle; Ehrmann, Stephan; Faiz, Sofian; Rozec, Bertrand; Boulain, Thierry

**Source** Journal of clinical monitoring and computing; Sep 2017

**Publication Date** Sep 2017

**Publication Type(s)** Journal Article

**PubMedID** 28956256

**Database** Medline

**Abstract** Arrhythmia-induced beat-to-beat variability of blood pressure (BP) is deemed to hinder the reliability of non-invasive oscillometric measurements (NIBP) but few data support this belief. We assessed the impact of arrhythmia on a NIBP device never tested for this purpose. We compared, in intensive care unit patients with and without arrhythmia, the agreement between three pairs of NIBP (Infinity™ Delta monitor, Dräger medical systems) and invasive readings. For systolic, diastolic and mean BP, the mean bias between NIBP and invasive measurements was not higher, in 89 patients with arrhythmia, than that observed in 127 patients with regular rhythm ($p = 0.93$ for mean BP). Averaging three measurements overcame the higher within-subject variability of NIBP measurements during arrhythmia, and yielded similar agreement between the two techniques in patients with arrhythmia and with regular rhythm. The international organization for standardization criteria (mean bias $< 5$ and SD $< 8$ mmHg) were satisfied neither during arrhythmia nor during regular rhythm: for mean BP, mean bias of $-8.0 \pm 6.5$ and $-7.5 \pm 6.1$ mmHg, respectively. The detection of hypotension (systolic invasive BP $< 90$ mmHg or mean invasive BP $< 65$ mmHg) or hypertension (systolic invasive BP $> 140$ mmHg) by NIBP was similar during arrhythmia and regular rhythm [areas under the receiver operating characteristic curves (AUCROC) of 0.88-0.92, $p > 0.13$]. The detection of a 10% increase in mean invasive BP after cardiovascular intervention was also associated with similar AUCROC's between the two groups. Provided that triplicates are averaged, the agreement between NIBP measured with the tested device and invasive measurements was not worse during arrhythmia than during regular rhythm.

5. Acute Cardiac MRI Assessment of Radiofrequency Ablation Lesions for Pediatric Ventricular Arrhythmia: Feasibility and Clinical Correlation.

**Authors** Grant, Elena K; Berul, Charles I; Cross, Russell R; Moak, Jeffrey P; Hamann, Karin S; Sumihara, Kohei; Cronin, Ileen; O'Brien, Kendall J; Ratnayaka, Kanishka; Hansen, Michael S; Kellman, Peter; Olivieri, Laura J

**Source** Journal of cardiovascular electrophysiology; May 2017; vol. 28 (no. 5); p. 517-522

**Publication Date** May 2017

**Publication Type(s)** Journal Article

**PubMedID** 28245348

**Database** Medline
BACKGROUNDArrhythmia ablation with current techniques is not universally successful. Inadequate ablation lesion formation may be responsible for some arrhythmia recurrences. Periprocedural visualization of ablation lesions may identify inadequate lesions and gaps to guide further ablation and reduce risk of arrhythmia recurrence. METHODSThis feasibility study assessed acute postprocedure ablation lesions by MRI, and correlated these findings with clinical outcomes. Ten pediatric patients who underwent ventricular tachycardia ablation were transferred immediately postablation to a 1.5T MRI scanner and late gadolinium enhancement (LGE) imaging was performed to characterize ablation lesions. Immediate and mid-term arrhythmia recurrences were assessed. RESULTSPatient characteristics include median age 14 years (1-18 years), median weight 52 kg (11-81 kg), normal cardiac anatomy (n = 6), d-transposition of great arteries post arterial switch repair (n = 2), anomalous coronary artery origin post repair (n = 1), and cardiac rhabdomyoma (n = 1). All patients underwent radiofrequency catheter ablation of ventricular arrhythmia with acute procedural success. LGE was identified at the reported ablation site in 9/10 patients, all arrhythmia-free at median 7 months follow-up. LGE was not visible in 1 patient who had recurrence of frequent premature ventricular contractions within 2 hours, confirmed on Holter at 1 and 21 months post procedure. CONCLUSIONSVentricular ablation lesion visibility by MRI in the acute post procedure setting is feasible. Lesions identifiable with MRI may correlate with clinical outcomes. Acute MRI identification of gaps or inadequate lesions may provide the unique temporal opportunity for additional ablation therapy to decrease arrhythmia recurrence.


