Topic 02 – Heart failure and cardiomyopathy

January 16th, Thursday 2014

056

First assessment of left ventricular systolic dysfunction by multimodality imaging in Tako-Tsubo cardiomyopathy
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Background: Tako-Tsubo cardiomyopathy is a stress-induced cardiomyopathy and is characterized by transient left ventricular (LV) systolic dysfunction. During the hospitalization, recovery may rapidly occur with a partial increase of LV ejection fraction. The aim of this prospective study was to assess LV systolic dysfunction in a large population of Tako-Tsubo cardiomyopathy.

Methods: The study population included 90 patients presenting with Tako-Tsubo cardiomyopathy (85 women, 71±12 y.o.). This is a sub-study of the multicentric prospective TAKO-GENE study (ClinicalTrials.gov Identifier: NCT01520610). TTC was defined according to the Mayo-Clinic criteria and echocardiography was 39.3±11.4% and was significantly lower than LV ejection fraction calculated by LV angiography (43.1±12.7%, p<0.001) and by cardiac magnetic resonance (49.6±11.8%, p<0.0001). Assessment of LV ejection fraction was performed by echocardiography at admission, by LV angiography between day 0 and day 3 and by cardiac magnetic resonance between day 2 and day 7.

Conclusion: Echocardiography allows a fast and immediate assessment of LV ejection fraction whereas assessment of LV systolic dysfunction may be delayed by LV angiography and cardiac magnetic resonance.

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Prevalence and severity of sleep apnoea syndromes in cardiac amyloidosis patients.

Background: Cardiac diseases are associated with a high prevalence of sleep apnoea syndrome (SAS) particularly in heart patients. Two types of SAS are known: central or obstructive. Heart failure can occur in patients with primary systemic amyloidosis (AL), senile systemic amyloidosis (SSA), and Transthyretin-Related Amyloidosis (TTR). There is no data about prevalence and severity of sleep disordered breathing in cardiac amyloidosis.

Aims: Assess the prevalence and severity of SAS in cardiac amyloidosis.

Methods: Patients prospectively referred in our cardiology department for cardiac amyloidosis underwent polygraphy to diagnose sleep apnoea syndrome (SAS) between 2010 and 2012. SAS was defined as an apnoea-hypopnoea index greater or equal to 5 events/h.

Results: Thirty-five patients were included, of whom 15 had AL, 9 FAP and 11 SSA. Mean age, body mass index, N-TproBNP, and left ventricular ejection fraction, of the overall cohort were respectively 72±12 years, 24±4 kg/m², 5642±7812 and 48±13 respectively. The prevalence of SAS was 56%. 9% of the drinkers were classified as central and 57% as obstructive. The mean apnoea-hypopnoea index was 22±14 events/h and was superior to 30 events/h in 11 patients. SSA were significantly older than N-TproBNP and LAEF were not different between the three types of amyloidosis. Apnoea-hypopnoea index was more elevated in SSA and FAP than in AL (p=0.01).

Conclusion: The prevalence of sleep-disordered breathing is high in cardiac amyloidosis population, with most syndromes having an obstructive pattern. Effect of SAS treatment should be investigated in this population.

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Paradoxical Response to Exercise (PRE) in asymptomatic hypertrophic cardiomyopathy: a new description of dynamic outflow tract obstruction
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Background: Despite the association of symptoms with LV outflow tract obstruction in HCM, there exist paradoxical situations in which significant intraventricular gradients (>50 mmHg) at rest occur in conjunction with excellent exercise tolerance.

Objectives: To analyze left ventricular (LV) obstruction in hypertrophic cardiomyopathy (HCM) during exercise echocardiography.

Methods: To examine this phenomenon we performed exercise echocardiography and analyzed the clinical status in 107 HCM patients with and without resting obstruction.

Results: At rest, 69 patients had no obstruction while 38 exhibited an intraventricular gradient, 9 of whom exhibited a decrease in gradient of at least 30 mmHg (99±25 to 30±14 mmHg, p<0.001) during exercise (paradoxical response to exercise or PRE). PRE patients presented a significantly lower NYHA clinical class and higher left ventricular volumes and arterial pressure both at rest and during exercise than HCM patients for whom the gradient increased or did not change during stress echocardiography. Finally, PRE patients exhibited a trend toward a reduced rate of cardiac events.

