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.
**Funding Acknowledgements:** This research was performed within the framework of the Italian ClinicalService, a project funded by Medtronic Italia, an affiliate of Medtronic Inc.

### P1286
### Atrial fibrillation and infection among acute patients in the Emergency Department: a multicentre cohort study of prevalence and prognosis

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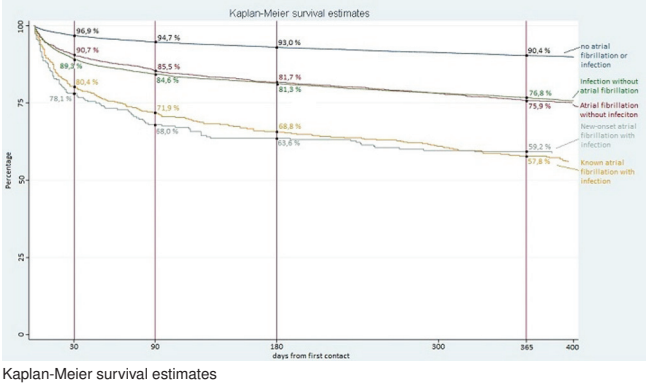
**Introduction:** Patients with infection presenting with atrial fibrillation (AF) are frequent in emergency departments (ED). This combination is probably related to a poor prognosis compared to AF or infection, but existing data are scarce.
**Purpose:** To describe the prevalence and prognosis for 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

### 1343
### Evidence for impaired vasodilator capacity of coronary microvessels in patients with vasospatic angina - Myocardial CT perfusion imaging study

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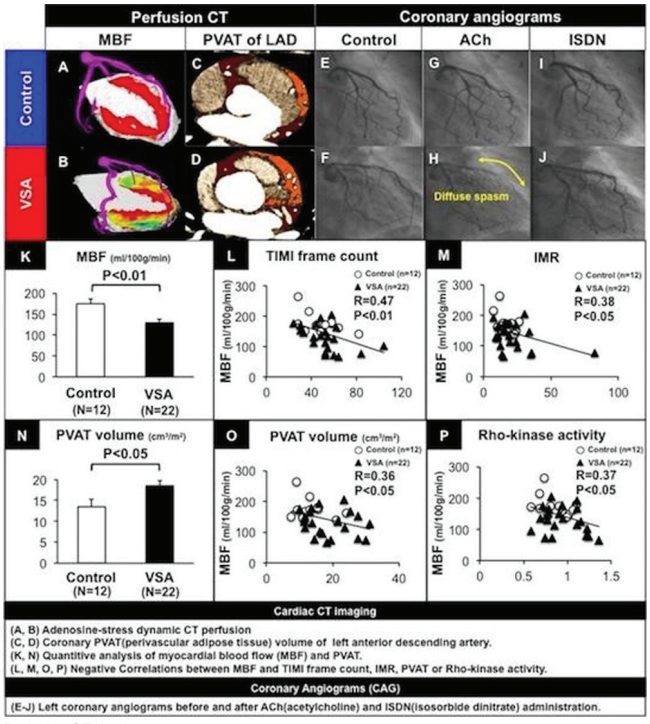
**Background:** We have previously demonstrated that enhanced adventitial inflammation plays important roles in the pathogenesis of coronary spasm in pigs and humans and that coronary spasm could develop in both epicardial coronary arteries and intramuscular coronary microvessels in patients with vasospastic 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

an index of microcirculation resistance (IMR, an invasive marker of microcirculation) of the LAD with a pressure-temperature sensor guidewire at hyperemic state induced by intravenous adenosine administration. We also measured Rho-kinase activity in circulating neutrophils as an established marker of VSA activity.
**Results:** Patient characteristics were comparable between the VSA and control groups. Adenosine-stress MBF was significantly decreased in the VSA group compared with the control group (VSA, 129.2±8.4 vs. control, 174.4±11.3 ml/100g/min, P<0.01) (Figures A, B, K). Importantly, there were significant negative correlations between MBF and TIMI frame count at baseline (R=0.47, P<0.01) and IMR at hyperemic state (R=0.38, P<0.05) (Figures L, M). In addition, the extent of PVAT volume was significantly increased in the VSA group compared with the control group (VSA 18.5±1.5 vs. control 13.5±1.8 $cm^3/m^2$, P<0.05) (Figures C, D, N). Notably, there was significant negative correlation between MBF and the extent of PVAT volume in the LAD (R=0.36 P<0.05) (Figure O) and between MBF and Rho-kinase activity (R=0.37, P<0.05) (Figure P).



Perfusion CT, Angiograms

**Conclusions:** These results provide the first direct evidence that vasodilator capacity of coronary microvessels is impaired in VSA patients, for which enhanced PVAT and Rho-kinase activity may be involved.

### 1344
### Myocardial bridging is associated with coronary endothelial dysfunction in patients with chest pain and non-obstructive coronary artery disease