Authors: van Hulst, Marinus; St Stefanovic, Jelena; Jacobs, Maartje S; Tieleman, Robert G; Kappelhoff, Bregt; Postma, Maarten J
Source: Journal of medical economics; Sep 2017; p. 1-9
Abstract: Dabigatran was cost saving compared to VKAs. A total of 4,552 QALYs were gained, and €13,892,288 was saved in a cohort of 10,000 patients. Annual costs of VKA control exceeded €159 per person, or dabigatran costs were below €2.81 per day. CONCLUSION Dabigatran was cost saving compared to VKAs for the prevention of arterial thromboembolism in patients with non-valvular AF in the Netherlands. This result appeared robust in the sensitivity analysis. Furthermore, volume based reduction of the price in the Netherlands will further increase the monetary benefits of dabigatran.

7. Intraoperative management of critical arrhythmia.

Authors: Kwon, Chang Hee; Kim, Seong-Hyop
Source: Korean journal of anesthesiology; Apr 2017; vol. 70 (no. 2); p. 120-126
Abstract: The incidence of intraoperative arrhythmia is extremely high, and some arrhythmias require clinical attention. Therefore, it is essential for the anesthesiologist to evaluate risk factors for arrhythmia and understand their etiology, electrophysiology, diagnosis, and treatment. Anesthetic agents reportedly affect normal cardiac electrical activity. In the normal cardiac cycle, the sinoatrial node initiates cardiac electrical activity through intrinsic autonomous pacemaker activity. Sequential atrial and ventricular contractions result in an effective cardiac pumping mechanism. Arrhythmia occurs due to various causes, and the cardiac pumping mechanism may be affected. A severe case may result in hemodynamic instability. In this situation, the anesthesiologist should eliminate the possible causes of arrhythmia and manage the condition, creating hemodynamic stability under proper electrophysiologic monitoring.

8. Patient characteristics associated with false arrhythmia alarms in intensive care.
A score for paroxysmal atrial fibrillation in acute ischemic stroke.

**Authors**
Naess, Halvor; Andreassen, Ulrike W; Thomassen, Lars; Kvistad, Christopher E

**Source**

**Publication Date**
Jan 2017

**Abstract**
Aim Many patients with ischemic stroke have paroxysmal atrial fibrillation that may be difficult to detect. We sought to identify markers of paroxysmal atrial fibrillation and construct a score that may help the clinician to select patients for anticoagulation even if investigations do not disclose atrial fibrillation. Methods A group of patients with acute ischemic stroke and TIA and documented paroxysmal atrial fibrillation was compared to a group of patients with ischemic stroke and TIA and no known paroxysmal atrial fibrillation and sinus rhythm on Holter monitoring. Clinical features, blood tests, ECG, and MRA findings were compared. Sensitivity and specificity of significant markers for paroxysmal atrial fibrillation were calculated. A simple score based on independent markers for paroxysmal atrial fibrillation was constructed. Results Out of 3480 patients with TIA or ischemic stroke, 237 (19%) had paroxysmal atrial fibrillation and 1002 (81%) had sinus rhythm. On univariate analyses, significant markers for paroxysmal atrial fibrillation included increasing age, females, prior ischemic stroke, myocardial infarction, other heart diseases, pathologic troponin, embolic stroke and stroke in different arterial territories (all P < .01). A score including age dichotomized at 75 years, cardiac disease and troponin was constructed. Conclusion We identified many markers for paroxysmal atrial fibrillation and constructed a score that may help the clinician to select patients for anticoagulation even if investigations do not disclose paroxysmal atrial fibrillation.