Conclusions: Our study identified a new subgroup of HCM patients, designated PRE, based on a decreased intraventricular gradient during exercise. The reduced exertional obstruction may account for the better functional class and trend to less clinical events in PRE patients.

059

Genotype/phenotype analysis and pathophysiology of desmoglein-2 propeptide cleavage-site mutations in arrhythmogenic right ventricular cardiomyopathy
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Background: Desmoglein-2 (DSG2) mutations are common causes of Arrhythmogenic Right Ventricular Cardiomyopathy (ARVC). A hot spot of missense mutations targets the consensus cleavage-site of DSG2 pro-peptide (Arg-X-Arg/Lys-Arg) by Kex2-like proprotein-convertases (PCs). We identified heterozygous missense DSG2 mutations of the cleavage site (p.R46Q, p.R46H, p.R46R and p.K48N) in ten probands out of 200 independent ARVC probands and seven additional relatives. This study analyses the phenotype associated to these specific mutations and experimentally explores their molecular consequences.

Methods and Results: The pro-DSG2 cleavage site mutations were associated with a severe phenotype with diffuse RV dilatation, severe RV dysfunction and frequent LV involvement leading to end-stage heart failure in 3 out of 17 mutation-carriers. Through ex vivo and in vitro analysis by expressing a WT or mutant DSG2-GFP fusion protein in cellular models, we demonstrated that all mutations prevented efficient propeptide cleavage. However mutants pro-DSG2 were correctly addressed to the intercellular junctions. We demonstrated that the presence of propeptide led to the abolition of interactions between the N-ter BC1 domains of the cadherins. This was accompanied with a mis-incorporation of pro-DSG2 into desmosomes as revealed by iF labelling at low Ca2+ concentrations compared to WT DSG2, due to an EGF-dепendant internalization of mutant pro-DSG2 and of its partners PKP2 and PG. Finally, we observed by WB an increase in the soluble pool of mutant pro-DSG2 compared to the WT DSG2 when cells were submitted to mechanical stress.

Conclusion: DSG2 propeptide cleavage-site mutations are associated with a severe phenotype and an increased risk of heart failure. Our experimental results indicated a loss of DSG2 adhesiveness properties and a decrease of the incorporation of mutant DSG2 into desmosomes due to propeptide cleavage abolition that could play an important role in ARVC pathophysiology.

060

Left ventricular non-compaction: predictors of outcomes

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Introduction: According to the ESC Working Group on Myocardial and Pericardial Disease, left ventricular non compaction (LVNC) is still an unclassified cardiomyopathy. Although LVNC is associated with a high incidence of morbidity and mortality, reports about prognosis are contradictory. So we sought to assess the incidence and the predictors of major complications and myocardial contractile recovery.

Methods: This retrospective study enrolled 32 patients who fulfilled the diagnostic criteria of LVNC. Clinical data, cardiac echography and MRI database of our institution was searched for all these patients. Follow-up included an interval history, a focused physical examination and a transthoracic echocardiogram.

Results: The mean age at diagnosis was 48.3±16.4 years. The most frequent symptom at diagnosis was dyspnea NYHA class III/IV (43%). The mean LV end-diastolic diameter was 66.4 mm and the mean EF was 29.5%. Duration of follow-up was 480 days. Major complications were heart failure in 13 patients (40%), thromboembolic events in 3 patients (9%) and ventricular tachycardia in 1 patient (3%). There were no unregistered deaths. There was no predictive role for any variable to specific complications. A worse NYHA class, a lower baseline LVEF, LV dimensions, wall thickness and E/e ratio did not predict MACE. During the follow-up 4 patients (12%) showed myocardial contractile recovery and 9 patients (28%) showed an improvement, with a increase in the mean LVEF to 38.5% (p=0.001). LV systolic improvement was inversely associated with the presence of a left bundle branch block (p=0.071) and LV end-diastolic volume (p=0.052).

