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Diabetes mellitus in atrial fibrillation patients: an observational study from 6 middle eastern countries

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Introduction: Atrial fibrillation (AF) is the most common arrhythmia and is associated with an increased risk of cerebral infarction, heart failure, and overall mortality. The prevalence and outcome of diabetes mellitus (DM) in AF patients in the developing countries is lacking.
Objective: To study the prevalence and outcome of DM in patients presenting to emergency room (ER) due to AF in 6 Middle Eastern countries.
Methods: The Gulf Survey of Atrial Fibrillation Events (Gulf-SAFE) is a prospective multicentre observational registry of patients presenting to the ER with AF in 6 Middle Eastern Countries. Patients were divided into those with and without DM.
Results: A cohort of 2033 AF-patients enrolled in the Gulf-SAFE registry; 606 (29.8%) of them had DM versus 1427 (70.2%) who were non-DM. The mean age of the DM group was 63±12 years and 47.7% of them were male. Common concomitant medical conditions in DM vs. Non-DM group were hypertension (81.4% vs. 40.5% p=0.001), coronary artery disease (47.4% vs. 20.4%, p=0.001) and hyperlipidemia (59.8% vs. 22.6%, p=0.001). DM patients with AF had higher overall mortality at 12 months in comparison to non-diabetics (14.4% vs. 9.7%, p=0.002). Moreover, It was observed higher rate of hospitalisation in DM group due to heart failure and or AF compared to the non-DM group [heart failure rate (14.9% vs. 10.2%, p=0.003) and AF rate (12.2% vs. 9.5%, p=0.06)] at 12 months respectively. However there was no differences in terms of stroke/TIA risks in both groups at 12 months (p=0.77). Multivariate analysis showed; age and previous history of heart failure were independent risk factors for 6 and 12 months mortality rates, whereas; diabetes mellitus was independent risk factor for mortality rate at 12months follow up only (see table).

Multivariate analysis at 6 and 12 month

Variable	Adjusted OR* (95% CI)** at 6 month	Adjusted OR (95% CI) at 12 month
Age	1.04 (1.02–1.06)	1.04 (1.03–1.06)
Gender Male	1.23 (0.77–1.97)	1.29 (0.87–1.91))
DM	1.36 (0.84–2.21)	1.55 (1.04–2.33)
HTN***	0.88 (0.52–1.50)	0.80 (0.51–1.23)
Hyperlipidemia	0.95 (0.57–1.57)	0.95 (0.62–1.45)
History of Heart failure	3.37 (2.01–5.65)	3.04 (2.0–4.64)

Oodds ratio, **Confidence Interval, ***Hypertension.

Conclusion: Diabetes mellitus is highly prevalent among patients presenting to ER with atrial fibrillation in 6 Middle Eastern countries and is independently associated with increased risk of death and hospitalisation for heart failure at 1-year follow-up.

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New insights on the pathogenesis of atrial fibrillation in acute myocardial infarction: data from the RICO survey

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Background: Atrial fibrillation (AF) is common after acute myocardial infarction (AMI), and associated with in-hospital and long-term mortality. However, there is an unmet need in the understanding of the pathophysiology of AF in AMI. Heart rate variability (HRV), measured by Holter-ECG (temporal and spectral analysis) reflects the cardiovascular response to the autonomic nervous system (ANS) and may have a major role in the onset of AF in AMI patients.
Objectives: We investigated the relationship between ANS parameters and the occurrence of AF during AMI.
Methods: From the RICO survey, all the consecutive patients hospitalized for AMI in our university hospital between June 2001 and November 2014 were prospectively analysed by Holter ECG <48 h following admission. HRV was measured using temporal and spectral analysis.
Results: Among the 2035 included patients, 168 (8.2%) developed AF during AMI. Compared to the sinus-rhythm group, patients who developed AF were older (77 vs. 64 y, p<0.001), had more frequent hypertension (114 vs 924, p<0.001) and lower LVEF (47% vs 55%, p<0.001). On the ANS Holter parameters, AF patients had higher pNN50 values (11% vs. 4%, p<0.001) as for mean heart rate (73± vs. 66±bpm, p<0.001). Moreover, there was a marked difference regarding the sympathovagal balance as assessed by the median LH/HF ratio: 2.75 (1.46–4.58; p<0.001) in sinus rhythm-group, compared to 0.88 (0.57–2.00); p<0.001, respectively) in AF-group. In ROC curve analysis, the optimal LF/HF cut-off for AF prediction was at 1.735. In our population, 75% of AF patients had a LF/HF ratio<1.735, as compared to 30% of patients in the sinus-rhythm group. By multivariate analysis, low LF/HF (OR 3.562 (2.202–5.763)) was the strongest predictor of AF, beyond age (OR (95% CI) 1.040 (1.018–1.062)), and mean sinus-rhythm rate on Holter recording (OR 1.031 (1.016–1.045)).
Conclusion: Our large prospective HRV analysis in AMI shows that low LF-HF ratio is a major predictor of AF. Our study strongly suggest that AF in AMI primarly occurs on previous underlying atrial electrical remodelling, rather than acute sympathovagal imbalance.
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P1284
Biatrial remodeling is associated with cardiovascular events in patients with atrial fibrillation and preserved ejection fraction