**Authors**  
Zhang, Qiang; Chen, Xianxiang; Fang, Zhen; Zhan, Qingyuan; Yang, Ting; Xia, Shanhong

**Source**  
Physiological measurement; Feb 2017; vol. 38 (no. 2); p. 259-271

**Publication Date**  
Feb 2017

**Publication Type(s)**  
Journal Article

**PubMedID**  
28099159

**Database**  
Medline

**Abstract**  
To lessen the rate of false critical arrhythmia alarms, we used robust heart rate estimation and cost-sensitive support vector machines. The PhysioNet MIMIC II database and the 2015 PhysioNet/CinC Challenge public database were used as the training dataset; the 2015 Challenge hidden dataset was for testing. Each record had an alarm labeled with asystole, extreme bradycardia, extreme tachycardia, ventricular tachycardia or ventricular flutter/fibrillation. Before alarm onsets, 300 s multimodal data was provided, including electrocardiogram, arterial blood pressure and/or photoplethysmogram. A signal quality modified Kalman filter achieved robust heart rate estimation. Based on this, we extracted heart rate variability features and statistical ECG features. Next, we applied a genetic algorithm (GA) to select the optimal feature combination. Finally, considering the high cost of classifying a true arrhythmia as false, we selected cost-sensitive support vector machines (CSSVMs) to classify alarms. Evaluation on the test dataset showed the overall true positive rate was 95%, and the true negative rate was 85%.

11. Arrhythmia Surgery for Adults with Congenital Heart Disease.

**Authors**  
Deal, Barbara J; Mavroudis, Constantine

**Source**  
Cardiac electrophysiology clinics; Jun 2017; vol. 9 (no. 2); p. 329-340

**Publication Date**  
Jun 2017

**Publication Type(s)**  
Journal Article Review

**PubMedID**  
28457246

**Database**  
Medline

**Abstract**  
Patients with repaired or unrepaired congenital heart anomalies are at increased risk for arrhythmia development throughout their lives, often paralleling the need for reoperations for hemodynamic residua. The ability to incorporate arrhythmia surgery into reoperations can result in improvement in functional class and decreased need for antiarrhythmic medications. Every reoperation for congenital heart disease can be viewed as an opportunity to assess the electrical and arrhythmia substrates and to intervene to improve the arrhythmias and the hemodynamic condition of the patient. The authors review and summarize the operative techniques for arrhythmia surgery that are based on the arrhythmia mechanisms.

12. Use of azithromycin and risk of ventricular arrhythmia.

**Authors**  
Trifirò, Gianluca; de Ridder, Maria; Sultana, Janet; Oteri, Alessandro; Rijnbeek, Peter; Pecchioli, Serena; Mazzaglia, Giampiero; Bezem, Irene; Garbe, Edeltraut; Schink, Tania; Poluzzi, Elisabetta; Freslev, Trine; Molokhia, Mariam; Diemberger, Igor; Sturkenboom, Miriam C J M

**Source**  
CMAJ : Canadian Medical Association journal = journal de l'Association medicale canadienne; Apr 2017; vol. 189 (no. 15); p. E560

**Publication Date**  
Apr 2017

**Publication Type(s)**  
Journal Article

**PubMedID**  
28420680

**Database**  
Medline

**Abstract**  
Available at CMAJ : Canadian Medical Association journal = journal de l'Association medicale canadienne from Europe PubMed Central - Open Access

Available at ProQuest (Hospital Premium Collection) - NHS Version
Abstract

BACKGROUND
There are conflicting findings from observational studies of the arrhythmogenic potential of azithromycin. Our aim was to quantify the association between azithromycin use and the risk of ventricular arrhythmia.

METHODS
We conducted a nested case-control study within a cohort of new antibiotic users identified from a network of 7 population-based health care databases in Denmark, Germany, Italy, the Netherlands and the United Kingdom for the period 1997-2010. Up to 100 controls per case were selected and matched by age, sex and database. Recency of antibiotic use and type of drug (azithromycin was the exposure of interest) at the index date (occurrence of ventricular arrhythmia) were identified. We estimated the odds of ventricular arrhythmia associated with current azithromycin use relative to current amoxicillin use or nonuse of antibiotics (≥ 365 d without antibiotic exposure) using conditional logistic regression, adjusting for confounders.