Conclusion: Our study demonstrates a high incidence of complications in LVNC disease. However, a relatively large number of patients may show a significant improvement in the LV systolic function shortly after the onset of symptoms. The improvement is unlikely to occur in patients with left bundle branch block and dilated LV.

061

Usefulness of right ventricle 2D strain in arrhythmogenic right ventricle dysplasia cardiomyopathy


Background: Diagnosis of Arrhythmogenic Right Ventricular (RV) Dysplasia/Cardiomyopathy (ARVD/C) is based on International Task Force Criteria (ITFC). But the diagnosis remains challenging especially in the early course of the disease. The purpose of this study was to assess if the RV 2D strain analysis could be an accurate tool to detect RV abnormalities in patient with suspicion of ARVD/C.

Methods: We enrolled 95 patients with suspicion of ARVD/C referred to our institution. ECG, SAECG, echocardiography and RV angiography were performed in all patients. Based on ITFC and a final experts’agreement, the patients were classified as follows: affected ARVD/C (n=50), borderline ARVD/C (n=9) or normal (n=36). In addition, RV longitudinal strain was measured in 6 RV segments obtained from the RV focused apical 4-chamber view. Analysis was performed offline and blinded of the final diagnosis.

Results: Compared to normal, affected patients had only a mild decrease in RV fractional area change (FAC) (37%±9% vs 44%±7% p=0.002) and an mild increase RV outflow tract diameter (RVOT) (35±6mm vs 32±2mm, p=0.002). Borderline had normal FAC and increase RVOT. Affected patients displayed a reduced global RV strain (RV-GS) (-20.8±4.8% vs -24.8±3.3% p<0.0001). Segmental strain analysis showed the reduction was major in the lateral-basal segment (RV-LBasS), the lateral-mid segment (RV-LMidS) and the septum-basal segment (RV-SBasS). Borderline’s patients had no significant altered RV strain compared to normals or affected patients.

Conclusion: RV 2D strain is significantly lower in affected ARVD/C patients compared with normal, but not with borderline, especially in mid lateral and basals segments. The presence of a RV strain impairment may be useful for the diagnosis of ARVD/C in the early course of the disease.

Figure – Results

062

Congestive heart failure in type 2 diabetes: about 324 Tunisian patient

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Objective: To estimate the prevalence and incidence of congestive heart failure (CHF) in populations with and without type 2 diabetes and to identify risk factors for diabetes-associated CHF.

Research design and methods: We searched the inpatient and outpatient electronic medical records of 324 individuals diagnosed with type 2 diabetes...
before 1 January 2011 and those of an age- and sex-matched control group without diabetes for a diagnosis of CHF. Among those without a baseline diagnosis of CHF, we searched forward for 24 months for incident cases of CHF. We constructed multiple logistic regression models to identify risk factors for both prevalent and incident CHF.

**Results:** CHF was prevalent in 11.8% (n=1,131) of diabetic subjects and 4.5% (n=72) of control subjects at baseline. We observed incident cases of CHF in 7.7% of diabetic subjects free of CHF and in 3.4% of control subjects. In diabetic subjects, age, diabetes duration, insulin use, ischemic heart disease, and elevated serum creatinine were independent risk factors for both prevalent and incident CHF. Better glycemic control at baseline, and improved glycemic and blood pressure control at follow-up predicted the development of CHF. In addition, the renal function was deteriorate in the diabetic group related to the risk of CHF.

**Conclusions:** Despite controlling for age, duration of diabetes, presence of ischemic heart disease, and presence of hypertension, insulin use was associated with both prevalent and incident CHF. Why insulin use and better glycemic control both at baseline and follow-up independently predicted CHF deserves further study.

### 063

**What are particularities in echocardiography and doppler of diabetics with chronic heart failure?**

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**Introduction:** The prevalence of heart failure and diabetes are both increasing: 25 to 30% of patients with heart failure suffer from diabetes. Diabetics have more diastolic dysfunction because accumulation collagen in intramyocardial.