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Background: Left atrial (LA) remodeling is associated with cardiovascular event in patients with atrial fibrillation (AF). Right atrial (RA) remodeling is also seen in patients with AF. Relationship between biatrial remodeling including RA and cardiovascular (CV) events is unclear.
Purpose: To investigate relationship between biatrial remodeling and CV events in patients with AF and preserved left ventricular ejection fraction.
Methods: Patients with AF and preserved left ventricular ejection fraction (≥50%) from 2012 to 2014 were retrospectively investigated. Patients with mitral stenosis, post mitral valve repair, and hemodialysis were excluded. In baseline echocardiography, LA volume and RA dimension were calculated. LA volume index (LAVI) was defined as LA volume / Body surface area (BSA). RA dimension index (RADI) was defined as (RA major axis + RA minor axis) / BSA. Study endpoint was CV events defined as cardiovascular death, ischemic stroke, and hospitalization due to worsening heart failure (HF).
Results: 364 patients were included in this study. Median value of LAVI and RADI were 34 ml/m^2 and 56 mm/m^2 respectively. During a median follow-up of 1574 days (interquartile range 1170–1814), 31 (8.5%) CV events occurred. Patients were divided into 3 groups according to LAVI and RADI median value (figure A): small LA (n=179, 49%) if LAVI was ≤34 ml/m^2, large LA small RA (n=40, 11%) if LAVI was ≥34 ml/m^2 and RADI was ≤56 mm/m^2, large LA large RA (n=145, 40%) if LAVI was ≥34 ml/m^2 and RAVI was ≥56 mm /m^2. Log-rank test revealed that large LA large RA group had a significantly higher risk of CV events (p=0.002, figure B) than the other groups. The adjusted cox hazard model showed that large LA large RA group had a significantly higher risk of CV events compared with large LA small RA group (hazard ratio (HR) 6.39, 95% confidence interval (CI) 1.31 to 115.12, p=0.017) and small LA small group (HR 2.66, 95% CI 1.18 to 6.54, p=0.017).

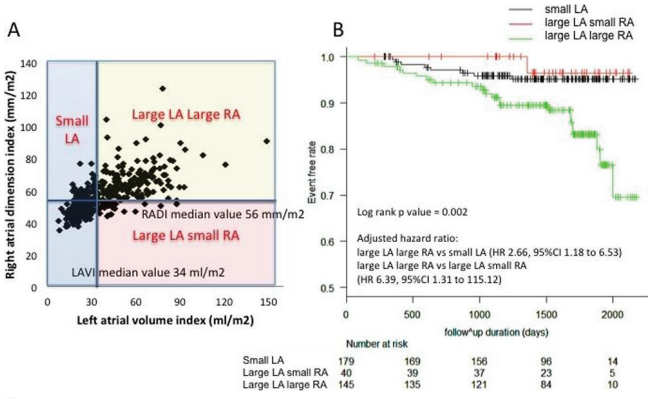

Figure 1

Conclusion: In patients with AF and preserved ejection fraction, biatrial remodeling is associated with a higher incidence of CV events than only LA remodeling.