RESULTS
We identified 14 040 688 new antibiotic users who met the inclusion criteria. Ventricular arrhythmia developed in 12 874, of whom 30 were current azithromycin users. The mean age of the cases and controls was 63 years, and two-thirds were male. In the pooled data analyses across databases, azithromycin use was associated with an increased risk of ventricular arrhythmia relative to nonuse of antibiotics (adjusted odds ratio [OR] 1.97, 95% confidence interval [CI] 1.35-2.86). This increased risk disappeared when current amoxicillin use was the comparator (adjusted OR 0.90, 95% CI 0.48-1.71). Database-specific estimates and meta-analysis confirmed results from the pooled data analysis.

INTERPRETATION
Current azithromycin use was associated with an increased risk of ventricular arrhythmia when compared with nonuse of antibiotics, but not when compared with current amoxicillin use. The decreased risk with an active comparator suggests significant confounding by indication.

13. Auscultatory versus oscillometric blood pressure measurement in patients with atrial fibrillation and arterial hypertension.

Authors
Šelmytė-Besusparė, Alėtė; Barysienė, Jūratė; Petrikonytė, Dovilė; Aidietis, Audrius; Marinskis, Germanas; Laucevičius, Aleksandras

Source
BMC cardiovascular disorders; Mar 2017; vol. 17 (no. 1); p. 87

Publication Date
Mar 2017

Publication Type(s)
Comparative Study Journal Article

PubMedID
28335730

Database
Medline

Available at BMC cardiovascular disorders from BioMed Central - Open Access

Abstract

BACKGROUND
The aim of our study was to investigate the reliability of automated oscillometric blood pressure (BP) monitoring in the presence and absence of atrial fibrillation (AF) in hypertensive patients.

METHODS
BP was measured and compared in 71 randomly selected patients with AF and arterial hypertension diagnosis, 4 times each by auscultatory and oscillometric (Microlife BP A6 PC with AF detection system) methods.

RESULTS
Study included 71 patients: 36 males (mean age 67.4 years) and 35 females (70.2 years). At the time of BP measuring procedure, 36 patients were in sinus rhythm (SR) and 35 in AF. In SR patients mean systolic blood pressure (SBP) was 132 ± 17.9 mmHg with auscultatory method (AM), 137.4 ± 19.4 mmHg with oscillometric method (OM); mean diastolic BP was 77.1 ± 10.9 mmHg (AM), 78.5 ± 12.2 mmHg (OM), in AF patients mean SBP was 127.5 ± 15.1 mmHg (AM), 133.6 ± 17.4 mmHg (OM); mean diastolic BP was 81.4 ± 9.9 mmHg (AM), 83.5 ± 11.8 mmHg (OM), p = 0.037. The averages of differences for SBP and DBP in sinus rhythm group were (-5.3 mmHg (95% limits of agreement -27.2 - 16.6)) and (-1.4 mmHg (95% limits of agreement -12.8 - 10.0)), respectively. In patients with AF the averages of differences for SBP and DBP were (-6.1 mmHg (95% limits of agreement -23.9 - 11.7)) and (-2.1 mmHg (95% limits of agreement -12.9 - 8.7)), respectively.

CONCLUSION
The oscillometric device validated for patients with AF on average gives 5.3 mmHg higher systolic BP values for patients with SR and 6.3 mmHg higher BP values for patients with AF. However, the limits of agreement between two methods reveal wide range of random error rates which is a questionable topic in clinical practice, as it could possibly affect the treatment of arterial hypertension in patients with AF.


Authors
Mohammazadeh, Alireza; Towfighi, Farshad; Jafari, Naser

Source
ANZ journal of surgery; May 2017

Publication Date
May 2017

Publication Type(s)
Journal Article

PubMedID
28544600

Database
Medline
BACKGROUND Cardiac arrhythmia after coronary artery bypass grafting (CABG) surgery is a common complication of cardiac surgery. The effect of serum magnesium, hypomagnesaemia treatment and prophylactic administration of magnesium in the development and prevention of arrhythmias is controversial and there are many different ideas. This study evaluates the therapeutic effects of magnesium in cardiac arrhythmia after CABG surgery.