The objectives of our study are to compare echocardiographics and Doppler profiles of diabetics and non diabetics.

**Material and methods:** We included 1800 patients, diabetes and non diabetics, admitted in unit of heart failure in our Center of Cardiology from May 2009 to October 2012. All patients were evaluated by echocardiography and Doppler.

The data are presented as numbers, percentages, and medians with interquartile range; the distribution of variables was compared between diabetics and non diabetics by chi-square test with confidence intervals.

**Results:** similarity of the parameters studied between the 2 groups diabetics and non diabetics in terms of morphology and hemodynamics (end diastolic left ventricle volume; mitral regurgitation; interventricular septum size; pulmonary arterial systolic pressure; left atrial volume …). But, we have found important differences of 3 parameters: Ejection fraction of left ventricle was higher (48.5% and 35%) in diabetics group. We found more segmental kinetic disorders (76% and 50%) and more diastolic dysfunction with higher filling pressures (51% and 34%) in diabetic population.

**Conclusions:** So, in our study, we have found more diastolic dysfunction and more segmental kinetic disorders but ejection fraction of left ventricle is higher in patients diabetic with chronic heart failure. In General, our results were consistent with most of the European and American registers.

These findings emphasize the importance of individualised management and need for more comprehensive recruitment of diabetics in clinical trials.

### 064

**Left ventricular remodeling in homozygous sickle cell disease: role of haemolysis and relation to pulmonary pressure**

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**Introduction:** Prognostic value of increased pulmonary pressure and its link to haemolysis are well established in homozygous sickle cell disease (HSC). Left ventricular (LV) remodelling has been less studied in these patients, and is attributed solely to anaemia.

**Objectives:** Study the determining factors of LV remodelling in HSC and investigate its relation to pulmonary pressure.

**Methods:** 154 stable HSC patients (28.6±8.5 years, 99 women) and a control group of 45 age and sex-matched people underwent echocardiography. LV end-diastolic volume was measured by Simpson method and indexed to body surface area (LVVI); cardiac index (CI), LV filling pressure (E/e') and pulmonary pressure by tricuspid regurgitation (TR) were also measured. Clinical and biological data were collected.

**Results:** LVVI, CI, E/e' and TR were significantly increased in HSC patients compared to the control group (table). Multivariate analysis in the patient group showed that the two determining factors of LVVI are haemoglobin (anaemia) and bilirubin (chronic haemolysis).

TR is determined by age, CI and E/e'.

**Conclusion:** In homozygous sickle cell disease, the LV is dramatically dilated. Haemolysis along with anaemia is one of the LV remodelling determining factors in these patients.

**Table**

<table>
<thead>
<tr>
<th>Patients (N=154)</th>
<th>Controls (N=45)</th>
<th>p</th>
</tr>
</thead>
<tbody>
<tr>
<td>Age (years)</td>
<td>28.6±8.2</td>
<td>29.2±8.2</td>
</tr>
<tr>
<td>Women, n (%)</td>
<td>99 (64)</td>
<td>64 (29)</td>
</tr>
<tr>
<td>CI (L/m²/m²)</td>
<td>4.1±0.9</td>
<td>3.0±0.5</td>
</tr>
<tr>
<td>LVVI (ml/m²)</td>
<td>91.9±19.8</td>
<td>54.3±10.8</td>
</tr>
<tr>
<td>E/e'</td>
<td>6.0±1.7</td>
<td>4.6±1.2</td>
</tr>
<tr>
<td>TR (m/s)</td>
<td>2.5±0.3</td>
<td>2.2±0.2</td>
</tr>
</tbody>
</table>

### 065

**Prevalence of anaemia in heart failure to the university hospital of Brazzaville.**

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**Objectives:** to determine the prevalence of anaemia in heart failure, and to evaluate its impact on the prognostic.

