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Association between silent Atrial Fibrillation and heart failure after Acute Myocardial infarction

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Atrial Fibrillation (AF) complicating an acute myocardial infarction (AMI) is frequent and associated with a worse prognosis after MI, particularly because of lethal heart failure (HF) episodes and cardiogenic shock. Although silent AF has also been suggested to be common in AMI, its association with development of heart failure during the first days after AMI remains unknown. In this study we aimed to assess a potential association between silent AF and episodes of heart failure after AMI.

Methods: For AF screening, 581 consecutive AMI were prospectively analyzed by Continuous ECG Scope Monitoring (CSM) for 48H after hospital admission. Left Ventricular Ejection Fraction (LVEF) was determined on admission by echocardiography. We analyzed the study population into 3 groups: No AF, silent AF (asymptomatic episodes of AF lasting at least >30 sec) and symptomatic AF (symptomatic episodes of AF that lasted >12 hours). Diagnosis of heart failure episode was based on plasmatic level of Nt-ProBNP.

Results: Ninety-five (16.4%) patients had AF on CSM after MI, of whom 76 (80%) developed silent AF. Compared with No AF group, patients with silent AF were markedly older (80 (69-85) vs 62 (53-74); $p<0.001$), more frequently women (45 vs 27%; $p=0.006$), hypertensive (76vs52%; $p<0.001$) but less smoker (18vs38%; $p<0.001$). On admission, patients with silent AF had an impaired LVEF (46%(13) vs 54%(11); $p<0.001$), with higher Nt-ProBNP (1817 (556-7078) vs 435 (111-1512); $p<0.001$) and more frequent episode of heart failure (42 vs 21%; $p<0.001$). Comparing the three groups, heart failure episodes during the acute phase after myocardial infarction were more frequent in silent AF group (42%) and in symptomatic AF group (53%) than in noAF group (21%), with $p<0.001$.

Conclusion: This study shows that silent AF is very common after MI (16.4%), and highlights for the first time that it is significantly associated with episodes of heart failure. This outcome suggests the potential impact of silent AF on the prognosis of patients after AMI.

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Long-term follow-up after implantable cardioverter defibrillator in patients with Brugada syndrome: a multicenter French experience

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Background and objective: Implantation of a cardioverter defibrillator (ICD) is a frequently recommended treatment for symptomatic Brugada syndrome (BrS). However, complications related to the device have been reported.

Methods and results: We assessed the benefit / morbidity ratio of this mode of therapy in a cohort of 34 patients implanted in 3 French experienced centers between January 1, 2002 and November 30, 2010. The mean age was 48±14 years, 4 (12%) female. Twenty nine (85%) patients had spontaneous typical coved Type I ECG pattern, 15 (44%) had family history of sudden cardiac death (SCD) and 24 (88%) had positive EP study. ICD implantation was based on aborted sudden cardiac arrest (SCA) in 3 (9%), syncope in 19 (56%) or high risk status (spontaneous type I ECG in conjunction with a family history of SCD and/or a positive EP study) in 12 (35%). The median follow-up period was 74±23 (9-127) months. One patient with prior cardiac arrest died of a non-cardiac cause, 5 (15%) patients had appropriate device therapy; all with spontaneous type I ECG and previous syncope but none with prior cardiac arrest. Overall complication rate was 26%. Six (27%) symptomatic and 3 (25%) asymptomatic patients experienced complications. Five (14%) patients (4 with previous syncope and 1 asymptomatic) experienced inappropriate

shocks and 4 (12%) had other complications: 2 patients had lead rupture, 1 lead displacement, and 1 pneumothorax during device replacement. These complications occurred in 2 asymptomatic and 2 symptomatic (1 syncope and 1 prior aborted SCA) patients. No case of SCD was observed in ICD carriers.

Conclusion: Appropriate device therapy after a median follow-up period of 6 years was observed in patients with prior syncope and none in asymptomatic patients. Complication rate was leading not to recommend ICD implantation in asymptomatic Brugada patients and to carefully evaluate the risk / morbidity ratio in subject with non spontaneous coved type ECG pattern.