METHODS The clinical trial enrolled 250 patients who underwent CABG. Based on the initial serum levels of magnesium, patients were divided into two groups: hypomagnesemia and normomagnesemia. Based on bioethics committee requirements, patients in the hypo-magnesium group received magnesium treatments until they attained normal magnesium blood levels. Both groups underwent CABG with normal blood levels of magnesium. After surgery, each group was randomly divided into two subgroups: one subgroup received a bolus dose of magnesium sulphate (30 mg/kg in 5 min) and the other subgroup received a placebo. Subgroups were under observation in the intensive care unit for 3 days and arrhythmias were recorded. Data from all four subgroups were analysed statistically and interpreted.

RESULTS The results of this study showed that the occurrence of arrhythmia was not significantly different among subgroups (P > 0.05). There was no significant relationship between blood levels of magnesium and arrhythmia during the 3 days post-surgery (P > 0.05).

CONCLUSION The results of this study showed that magnesium sulphate administration did not significantly improve the incidence of arrhythmias in hypo- and normo-magnesium patients after CABG. There was no significant correlation between post-operative serum levels of magnesium and arrhythmia during 3 days.

15. Smartphone-based arrhythmia monitoring.
Authors Garabelli, Paul; Stavrakis, Stavros; Po, Sunny
Source Current opinion in cardiology; Jan 2017; vol. 32 (no. 1); p. 53-57
Publication Date Jan 2017
Publication Type(s) Journal Article
PubMedID 27875477
Database Medline
Abstract The use of smartphones for arrhythmia monitoring is another leap for ECG utilization and arrhythmia detection - effectively taking the technology to any smartphone user. Smart wearable technology, while very common, is limited mostly to activity tracking and exercise motivation. Rhythm strip generating smartphone products (Kardia Mobile by AliveCor and ECG Check by Cardiac Designs) are more powerful at arrhythmia detection than wearable monitors. These products, which have been studied in a variety of situations, rely on an external device with metal sensors to create a rhythm strip, which is usually Lead I. A different subset of smartphone products use photoplethysmography through a phone camera and light to detect atrial fibrillation. Together, these products are creating a paradigm shift in rhythm detection and monitoring.

16. Frequency of arrhythmia symptoms and acceptability of implantable cardiac monitors in Hemodialysis patients.
Authors El Hage, Naya; Jaar, Bernard G; Cheng, Alan; Knight, Chloe; Blasco-Colmenares, Elena; Gimenez, Luis; Guallar, Eliseo; Shafi, Tariq
Source BMC nephrology; Oct 2017; vol. 18 (no. 1); p. 309
Publication Date Oct 2017
Publication Type(s) Journal Article
PubMedID 29017465
Database Medline
Available at BMC nephrology from BioMed Central
Available at BMC nephrology from Europe PubMed Central - Open Access
BACKGROUND Arrhythmia-related complications and sudden death are common in dialysis patients. However, routine cardiac monitoring has so far not been feasible. Miniaturization of implantable cardiac monitors offers a new paradigm for detection and management of arrhythmias in dialysis patients. The goal of our study was to determine the frequency of arrhythmia-related symptoms in hemodialysis patients and to assess their willingness to undergo implantation of a cardiac monitor.

METHODS We conducted a survey of in-center hemodialysis patients at a hemodialysis clinic in Baltimore, Maryland. We assessed the frequency of arrhythmia-related symptoms and willingness to undergo placement of an implantable cardiac monitor (LINQ, Medtronic Inc.).

RESULTS Forty-six patients completed the survey. The mean age of the survey respondents was 59 years and 65% were male. Symptoms were common with 74% (n = 34) of participants reporting at least one arrhythmia-related symptom and many (22% (n = 10)) had all 3 symptoms. Among the patients with symptoms, 57% (n = 26) reported “heart skipping beats, flopping in chest or beating very hard,” 61% (n = 28) reported “heart racing (palpitations),” and 37% (n = 17) reported feeling that they “passed out or almost passed out.” The majority of the patients felt that the timing of the symptoms was unrelated to dialysis treatments. The acceptability of the monitoring device implementation was high, with 59% (n = 20) of patients with symptoms and 50% (n = 6) of patients without symptoms willing to consider it. The main reason for not considering the device was not wanting to have an implanted device.

CONCLUSION The prevalence of arrhythmia-related symptoms is high in hemodialysis patients and the majority would consider an implantable cardiac monitor if recommended by their physicians. Routine implantation of cardiac monitoring devices to manage arrhythmias in dialysis patients may be feasible and will provide further insights on the leading causes of morbidity and mortality in dialysis patients.

