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Electrocardiographic findings in primary systemic amyloidosis, senile systemic amyloidosis and transthyretin-related amyloidosis.

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Objective: This study sought to determine the spectrum of electrocardiographic (ECG) abnormalities found in patients with primary systemic amyloidosis (AL), senile systemic amyloidosis (SSA) and Transthyretin-Related Amyloidosis (TTR) and to evaluate the prognostic implications.

Methods: Between 2010 and 2012, 103 patients treated in the University Henri-Mondor Hospital with cardiac amyloidosis were included. 32 patients with AL, 63 patients with TTR and 11 patients with SSA. ECG were analysed regarding: rhythm, conduction, voltage, and ischaemic signs. The primary endpoint was defined as death or heart transplantation.

Results: The mean age and men prevalence were respectively 62±15 and 64%. Atrial fibrillation was significantly more frequent (p=0.005) in the SSA group (44%) compared to AL group (13%) and TTR group (7%). No significant difference was found between the three groups when low voltage was defined according to the Klein criteria or defined as a voltage inferior to 1 mV in all precordial limbs. But when it was defined as a voltage <0, 5 mV in all limb leads it was found significantly higher (p=0.006) in the AL population (36%) compared to the TTR (8%) and SSA (25%) groups. LV hypertrophy was rare in the three groups. No significant difference was found concerning conduction disorders (p=0.064) and the presence of Q waves (61% AL, 51% TTR, 33% SSA, p=0.51) or reduced R wave height (7% AL, 20% TTR, 0% SSA, p=0.14).

Conclusion: Electrocardiographic abnormalities are frequent in amyloidosis whatever the type.

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Midventricular Takotsubo cardiomyopathy: clinical characteristics and prognosis.

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Background: Takotsubo cardiomyopathy was initially described as apical ballooning with apical wall motion abnormalities. A group of patients presenting with atypical appearence with mid-ventricular wall motion abnormality was also described, but the incidence, the clinical characteristics and the prognosis of this pattern have not yet been assessed.

Objectives: The aim of our study is to analyse the clinical profile, demographic characteristics and outcomes of patients with mid-ventricular Takotsubo cardiomyopathy (TC).

Methods: A retrospective monocentric study enrolling fifty-six subsequent patients hospitalised for TC, between January 2002 and January 2013. Only patients with mid-ventricular form are included.

Results: The incidence of the midventricular form was 25% (14 patients). The wall motion abnormalities in these patients were confirmed by both left ventriculogram and cardiac magnetic resonance. The mean age was 65±10 years. Hypertension and dyslipidemia were the most common risk factors for coronary heart disease (64.3% and 35.7% respectively). A history of cancer was noted in 35.7%. A stressful event preceded presentation in 11 patients (78.6%). Chest pain was the most common symptom (85.7%). Global T wave inversion was the most frequent electrocardiographic changes (64.3%). The peak troponin levels was 2.6±3.2 ng/ml. Mean left ventricular ejection fraction at initial presentation was moderetly impaired (45.5±9%). In-hospital mortality was 7% and no other in-hospital complication was occurred. After a mean follow-up of 50±30 months, overall mortality, cardiovascular hospitalization and recurrence were noted respectively in 15.4%, 46.2% and 7% of cases.

Conclusions: Our study demonstrated that midventricular takotsubo cardiomyopathy is associated with significant long term morbidity and mortality.

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Heart failure secondary to dilated cardiomyopathy: the correlation between mechanical and electrical dyssynchrony: about 61 cases

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Introduction: The existence of an abnormal electrical activation of the myocardium is a common feature in the case of dilated cardiomyopathy. This can lengthen the time of ventricular contraction and generate electro anomalies affecting the contraction and the relaxation of the left ventricle.