P1285
Detection of new onset of atrial fibrillation in patients wearing a single chamber defibrillator: insights from a multicentric experience

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Background: Atrial tachyarrhythmias (AT/AF) are the most common arrhythmias in clinical practice and have been associated with an increased risk of mortality, morbidity and ischemic stroke. Since AT/AF are common comorbidities in patients with heart failure and/or ventricular arrhythmias, it is expected that they are

frequently observed in patients with implantable cardioverter defibrillators (ICD). Conversely AT/AF incidence in the single chamber ICD patients has been reported to be between 2 and 5%, possibly due to monitoring limits and to the fact that AT/AF are frequently asymptomatic.
Purpose: To evaluate real AT/AF incidence in patients with no history of AT/AF, no anti-arrhythmic drug (AAD) therapy and wearing a new-generation single chamber ICD with specific AT/AF diagnostics.
Methods: Consecutive single-chamber ICD patients were prospectively followed by 23 Italian cardiologic centers in an observational research. Clinical and device data were collected and reviewed by expert cardiologists to assess AT/AF occurrence through in clinic visit and/or remote transmissions of device data.
Results: 94 (83.1% male, 60 years old, 55% with a CHA2DS2-VASc≥2) were followed for a median observation period of 389 days. AT/AF episodes occurred in 22 (23.4%) patients when considering at least 5 minutes duration, in 16 (17%) for AT/AF ≥1 hours, in 10 (10.6%) for AT/AF ≥6 hours, in 4 (4%) for AT/AF ≥1 day.
Conclusions: Our multicenter real-world experience in a population of single chamber ICD patients with no history of AT/AF shows that a relevant percentage of patients develops new onset AT/AF in 1 year follow-up. Compared with literature data, the use of a specific AF diagnostics allowed cardiologists to improve the knowledge about patients with AT/AF and at risk of stroke and to optimize AT/AF management in terms of oral anticoagulation, and rate-control or rhythm control strategies.
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P1286
Atrial fibrillation and infection among acute patients in the Emergency Department: a multicentre cohort study of prevalence and prognosis

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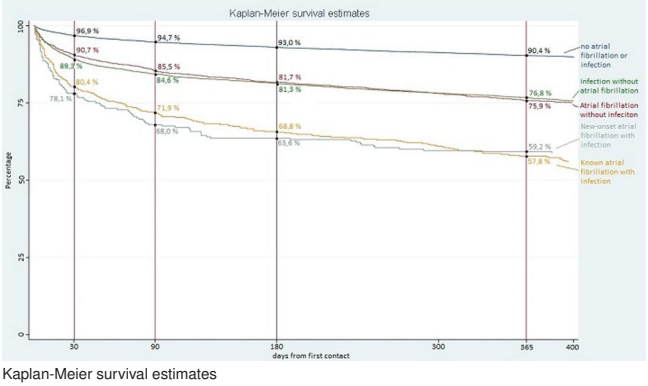
Introduction: Patients with infection presenting with atrial fibrillation (AF) are frequent in emergency departments (ED). This combination is probably related to a poor prognosis compared to AF or infection, but existing data are scarce.
Purpose: To describe the prevalence and prognosis for AF and infection, individually and concomitantly in an ED setting.
Methods: Cohort study in adult (≥18 years) ED patients with ECG performed on presentation at 2 hospitals in Denmark, from March 13 2013 to April 30 2014. AF was identified by electronic ECG records, manually validated with a kappa value of 0.86 (95% CI, 0.782 to 0.947) and a predictive positive value of 95%, (95% CI, 81.8 to 99.3), and infection was identified based on discharge diagnoses.
The absolute 30-day mortality and stroke rate were calculated for all patients, for those with AF, infection and those with both.
Results: Among 39393 contacts to the ED, 27879 patients (median age 66, 50% women) had an ECG recorded and were included in the study. 2341 (8.4%) had AF, 5672 (20.3%) had an infection and 670 (2.4%) had both infection and AF, of which 230 (34.3%) had no previous AF diagnosis or AF identified by ECG (new-onset AF).
In these groups, 30-day mortality was 12.4% (95% CI, 11.6 to 13.3) in patients with infection, 13.5% (95% CI, 12.1 to 14.9) in patients with AF and 22.6% (95% CI, 17.4 to 28.6) in patients with new-onset AF and infection. One-year stroke rate in patients with AF was 56.6/1000 person-years (95% CI, 46.5 to 68.9), 23.2/1000 person-years (95% CI, 19.1 to 28.1) in patients with infection and 62.5/1000 person-years (95% CI, 32.5 to 120.2) in patients with new-onset AF and infection.
Conclusion: Compared to ED patients with AF or infection, patients with concomitant new-onset AF and infection show an increased 30-day mortality. One-year stroke rate in patients with AF compared to patients with new-onset AF and infection was similar.
Funding Acknowledgements: The Research Foundation of Odense University Hospital