17. Aging-related mitochondrial dysfunction facilitates the occurrence of serious arrhythmia after myocardial infarction.

Authors: Stöckigt, Florian; Beiert, Thomas; Knappe, Vincent; Baris, Olivier R; Wiesner, Rudolf J; Clemen, Christoph S; Nickenig, Georg; Andréi, René P; Schrickel, Jan W

Source: Biochemical and biophysical research communications; Nov 2017; vol. 493 (no. 1); p. 604-610

Abstract: During aging a mosaic of normal cells and cells with mitochondrial deficiency develops in various tissues including the heart. Whether this contributes to higher susceptibility for arrhythmia following myocardial infarction (MI) is unknown. METHODS AND RESULTS: Myocardial cryoinfarction was performed in 12-month-old transgenic mice with accelerated accumulation of deletions in mitochondrial DNA. Occurrence and pathogenesis of arrhythmia was investigated after two weeks. Holter-ECG recordings revealed higher rates of premature ventricular complexes (incidence > 10/24 h: 100% vs. 20%; p = 0.048) and more severe spontaneous arrhythmia during stress test in mutant mice with MI as compared to control mice with MI. Mice with mitochondrial dysfunction exhibited longer spontaneous AV-blocks (467 ± 26 ms vs. 377 ± 24 ms; p = 0.013), an increased probability for induction of ventricular tachycardia during in vivo electrophysiological investigation (22% vs. 9%; p = 0.044), and a reduced conduction velocity in the infarct borderzone (38.5 ± 0.5 cm/s vs. 55.3 ± 0.9 cm/s; p = 0.001). Furthermore, mutant mice exhibited a significant reduction of the phospho-Cx43/Cx43 ratio in right (0.59 ± 0.04 vs. 0.85 ± 0.01; p = 0.027) and left ventricular myocardium (0.72 ± 0.01 vs. 0.86 ± 0.02; p = 0.023). CONCLUSION: Aging-related cardiac mosaic respiratory chain dysfunction facilitates the occurrence of spontaneous and inducible cardiac arrhythmia after myocardial infarction and is associated with slowing of electrical impulse propagation in the infarct borderzone.

18. Cardiac hemangioma caused ventricular arrhythmia: A rare case and literature review.

Authors: Wang, Yanqiu; Liu, Shuang; Yang, Jun; Gu, Tianxiang; Zhang, Limin

Source: Journal of electrocardiology; 2017; vol. 50 (no. 5); p. 667-670

Abstract: Cardiac hemangioma is a rare primary cardiac tumor. We reported the case of a patient with left ventricular hemangioma who was referred to our hospital complaining of palpitation for one week. 24 h Holter revealed high episode of ventricular arrhythmia. Echocardiography showed a mass at left ventricle, which was also confirmed by MRI. The mass was successfully resected and postoperative pathology confirmed cardiac capillary hemangioma. The patient recovered well with no cardiac arrhythmia after surgery over 12 months of follow-up.


Authors: Vasichkina, Elena; Poghosyan, Hermine; Mitrofanova, Lubov; Tatarky, Roman; Lebedev, Dmitry

Source: Cardiology in the young; Apr 2017; vol. 27 (no. 3); p. 435-442
Purpose
This study aimed to assess the results of endomyocardial biopsy from the right ventricle to establish the possible cause for drug-refractory arrhythmias in children. Materials and methods
We enrolled 19 consecutive young patients with drug-refractory arrhythmia, from 2010 to 2013, who underwent endomyocardial biopsy. Inclusion criteria were as follows: age < 18 years with a structurally normal heart or mild changes in a structure of the heart initially diagnosed as arrhythmia-induced cardiomyopathy. Overall, 86 biopsies were performed in 19 patients. Histopathological analysis, immunohistochemistry, and polymerase chain reaction were used for the interpretation of the endomyocardial biopsy.