**Patients and methods:** it was about a cross-sectional study with prospective collection, carried out of the January 1st at December 31th, 2010 in the service of cardiology and internal medicine of the university hospital of Brazzaville. The study included patients admitted for a left or global heart failure. Anaemia was defined by a rate of haemoglobin<12 g/dl at the man and <11 g/dl at the woman. Two hundred and seventy two patients were retained, divided into two groups according to anaemic patients (n=114) and non anaemic patients (n=150).

**Results:** they were 130 men (47.8%) and 142 women (52.2%), old on average of 56.9±16.5 years (extreme: 18 and 97 years). The prevalence of anaemia was 42%, with an average rate of haemoglobin of 11.9±4.4 g/dl (extreme: 4.7 and 15.2 g/dl). The subjacent heart diseases were a hypertensive heart disease in 106 cases (39%), a diilated cardiomyopathy in 86 cases (31.6%), a myocardit in 27 cases (9.9%), a valvulopathy in 24 cases (8.8%), an ischaemic heart disease in 15 cases (5.5%), and of unspecified cause in 14 cases (5.1%). Heart failure was global in 233 cases (85.7%) and left in 39 cases (14.3%). Two hundred and forty-nine patients (91.5%) were in functional class III-IV of the NYHA, without difference between the A and NA (p=0.6). Left ventricle ejection fraction was 48±14.6% in A and 52±14.9% in NA (p=0.43). Forty seven patients (17.3%) were under anti-vitamin K and 15 (5.5%) under acetylsalicylic acid. The average duration of stay was of 19.1±16.7 days, without difference between the A and NA (19.4±12 days).
versus 18.8±13.8 days; p=0.79). Mortality rate total was 17%, with a significant difference between the A and NA (26% versus 10%; p=0.001).

Conclusion: this preliminary study showed a high prevalence of anaemia in heart failure, and its negative influence on the prognostic. The assumption of responsibility for this co-morbidity would make it possible to improve the prognostic of the heart failure patients.

Keywords: heart failure, anaemia, prognostic, Congo.

066
Hematologic determinants of cardiac remodeling and cardiac index in sickle cell disease patients.

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Background: In sickle cell disease (SCD), relationship between cardiac remodeling, cardiac index (CI) and haemoglobin (Hb), red blood cell count (RBC) and foetal Hb (fHb) have not been well characterized.

Methods: We interrogated our hospital database including 1780 SCD patients. Inclusion criteria were: patients with SS or ST* sickle cell disease having an echocardiography and without pregnancy. 656 SS-STS* were included in the analysis with a mean age of 31(25; 40). SCD patients were compared with 25 age-matched black healthy subjects. Echocardiography included M-mode, 2D, pulsed Doppler and LV tissue Doppler.

Results: Compared to control, SCD had significant higher left ventricular diastolic diameter indexed to body surface area (LVEDD indexed), left atria diameter indexed (LAD indexed), CI and lower LVEF. Systolic pulmonary artery pressure (sPAP) was not different between the two last groups.

In SCD, LVEF was not correlated with Hb (p=0.74) whereas CI and LVEDD indexed were (both R=0.25, p<0.0001). Systolic dysfunction (LVEF<50%) was observed in only 3.4%.

There was poor relationship between LVEDD and CI (R=0.15, p=0.01). Patients were divided in quartiles of CI and LVEDD indexed. Patients in the fourth quartiles (Q4) of LVEDD indexed (median/range: 35 (34; 37)) and of CI (4.7 (4.5; 5.3)) versus the three others quartiles (Q1-3) had significantly lower Hb, HbF and RBC and higher lactate dehydrogenase and bilirubin which are associated with hemolysis.

Patients in Q4 LVEDD indexed had lower heart rate, LVEF and higher CI, LAD indexed, sPAP, severity of mitral regurgitation, compared to Q1-3. Patients in Q4 CI had higher heart rate, LVEDD indexed, LAD indexed, sPAP, and lower CI and LAD indexed, compared to Q1-3.

Conclusion: In SCD, cardiac remodeling and elevated cardiac output are determined by hematologic variables and associated with hemolytic pattern.

067
Cardiac involvement, major problem in human immunodeficiency virus infection in children

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Objectives: The present the main clinical aspects and diagnostic problems of cardiac involvement induced by human immunodeficiency virus infection (HIV infection/AIDS) in children.