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Interplay between right ventricular function and cardiac resynchronization therapy: An Analysis of the CARE-HF trial

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Background: Cardiac resynchronization therapy (CRT) prolongs survival in appropriately selected patients with heart failure. Right ventricular (RV) dysfunction is associated with a worse prognosis in this setting but it is not clear whether it influences the clinical response to CRT.

Method and Results: Of 813 patients enrolled in the Cardiac Resynchronization-Heart Failure (CARE-HF) study, 688 had tricuspid plane systolic excursion (TAPSE) measured at baseline and 345 of these were assigned to CRT. Their median (IQR) age was 66 (58-71) years, left ventricular (LV) ejection fraction was 24 (21-28)% and TAPSE was 19 (16-22)mm. Baseline LV function and size and QRS duration were similar amongst TAPSE tertiles but those in the worst tertile (TAPSE<17.4 mm) had higher plasma concentrations of amino-terminal pro-brain natriuretic peptide (NT-proBNP) and were more likely to have ischaemic heart disease. In response to CRT, patients in the lowest tertile of TAPSE had less LV reverse remodelling but greater reductions in NT-proBNP and pulmonary artery pressure and more RV reverse remodelling compared to other tertiles. The median (IQR) follow-up for mortality was 748 (582-950) days during which 213 deaths occurred. Patients with lower TAPSE had a higher mortality regardless of assigned treatment ($p<0.001$). Greater inter-ventricular mechanical delay, New York Heart Association class, mitral regurgitation and NT-proBNP, lower TAPSE and assignment to the control group were independently associated with higher mortality. Reduction in mortality with CRT was similar in each tertile.

Conclusion: RV dysfunction is a powerful determinant of prognosis amongst candidates for CRT, regardless of treatment assigned: CRT improved prognostic in patients with RV dysfunction despite less improvement in LV remodelling.

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Reverse electrical remodeling by cardiac resynchronization therapy: prevalence and clinical impact

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Background: Cardiac resynchronization Therapy (CRT) improves left ventricular ejection fraction (LVEF) in patients with congestive heart failure, LV systolic dysfunction and a wide QRS complex. Previous reports suggest

that CRT may also induce electrical remodeling but the impact on clinical outcome remains unknown.

Objective: We sought to determine 1) if chronic CRT induces a relevant shortening of the intrinsic QRS (iQRS), 2) whether changes in the native conduction system correlate with clinical or echocardiographic response to CRT and 3) to identify predictors of iQRS width shortening.

Methods: We prospectively included 85 consecutive patients with left bundle branch block who received a CRT device in 3 French centers. NYHA class, iQRS duration, LVEF and left ventricular volumes were assessed before and one year after CRT implantation. Clinical and echocardiographic were defined respectively as NYHA class improvement >1 class without heart failure hospitalization and an increase of LVEF by $\geq 10\%$ and/or a decrease in LVESV by $\geq 15\%$. Electrocardiographic responders were defined as a decrease in iQRS duration by ≥ 20 msec.

Results: Baseline and 1-year follow-up mean iQRS durations were respectively 168.0 ± 19.7 ms and 149.6 ± 31.6 ms ($p < 0.0001$). Electrocardiographic response, observed in 43/85 patients (51%), was associated with a greater rate of clinical ($p = 0.035$) and echocardiographic ($p = 0.023$) response. Younger age, male gender and longer baseline QRS width were independent predictors of electrocardiographic response.

Conclusion: CRT decreases iQRS duration. A reduction of at least 20 ms in iQRS duration is associated with better clinical and echocardiographic response.

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Remote monitoring follow-up of 533 ICD/CRT-D recipients: a very low rate of inappropriate shocks

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Remote monitoring (RM) is now accepted as a safe alternative to standard follow-up (sFU) for ICD recipients (ICDr).

Methods: We analysed the long term outcomes of 533 ICD/CRT-Dr.

Patients were equipped with Boston Scientific Latitude (45%), Medtronic Carelink (43%), St Jude Medical Merlin (9%) or Biotronik Home Monitoring (3%) RM systems. Automatic FU with RM was performed every 3 months, with at least one sFU/year. In emergency cases patients were invited visits.

ICD programming was done with 2 zones (VT zone > 180 bpm / VF zone > 220 bpm). All RM alerts and related EGMs as well as the reasons and therapies were reviewed by two physicians.