Prevalence in age groups

Age group (group size)	Atrial fibrillation (AF)	New-onset AF	Infection (INF)	New-onset AF + INF
<50 (7023)	50 (0,7%)	29 (0,4%)	765 (10,9%)	2 (0,03%)
50–59 (3874)	103 (2,7%)	45 (1,2%)	621 (16%)	6 (0,16%)
60–69 (5388)	327 (6,1%)	129 (2,4%)	1076 (20,0%)	28 (0,52%)
70–79 (5728)	723 (12,6%)	239 (4,2%)	1364 (23,8%)	63 (1,10%)
80–89 (4526)	820 (18,1%)	255 (5,6%)	1381 (30,5%)	86 (1,90%)
90–99 (1304)	309 (23,7%)	108 (8,3%)	451 (34,6%)	43 (3,30%)
>100 (36)	9 (25,0%)	4 (11,1%)	14 (38,9%)	2 (5,56%)



Kaplan-Meier survival estimates

P1287
Prevalence of atrial fibrillation and outcomes in a specific European health care area gained thorough the processing of the informatics sanitary system

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Introduction: Today's healthcare policies rely heavily on data that has been amassed from multiple small studies within intrinsically varied populations. We sought to describe the prevalence, comorbidities and outcomes of atrial fibrillation (AF) in a population belonging to a specific area where all healthcare centers have implemented a common informatics structure.
Methods: The total number of inhabitants was obtained from the health care area's informatics system. Information pertaining to AF was derived from various datasets within the "data warehouse del Servicio Galego de Saúde".
Results: From the health care area of our city (n=348.985), throughout the year 2013, the diagnosis of AF was codified in 7990 (2.08%) individuals. Mean age was 76.83±10.5 years, mean CHA2DS2-VASc=3.5, 4.056 (50.8%) were females and 72.6% were receiving oral anticoagulants. Up till December 31st, 2015, 1361 patients died of all-cause mortality (17%), 478 (6%) of them in-hospital, documenting 30 deaths secondary to intracranial haemorrhage (0.4%) and 125 strokes (1.6%). On multivariable analysis, age, sex, heart failure, diabetes, previous thromboembolic event(s) and dementia were independently associated with all-cause mortality. Similarly, age, sex and previous thromboembolic event(s) associated with the occurrence of future thromboembolic events. Oral anticoagulation was found to be protective from mortality and thromboembolic events.
Conclusions: In this study, we report for the first time the true prevalence of diagnosed AF, clinical characteristic, treatment and prognosis in a whole specific Spanish healthcare area as derived from the systematic integration of data available from a universally adopted informatics sanitary system within the region.

SHEAR STRESS, SPASM AND VULNERABLE PLAQUE

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Evidence for impaired vasodilator capacity of coronary microvessels in patients with vasospatic angina - Myocardial CT perfusion imaging study

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Background: We have previously demonstrated that enhanced adventitial inflammation plays important roles in the pathogenesis of coronary spasm in pigs and humans and that coronary spasm could develop in both epicardial coronary arteries and intramuscular coronary microvessels in patients with vasospastic angina (VSA). However, it remains to be examined whether vasodilator capacity of coronary microvessels is also impaired in VSA. Adenosine-stress dynamic computed tomography perfusion (CTP) is a new non-invasive technique that can measure absolute quantification of myocardial blood flow (MBF) and cardiac structure including adventitial perivascular adipose tissue (PVAT).
Purpose: We thus examined whether vasodilator capacity of coronary microvessels is impaired in VSA patients using adenosine-stress CTP, and if so, to examine the mechanisms involved with a special reference to PVAT, potential source of inflammation, and Rho-kinase that we have identified as the central molecule of coronary spasm.
Methods: We examined consecutive 22 VSA patients with acetylcholine-induced diffuse spasm in the left anterior descending coronary arteries (LAD) and 12 control subjects without spasm. Using adenosine-stress dynamic CTP, we examined MBF of LAD segment and the extent of PVAT volume. We also examined Thrombolysis in Myocardial Infarction (TIMI) frame count as a marker of coronary blood flow, which was obtained by the number of frames required for dye to reach a distal landmark of the LAD in the control angiography. Furthermore, we measured