Results: 60% of patients were included in group P2I clinical staging. Signs of cardiac involvement: heart failure (11 cases), tachycardia (20 cases), deafness of the heart sounds ± gallop rhythm ± systolic murmur of mitral regurgitation (12 cases), dyspnnea (14 cases), other non-symptomatic (14 cases) or with signs of other diseases. ECG: disturbances of ventricular repolarisation, sinusal tachycardia. Rx.CT: cardiomegaly (30% cases) ± aspects of pulmonary infections. Echo exam: cardiac involvement in 66% cases: dilated cardiomyopathy, the most severe changes (14 cases), pericarditis(10 cases), isolated dilation of the left and right ventricle (6 cases), LV diastolic dysfunctional (14), pulmonary hypertension (6). The severity and incidence of cardiac disease was associated with significant reduction of CD4 value (20 cases). Histological exam in 28 patients died by pulmonary infections: aspects of myocarditis, pericardial and myocardial inflammatory infiltration, necrotic lesions.

Conclusion: By the high incidence (66%) of cases and severity of clinical manifestations, cardiac suffering during HIV infection / AIDS is one of the most important problems of these patients. Cardiological evaluation of patients is necessary in all the stages of the infection, even non-symptomatic, for the diagnosis and follow-up of evolution. Echocardiography is the most sensitive noninvasive method useful for highlighting cardiac damage in these patients.

068
When heart failure has to do with past abdominal surgery...

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We report the interesting case of a 70-year-old woman admitted to hospital for progressive dyspnea revealing congestive heart failure. Her past medical history was marked by permanent atrial fibrillation, obesity (body mass index 45 kg/m²) and cholecystectomy for symptomatic gallstone. The first echocardiographic evaluation showed preserved left ventricular systolic function, but a major dilation of right-sided cavities and inferior vena cava. Systolic pulmonary artery pressures were elevated at 60 mm Hg. After a rapid and major relief of congestive symptoms thanks to high doses of diuretics, a right heart catheterization was performed and confirmed elevated right-sided pressures (mPAP: 28 mmHg, PCWP 12 mm Hg) with high cardiac output (5.2 l/min/m²).

To explore this patient with congestive heart failure and high cardiac output, thyroid function and hemoglobin returned in normal ranges. A chest, abdomen and pelvis computed tomography was performed and demonstrated a large porto-systemic shunt. A mesenteric angiography was subsequently performed and confirmed the communication between the right side of the portal vein and the right sub-hepatic vein. The porto-systemic shunt was embolized with an amplatz plugs. As a result of the suppression of the shunt, six months later, the patient had not experienced any other episodes of congestive heart failure and echocardiography confirmed the regression of pulmonary hypertension and right-sided cavities enlargement. Extrahepatic portosystemic venous shunting in the absence of portal hypertension or abdominal trauma is extremely rare. For our patient, the porto-systemic shunt was probably to attribute to the past cholecystectomy.

069
Echocardiographic evaluation of sudden death risk of the arrhythmogenic right ventricular cardiomyopathy / dysplasia

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Objective: To describe the clinical, electrocardiographic and echocardiographic variables involved in the stratification of the risk of sudden death of the arrhythmogenic right ventricular cardiomyopathy/dysplasia (ARVCD).

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Method: From 2005 to 2012, 25 patients, 22 males and 3 females, mean age 35.4±16 years range 15-62 years, fulfilling the 2010 ARVC D ESC criteria were screened. Conventional transthoracic echocardiography and tissue Doppler Imaging (DTI) at the lateral tricuspid annulus were performed to assess the right and left ventricular cavity size and function among the usual parameters.

Results:
– 1 patients have 2 major criteria: an aspect of major arrhythmia, ventricular tachycardia, and dilated right cavities.
– 7 patients have three major criteria: appearance of ventricular tachycardia, a major anomaly called depolarization wave epsilon and dilated right cavities. Among them, two patients died, suddenly in one case and after a stroke in the other case where echography showed very dilated right cavities with very dense spontaneous contrast.
– 4 Patients diagnosed with 4 major criteria: the occurrence of syncope, epsilon wave, ventricular tachycardia and dilated right cavities.
– 3 patients with a family history of sudden death and dilated right cavities.
– Ventricular function was decreased in 11 patients.