Results: We enrolled 533 pts (82% male, mean age 66 ± 10 y.o.). 55% had ischemic cardiomyopathy, 69% were primary prevention. CRT-D (46%) and dual chamber (45%) devices were mainly represented. During a RM FU period of 15 ± 8 months, we noted 8 automatic RM FU and 2 sFU visits/patient. 23 deaths occurred. 19 patients had major alerts (5 for ICD lead dysfunction, 1 for ERI, 9 for electrical storm). 2672 non major alerts occurred and led to multiple diagnoses: in 22 pts early detection of unknown AF, in 41 CRT-Dr loss of biventricular pacing. 145 ICD discharges occurred in 52 pts. Within the 66 pts with diagnosed AF by RM, 24 were managed with rhythm control strategy (11 cardioversions, 10 AA drugs introductions, 3 PAF ablations) and 10 (CRT-D) had a rate control strategy (AV node ablations in 6 and beta blocker in 4). 91 appropriate (app) ICD discharges (ICDd) occurred in 35 pts (6,5%) of which 10 were in primary prevention.

A first inappropriate ICDd occurred in 3,1% of the population (17 pts) and were mostly due to AF (76%). 74 pts had 1205 app ATP (80% successful). 5 pts with high LV impedance detected by RM had lead dislodgement and underwent reintervention.

Conclusion: In a large monocentric observational study, RM has demonstrated to be an effective mode of FU for ICDr. Early diagnoses allow rapid management of pts and are associated with a very low rate of inappropriate shocks.

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Prevalence of ventricular tachyarrhythmias clustering in ICD treated patients with ischemic cardiomyopathy

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Objective: Ventricular tachyarrhythmias clustering (occurrence of > 3 separate episodes of VT/VF within a 24 h period, each separated by > 5 min) in ICD population remains a serious problem, associated with adverse prognosis. Our aim was to retrospectively assess the prevalence of VT clustering in primary and secondary SCD prevention pts and in single, dual and triple chamber ICD device.

Methods: We studied 360 consecutive pts with ischemic cardiomyopathy who underwent ICD implantation for primary (20%) and secondary (80%) SCD prevention, over a mean follow-up period of 8 (5 years). Single, dual and triple chamber ICD was implanted in 29%, 61% and 10% respectively of pts. Stored endocardial electrograms were used to determine the causative rhythm disorders provoking ICD activation.

Results: VT arrhythmic clustering was recorded in 43pts (12%). Concerning primary and secondary prevention pts, the prevalence was 4% and 14% respectively ($p < 0.001$). Concerning Single, Dual and Triple chamber device, the prevalence was 12,5%, 11,9% and 12,1% respectively ($p = NS$).

Conclusions: Clustering of VTachyarrhythmias occurs more often in secondary than in primary prevention ICD's pts with coronary artery disease. No differences exist between single, dual or triple chamber device.

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Cardiac resynchronization device implantation procedure in real life. The French Electra survey

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Introduction: Cardiac resynchronization therapy (CRT) has been a major breakthrough in cardiac failure management. However, implantation procedure is not standardized.

Aim of the study: To evaluate routine implantation procedure habits in french practice.

Material and methods: A survey was e-mailed to 100 French CRT implanters in November 2011. Physicians were interviewed on their own strategy in the center. Answers had to concern the most frequent routine attitude. If appropriate, physicians could answer "no standardized attitude" or "other".

Results: Among the 62 physicians who answered, 45% practise in a university hospital, 24% in a non-university hospital and 23% in a private institution. The rate of physician implantations is < 30 /year, 30-50/year and > 50 /year in 42%, 25% and 33%, respectively. Implantations are performed by a single operator in 49%, and in 43% by two physicians, 16% of implants being done under general anaesthesia.

Default CRT-Pacemaker (CRT-P) implantations are right-sided in 18%, left-sided in 51%, unsettled in 20%, and for CRT-Defibrillator (CRT-D) 8%, 82 and 10% respectively.

The venous approach is "all cephalic" in 21%, "all subclavian" in 18% and combined in 62%.

First implanted lead is the right ventricular lead (RV) in 74%, and the coronary sinus (CS) lead in 23%. RV lead is placed in apical position in 26% and in septal position in 67%.