RESULTS
The mean age of the patient population was 14.1 ± 2.9 year (range from 7 to 17 years). All these patients had a history of drug-refractory arrhythmia for > 5 months (mean 30 months). Patients underwent a complete history investigation, physical examination, laboratory studies, echocardiography, electrocardiography, treadmill test, and Holter monitoring before endomyocardial biopsy; two patients with arrhythmogenic right ventricular dysplasia had implantable cardioverter defibrillator implantation and further appropriate successful device shocks. Myocarditis was diagnosed based on histopathological and immunohistological analyses in nine (47.4%) patients. Polymerase chain reaction was positive for viral genome in four of them; five patients had active myocarditis. Radiofrequency ablation was performed in 17 patients; five out of six (83%) endomyocardial biopsy-proved myocarditis patients had successful radiofrequency ablation. No significant complication was reported during ablation and endomyocardial biopsy.

CONCLUSIONS
Approximately half of the children with drug-refractory arrhythmia had unsuspected myocarditis according to the results of the endomyocardial biopsy.
### Abstract
Heart failure (HF) treatment remains complex and challenging, with current recommendations aiming at consideration and treatment of comorbidities in patients with HF. Sleep-disordered breathing (SDB) and arrhythmia come into play, as both are associated with quality of life deterioration, and morbidity and mortality increase in patients with HF. Interactions of these diseases are versatile and may appear transparent in daily practice. Nevertheless, because of their importance for patients’ condition and prognosis, SDB and arrhythmia individually, but also through interaction on one another, necessitate attention, following the fact that treatment is requested and desired considering latest research findings and outcomes.

### 23. Role of abnormal repolarization in the mechanism of cardiac arrhythmia.

**Authors**
Osadchii, O E

**Source**
Acta physiologica (Oxford, England); Jul 2017; vol. 220

**Publication Date**
Jul 2017

**Publication Type(s)**
Journal Article

**PubMedID**
28707396

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**Abstract**
In cardiac patients, life-threatening tachyarrhythmia is often precipitated by abnormal changes in ventricular repolarization and refractoriness. Repolarization abnormalities typically evolve as a consequence of impaired function of outward K+ currents in cardiac myocytes, which may be caused by genetic defects or result from various acquired pathophysiological conditions, including electrical remodelling in cardiac disease, ion channel modulation by clinically used pharmacological agents, and systemic electrolyte disorders seen in heart failure, such as hypokalaemia. Cardiac electrical instability attributed to abnormal repolarization relies on the complex interplay between a provocative arrhythmic trigger and vulnerable arrhythmic substrate, with a central role played by the excessive prolongation of ventricular action potential duration, impaire intracellular Ca2+ handling, and slowed impulse conduction. This review outlines the electrical activity of ventricular myocytes in normal conditions and cardiac disease, describes classical electrophysiological mechanisms of cardiac arrhythmia, and provides an update on repolarization-related surrogates currently used to assess arrhythmic propensity, including spatial dispersion of repolarization, activation-repolarization coupling, electrical restitution, TRIaD (triangulation, reverse use dependence, instability, and dispersion), and the electromechanical window. This is followed by a discussion of the mechanisms that account for the dependence of arrhythmic vulnerability on the location of the ventricular pacing site. Finally, the review clarifies the electrophysiological basis for cardiac arrhythmia produced by hypokalaemia, and gives insight into the clinical importance and pathophysiology of drug-induced arrhythmia, with particular focus on class Ia (quinidine, procainamide) and Ic (flecainide) Na+ channel blockers, and class III antiarrhythmic agents that block the delayed rectifier K+ channel (dofetilide).

### 24. Clinical scores for outcomes of rhythm control or arrhythmia progression in patients with atrial fibrillation: a systematic review.

**Authors**
Deng, Hai; Bai, Ying; Shantsila, Alena; Fauchier, Laurent; Potpara, Tatjana S; Lip, Gregory Y H

**Source**
Clinical research in cardiology : official journal of the German Cardiac Society; May 2017

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Journal Article

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Medline

**Abstract**
Patients with atrial fibrillation (AF) are commonly managed with rhythm control strategy, but the natural history of this common arrhythmia leads itself to progression from paroxysmal to persistent or permanent AF, and recurrences are evident despite rhythm control treatments using cardioversion or catheter ablation. Numerous clinical factors have been associated with outcomes of rhythm control or arrhythmia progression in patients with AF. The more common factors have been used to formulate risk stratification scores, to help predict the outcomes of rhythm control treatments or AF progression. This review article provides an overview on the published clinical risk scores related to outcomes of rhythm control strategy or AF progression.