Discussion and Conclusion: Echocardiography takes an important place in the diagnosis and prognostic of ARVD and allows to screen non invasively all the members of the family when the diagnosis has been made.

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Causes of readmission for heart failure to the university hospital of Brazzaville.

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Objectives: to identify the independent factors of decompen- sation of heart failure, and to propose axes of prevention.

Patients and methods: it was about a cross-sectional study with prospective collection, descriptive, carried out of the January 1st at December 31th, 2010 in the service of cardiology of the university hospital of Brazzaville. This study included known patients and treatments for heart failure, readmitted in the service for a push of left or global heart failure. Hundred twenty-five patients were retained, divided into 69 men (55.2%) and 56 women (44.8%).

Results: The median age of the patients was 59±14 years (extreme: 32 and 97 years), and the sex-ratio 1.2. The patients were of a standard of living raised in 39 cases (31.2%), weak in 47 cases (37.6%), and without income in 39 cases (31.2%). The principal subjacent heart diseases were a hypertensive heart disease in 40 cases (32.0%), a dilated cardiomyopathy in 36 cases (28.3%), a valvulopathy in 21 cases (16.8%), and an ischaemic heart disease in 14 cases (11.2%). The maintenance treatment comprised diuretic in 95 cases (76.0%), an ACE/ARA2 in 88 cases (70.4%), digoxin in 31 cases (24.8%), spironolactone in 29 cases (23.2%), a beta-blocker in 12 cases (9.6%). Twenty-five patients (20%) were under acetylsalicylic acid and 24 (19.2%) under anti-vitamin K. The identified independent factors of decompensation were a variation of mode in 84 cases (67.2%), an interruption of maintenance treatment in 83 cases (66.4%), a pulmonary embolism supposed in 46 cases (36.8%), a flu syndrome with bronchopulmonary superinfection in 19 cases (15.2%), and an anaemia in 9 cases (7.2%). The other factors were represented by a hypertensive push (n=4), a passage in atrial fibrillation (n=3), and a myocardial ischaemia in one case.

Conclusion: the assumption of responsibility of heart failure remains difficult in Congo. Its optimization passes by the education of the heart failure patients, and by the improvement of the living conditions of these often modest populations.

Keywords: heart failure, readmission, Congo.

073

Precipitating factors associated with diastolic heart failure in the elderly

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Beside basal myocardial dysfunction, acute heart failure involves associated factors, which increase pulmonary capillary pressure or decrease colloid osmotic pressure. The aim of this study was to evaluate the prevalence of these precipitating factors in a population presenting with acute heart failure with preserved left ventricular systolic function.

Methods: Forty-eight patients (25 men, 78±10 years) presenting pulmonary edema with a left ventricular ejection fraction >45% were included. All had a Doppler echocardiography at the time of intravenous loop diuretics initiation. Patients with severe valve disease or symptomatic coronary disease were excluded.

Results: A history of heart failure, coronary disease, hypertension and diabetes was present in 62%, 42%, 64% and 33% of patients, respectively. On admission, mean left ventricular ejection fraction was 61±9% and 79% of patients had critical elevation in Doppler filling pressures. Associated factors were renal failure (creatinine clearance <30 ml/min) in 33% patients, silent myocardial ischemia (troponin I >0.5 ng/ml) in 31%, atrial fibrillation in 29%, high systolic blood pressure (>160 mmHg) in 27%, major sepsis in 25%, severe hypoalbuminemia (<2.5 g/dl) in 23%, and severe anemia (<10 g/dl) in 17%, respectively. Four patients had no aggravating factor, whereas 34 and 10 patients had 1–2 and 3–4 associated factors, respectively.