Material and results: We conducted a prospective study of 61 patients with heart failure secondary to dilated cardiomyopathy. This study aims to analyze the correlation between electrocardiographic parameters and mechanical dyssynchrony (inter and intraventricular dyssynchrony).We found that 95% of patients with complete left bundle branch block (BBGC) had whether inter or intraventricular dyssynchrony. Among the patients with a BBGC, the number of those with an interventricular dyssynchrony was equal to that of those with an intraventricular dyssynchrony (23%). One hundred percent of our patients with a QRS duration > 140 ms had whether an inter or an intraventricular dyssynchrony.Inter or intraventricular asynchrony was also present in 45% of our patients with a QRS duration ≤ 120ms. In this population, the prevalence of the intraventricular dyssynchrony was higher than that of the interventricular one. We found a statistically significant positive correlation between the QRS duration and the parameters of interventricular dyssynchrony in echocardiography Doppler: Aortic pre-ejection delay (p<10-3) with an interval between the Aortic and the Pulmonary pre-ejectionnel (p<10-3).We also noted a statistically significant positive correlation (p<10-3) between the QRS duration and the intraventricular dyssynchrony measured by the Doppler echocardiography maximum interval between electro-systolic delays.

Conclusion: The study demonstrates a significant association between the prolonged QRS duration and the mechanical dyssynchrony. As a matter of fact, nowadays , indicating a multisite pacemaker is based primarily on the electrocardiographic criteria of dyssynchrony in the case of an absence of an individualized reproducible criterion of the mechanical dyssynchrony.

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New prognostic factors in heart failure with preserved ejection fraction: the KaRen study

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KaRen was a prospective multicentre study identifying predictors of outcome in patients with Heart Failure and preserved Ejection Fraction (HFpEF), with a special focus on electrical and mechanical dyssynchrony

Method: 539 patients were included following an acute HF presentation accompanied with BNP> 100 pg/mL or NT-proBNP>300 pg/mL and LVEF >45%. 438 patients were reassessed after 4 -8 weeks. ECG (18 variables) and echo (117 variables) were analysed in core centres. Patients were followed during a minimum of 18 months. The primary endpoint was time to all-cause death or first HF hospitalisation.

Patients: The mean age was 76± 9 years and 57% were women. A history of HF was found in 40.4%. Patients´ history included hypertension in 78.5%, atrial tachyarrhythmia in 58%, anemia (Hb<12mg/dL in females and 13mg/dL in males) in 47.2%, diabetes in 31.3%, renal dysfunction in 37.9%, coronary artery disease in 28% and COPD in 12.3%. Of the patients 6.1% had first degree AV block and 14.9% had QRS width > 120 ms.

Results: During a mean follow-up time of 21.6 months a primary outcome event occurred in 204 patients (46.5%)**,** consisting of 101 deaths (23%) and 142 HF-hospitalizations (32.5%). Candidate predictors of outcome are presented in Figure 1. First degree AV block was the only dyssynchrony criteria independently predicting outcome (p=0.04) 2- tricuspid regurgitation (mean±standard deviation=2.87±0.64 m/s, p=0.0009) and mean e' velocity >5.5cm/s (mean±standard deviation=7.95±2.58, p=0.0009) were the two echocardiographic predictors. Ongoing ACE (ARB) treatment was the only positive predictor of outcome.

Conclusion: The KaRen study recruited a representative population of HFpEF patients with a high rate of clinical events (23% deaths).First degree atrio-ventricular block and increased pulmonary arterial pressures and left ventricular diastolic dysfunction were independently associated with outcome. These novel data may provide new information improving the management of HFpEF patients.

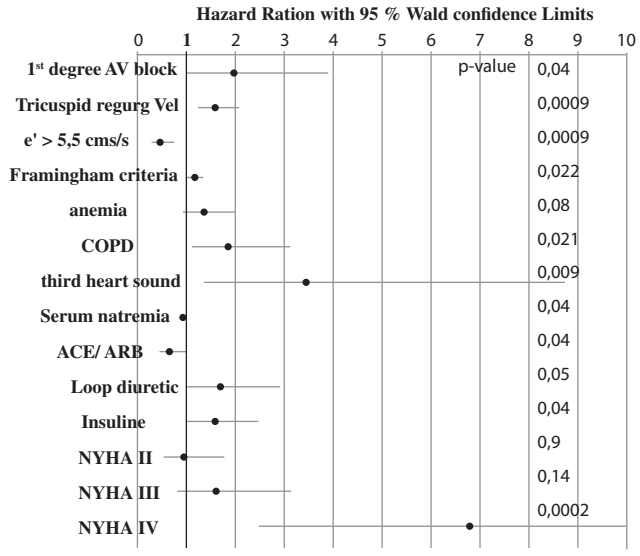

Figure – Main results

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Involvement of BAG3 and HSPB7 loci in various etiologies of systolic heart failure: results of a European collaboration assembling more than 2,000 patients