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**Background:** Myocardial bridging (MB), characterized by the epicardial coronary vessel diving into the myocardium, is present in up to 1/3rd of adults and is associated with angina and acute coronary syndromes. MB is accompanied by altered blood flow mechanics, regional changes in wall sheer stress and accelerated atherosclerosis potentially through its effects on endothelial function. However the association between MB and endothelial dysfunction is incompletely understood.
**Purpose:** We studied the relationship between MB and microvascular endothelial dysfunction in patients with non-obstructive coronary artery disease (CAD).
**Methods:** Patients with stable angina and non-obstructive CAD (stenosis <40%) at angiography underwent an invasive assessment of endothelial function. Presence of MB was diagnosed angiographically by identifying a reduction in minimal luminal diameter during systole (the "milking effect") while microvascular endothelial function was assessed by measuring the percent change in coronary blood flow in response to intracoronary infusions of acetylcholine (%ΔCBFAch). Microvascular endothelial dysfunction was defined as a %ΔCBFAch of <50%. Patients were divided into those with and without MB and the frequency of microvascular endothelial dysfunction was compared between groups.
**Results:** Between 1993 and 2012, 1,474 patients (mean age 50.3 years, 35% male) underwent coronary angiography and invasive testing for endothelial dysfunction. Two hundred and eight patients were found to have MB (14.1%), who were then matched with respect to age and sex using propensity scoring in a 1:2 ratio to patients without MB (n=624). Patients with MB had a significantly higher frequency of microvascular endothelial dysfunction compared to patients without bridging (57.7% vs. 49.3%, p=0.047) and had a significantly lower %ΔCBFAch (33.2 (-14.3, 89.7) vs. 51.9 (-5.6, 108.8), p=0.050). After adjusting for a history of hypertension, diabetes mellitus, hyperlipidemia, smoking, body mass index and family history of CAD MB was significantly associated with %ΔCBFAch (estimate -9.62, standard error 4.90, p=0.049) and with microvascular endothelial dysfunction (odds ratio 1.22 (95% CI 1.03–1.45) p=0.023).
**Conclusion:** MB is significantly associated with microvascular endothelial dysfunction supporting vasospasm as the cause for angina in symptomatic patients with MB and suggesting a link between MB, endothelial dysfunction and atherosclerotic disease.

### 1345
### Prognostic impacts of impaired coronary vasodilatation and enhanced coronary vasoconstricting responses in patients with angina and unobstructive coronary arteries

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**Background:** Coronary vasomotor abnormalities, including impaired vasodilatation and enhanced vasoconstriction of epicardial and microvascular coronary arteries, play important roles in the pathogenesis of angina with unobstructive coronary arteries. However, the prognostic impacts of these disorders and their combination remains to be fully elucidated.
**Purpose:** We examined the prognostic impacts of impaired vasodilatation, enhanced vasoconstriction of coronary arteries, and both of them in patients with angina and unobstructive coronary arteries.
**Methods and results:** We enrolled 187 consecutive patients with suspected angina and unobstructive coronary arteries (M/F 113/74, 63.2±12.3 [SD] year-old). To assess coronary vasoconstricting responses, we performed acetylcholine provocation tests. Then, to evaluate coronary microvascular dilator function, we measured coronary flow reserve (CFR) and index of microcirculation resistance (IMR) during hyperemic state induced by intravenous adenosine administration. For the analysis, we divided the subjects into 4 groups according to CFR (<2.0) and IMR (>20) levels; high CFR and low IMR (Group 1, n=84), high CFR and high IMR (Group 2, n=37), low CFR and low IMR (Group 3, n=39), and low CFR and high IMR (Group 4, n=27). Among the 4 groups, there was no significant difference in age, sex, or prevalence of traditional coronary risk factors, whereas Group 4 had the highest levels of high-sensitive troponin T (P=0.04) and high-sensitive C-reactive protein (P=0.01). Although abnormal vasoconstricting responses to intracoronary acetylcholine were noted in all the 4 groups as defined by CFR and IMR, Group 4 had the highest incidence of epicardial coronary spasm (P=0.02) and the lowest incidence of microvascular spasm (P=0.046) (Figure A). Moreover, we analyzed the incidence of major adverse cardiac events (MACE), including cardiac death, non-fatal myocardial infarction, hospitalization due to unstable angina pectoris, during the median follow-up period of 619 days (IQR 373, 814). Kaplan-Meier survival analysis showed a significantly worse prognosis in Group 4 compared with other 3 groups (HR 9.14, 95% CI 1.17–184.75, P=0.03) (Figure B). Multivariable Cox proportional hazard analysis showed that a combination of epicardial spasm and coronary microvascular dilator dysfunction with low CFR and high IMR was significantly correlated with poor outcomes (HR 11.87, 95% CI 1.85–66.64, P=0.005). Importantly, intracoronary administration of fasudil, a selective Rho-kinase inhibitor, significantly ameliorated CFR and IMR in Group 4 as compared with other 3 groups (both P<0.001).

Figure A

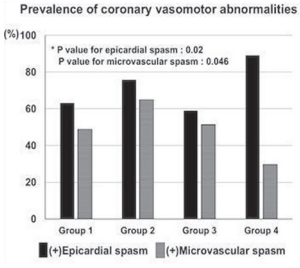
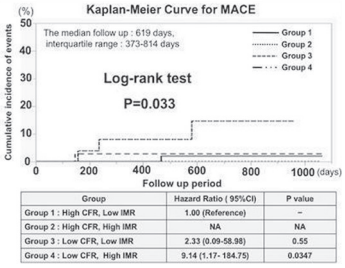



Figure B




| Group | Hazard Ratio ( 95%CI) | P value |
|---|---|---|
| Group 1 : High CFR, Low IMR | 1.00 (Reference) | - |
| Group 2 : High CFR, High IMR | NA | NA |
| Group 3 : Low CFR, Low IMR | 2.33 (0.09-58.98) | 0.55 |
| Group 4 : Low CFR, High IMR | 9.14 (1.17- 184.75) | 0.0347 |

**Conclusions:** These results provide the first evidence that a combination of epicardial spasm and impaired microvascular dilation, both of which are caused by Rho-kinase activation, is associated with a poor prognosis in patients with angina and unobstructive coronary arteries.

### 1346
### Laser doppler assessment of dermal microcirculatory endothelial function in patients with angina and non-obstructive coronary arteries

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**Introduction:** Coronary endothelial dysfunction plays a major role in the devel-