074

Epidemiology, therapeutic and future of heart failure in Moroccan women

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Introduction: Heart failure affects nearly 5 million people in the United States, and more than 50% of them are women. In Morocco like most developing countries there are no accurate statistics on the epidemiology of heart failure in women

Objectifs: We report the experience of cardiology center. A retrospective study from May 2009 to October 2012.

The objective of our work is to analyze the epidemiological and therapeutic and prognosis of heart failure in women

Materials and Methods: Of 1800 patients there were 630 women so 35%, their mean age was 65±10 years. 47% of women were hypertensive, 38% diabetic, 21.6% sedentary, 20% postmenopausal and 12.3% obese. 353 patients (56.05%) were in New York Heart Association class II, 180 (28.7%) in class III and 18 (3.56%) in class IV, sixty eight patients (10.9%) with atrial fibration. Heart rate on admission was greater than 80 beats per minute in 305 patients (48.5%). Only 15 patients had preserved systolic function. Heart failure was ischemic in 47.42% cases, toxic in 4.76% cases, 10 patients had a peripartum cardiomyopathy. About the treatment only 23.80% of women had reached the target dose of beta blockers. After 1 year of follow up there 35% were hospitalized at least 3 times, 4.2% of deaths (1.6% of cardiovascular causes).

Conclusion: Women tend to develop heart failure at an older age and with better left ventricular systolic function compared with men. Women are more likely than men to have hypertension and diabetes as underlying risk factors for heart failure and are less likely to have coronary artery disease.

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Heart failure in the presence of a normal left ventricular ejection fraction: Algerian cohort.

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Introduction and objectives: An increasing number of patients hospitalized for heart failure (HF) are found to have a normal left ventricular (LV) ejection fraction (EF). The cause of HF in these patients is thought to be related to LV diastolic dysfunction.

We conducted a multicenter study (military hospitals of Algiers and Constantine) to define the clinical characteristics, hospital course, treatment, and factors precipitating decompensation in patients hospitalized for heart failure with a normal ejection fraction (HFNEF).

Methods: Patients hospitalized for heart failure (HF) during 2010-2012 at the two medical centers in Algeria and found to have a left ventricular (LV) ejection fraction of >50% were included in this study. Patient demographics, signs and symptoms of HF, coexisting and exacerbating cardiovascular and medical conditions, treatment, laboratory tests, and hospital outcomes data were collected.

Results: Of 296 patients, 81% were women, who were on average eight years older than men (73.2 years vs. 65.3). Co-morbid conditions and their prevalence were: hypertension, 84%; increased LV mass, 92%; diabetes, 52%; and obesity, 67%. Before clinical decompensation that precipitated hospitalization, 72% of patients had chronic symptoms compatible with New York Heart Association functional classes II to IV. Factors precipitating clinical decompensation were identified in 49% of patients. In-hospital mortality was 4.05%.

Conclusions: Patients hospitalized for HFNEF are most often chronically incapacitated elderly women with a history of hypertension and increased LV mass. Reasons for clinical decompensation are identified in only one-half of patients.
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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, 65 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 appearance 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 moderately 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 dysynchrony (inter and intraventricular dysynchrony). We found that 95% of patients with complete left bundle branch block (BBGC) had whether inter or intraventricular dysynchrony. Among the patients with a BBGC, the number of those with an interventricular dysynchrony was equal to that of those with an intraventricular dysynchrony (23%). One hundred percent of our patients with a QRS duration >140 ms had whether an inter or an intraventricular dysynchrony. 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 dysynchrony was higher than that of the interventricular one. We found a statistically significant positive correlation between the QRS duration and the parameters of interventricular dysynchrony in echocardiography: Doppler: Aortic pre-ejection delay (p<10-3) with an interval between the Aortic and the Pulmonary pre-ejective counterpart (p<10-3). We also noted a statistically significant positive correlation (p<10-3) between the QRS duration and the intraventricular dysynchrony 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 dysynchrony. As a matter of fact, nowadays, indicating a multisite pacemaker is based primarily on the electrocardiographic criteria of dysynchrony in the case of an absence of an individualized reproducible criterion of the mechanical dysynchrony.

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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 dysynchrony.

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.