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Genetic background of multifactorial systolic heart failure (systHF) is still poorly understood. However, through a recent genome wide association study we identified two loci significantly associated with sporadic Dilated Cardiomyopathy (DCM): BAG3 and HSPB7 loci. We further studied these two loci and hypothesized (1) that the loci could also be involved in systHF due to coronary artery disease (CAD) and (2) that the loci could be involved in the severity of systHF and not only in the susceptibility to develop HF.

Methods. We genotyped polymorphisms (SNPs) previously associated with DCM (rs2234962 for BAG3 locus, rs10927875 and rs945417 for HSPB7 locus) in a European population of 1160 patients with systHF due to CAD (ischemic-HF) and 1322 controls. The severity of systHF (assessed by left ventricle ejection fraction or LVEF, LV end diastolic diameter or LVEDD, age and NYHA dyspnea at inclusion) was also compared according to the SNPs in the cohort of ischemic-HF patients as well as in a European cohort of 1141 patients with DCM.

Results. We observed that SNPs related to HSPB7 locus were significantly associated with ischemic-HF (MAF of rs10927875 and rs945417 were less frequent in patients than controls, adjusted p value 0.0.0017 and 0.0.0016 respectively) whereas SNP related to BAG3 locus was not. In cohorts of patients with ischemic-HF or DCM, the two loci were not associated with severity of HF, except LVEDD that was significantly associated with rs2234962 (BAG3 locus) both in DCM patients (591 patients with LVEDD available) and ischemic-HF patients (348 patients with LVEDD available) (p=0.0086 and 0.012 respectively).

Conclusions. Out of the two loci previously associated with DCM we observed that HSPB7 locus was also associated with ischemic-HF whereas BAG3 locus was not, suggesting differential involvement according to the underlying cause of HF. Severity of HF was not related to the two loci, except BAG3 locus associated with LV diameter in both populations.

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Erectile dysfunction in systolic heart failure patients: prevalence and associated factors.

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Chronic heart failure (HF) and erectile dysfunction (ED) are 2 highly prevalent disorders that frequently occur concomitantly. ED has a significant effect on patients' quality of life. The aim of this study was to investigate the prevalence and factors associated with erectile dysfunction in systolic heart failure.

Methods: In a cross-sectional study 110 male patients (age=58.2+-9.7 years) with systolic heart failure (LVEF<=45%) were selected using convenience sampling method. IIEF-5 questionnaire (the International Index of Erectile Function, 5-item version), were used to evaluate the presence and the severity of ED. Baseline clinical characteristics known to be associated with ED, such as NYHA functional classification, were also documented.

Results: The prevalence of ED was found to be 69.1%. Mean score of erectile dysfunction was 19.24±4.08. Erectile dysfunction was significantly associated with age (P<0.001), diabetes mellitus (P= 0.007), low left ventricular ejection fraction (P=0.03), renal dysfunction (P=0.01), angiotensin converting enzyme inhibitors (P= 0.03), beta blocker (P=0.01), diuretics (P=0.05).

Conclusion: Physicians should be aware of the close relation between HF and ED and of the related clinical and therapeutic implications, in order to improve patients quality of life and clinical outcome.

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Therapeutic education and recent acute heart failure: the two keys for a successful telemonitoring program in heart failure. Systematic review and meta-analysis of randomized clinical trials.

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Aims: We hypothesized that long term educational support and recent hospitalization for acute HF could influence the results of telemonitoring (TM) programs in heart failure (HF).