### 25. Family history of atrial fibrillation as a predictor of atrial substrate and arrhythmia recurrence in patients undergoing atrial fibrillation catheter ablation.

**Authors**
Kapur, Sunil; Kumar, Saurabh; John, Roy M; Stevenson, William G; Tedrow, Usha B; Koplan, Bruce A; Epstein, Laurence M; MacRae, Calum A; Michaud, Gregory F

**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; May 2017

**Publication Date**
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Journal Article

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28541417

**Database**
Medline
Abstract

Aims A commonly held notion is that patients with a family history of atrial fibrillation (AF) have worse atrial substrate and higher rates of arrhythmia recurrence following ablation. We sought to examine differences in atrial substrate and catheter ablation outcomes in patients with a 1st degree family member with paroxysmal or persistent AF (PeAF) compared to those without. Methods and results A total of 256 consecutive patients undergoing their 1st ablation for AF (123 paroxysmal, 133 persistent) with >1 year follow up were included. The presence of one 1st-degree family relative was defined as a ‘positive family history’. Clinical characteristics, electroanatomic map findings, ablation characteristics and outcomes were compared in patients with and without a positive family history of AF. Patients with paroxysmal fibrillation with a positive family history (n=57; 46%) had similar clinical characteristics and arrhythmia recurrence after catheter ablation as those without. Of those that recurred, patients with a positive family history were more likely to have progressed to PeAF (P = 0.05). Patients with PeAF with a positive family history (n=75; 56%) had similar clinical characteristics, electroanatomic mapping findings and ablation characteristics, but worse long term arrhythmia free survival (P = 0.04). Conclusion The presence of a 1st-degree family member with AF does not impact the clinical outcomes of catheter ablation for paroxysmal AF. However, a positive family history is associated with worse arrhythmia free survival in patients with PeAF. This finding is not explained by differences in clinical characteristics, atrial substrate assessed by voltage maps or ablation characteristics.


Authors Sundbøll, Jens; Hováth-Puhó, Erzsébet; Adelborg, Kasper; Ording, Anne; Schmidt, Morten; Bøtker, Hans Erik; Sørensen, Henrik Toft

Source International journal of cardiology; Aug 2017; vol. 241 ; p. 182-187

Abstract BACKGROUND Patients with atrial fibrillation or flutter (AFF) are at increased risk of ischemic stroke, but their risk of other thromboembolic events remains less clear. METHODS During 2004-2013, we conducted a nationwide population-based cohort study using Danish medical registries. We identified all patients with first-time AFF and sampled a sex-, age-, and calendar year-matched general population comparison cohort without AFF. For myocardial infarction, peripheral embolism, ischemic stroke, hemorrhagic stroke, deep venous thrombosis, and pulmonary embolism, we computed cumulative risks and adjusted incidence rate ratios (aIRRs) adjusted for comorbidity and medication. RESULTS The study population consisted of 103,989 patients with AFF and 519,935 individuals without AFF from the general population. Ten-year cumulative risks in the AFF cohort were 3.5% for myocardial infarction, 0.5% for peripheral embolism, 6.7% for ischemic stroke, 1.3% for hemorrhagic stroke, 1.0% for deep venous thrombosis, and 1.3% for pulmonary embolism. During the first 30 days following AFF, aIRRs were markedly (4 to 16-fold) increased for all outcomes and similarly elevated for myocardial infarction (aIRR=8.0, 95% confidence interval (CI): 6.8-9.5) and ischemic stroke (aIRR=9.9, 95% CI: 8.5-11.5). Thereafter, aIRRs decreased gradually, reaching unity after 5 years for myocardial infarction, deep venous thrombosis, and pulmonary embolism, but remained 1.6 to 3.5-fold increased for peripheral embolism, ischemic stroke, and hemorrhagic stroke. CONCLUSION AFF was a risk factor for all arterial and venous outcomes during the first year of follow-up, but only for peripheral embolism, ischemic stroke, and hemorrhagic stroke thereafter.
### Search Strategy

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