ABSTRACTS OF THE 19TH CONGRESS OF ECHOCARDIOGRAPHY

Poster session: Left ventricular function - Heart failure

Hypocalcemia as a rare cause of reversible cardiomyopathy
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Hypocalcemia is a very rare cause of dilated cardiomyopathy with alteration more or less of the contractile function of left ventricle (LV). It is complicated rarely with heart failure. We report two cases admitted to the cardiology department of the University Hospital Mohammed VI in Marrakech for congestive heart failure secondary to severe hypocalcemia.

Case 1.— A 29-year-old female was admitted in our hospital due to congestive heart failure with dyspnea (NYHA class IV) and generalized oedema for 2 days. She had a history of total thyroidectomy one year ago due to thyroid goiter. She had taken synthroid as a daily medication associated to calcium supplementation and vitamin D because of hypoparathyroidia. Patient was not compliant to treatment. Laboratory tests revealed severe hypocalcemia. Transthoracic echocardiography (TTE) showed a dilated LV with global hypokinesia and an ejection fraction (EF) at 25% and mild mitral regurgitation. A marked clinical improvement was noted after correction of hypocalcemia. Four months later, we observed a total recovery of LV function.

Case 2.— A 44-year-old male, without particular medical history, who was hospitalized for a congestive heart failure. TTE showed a dilated LV with severe alteration of systolic function (EF to 20%). Laboratory tests showed hypocalcemia, with decreased of a parathyroid hormone. There was improvement of symptoms after correction of metabolic disorder. The ventricle has gradually recovered its performance.

Hypocalcemia is an unrecognized cause of heart failure with a favorable prognosis. However, it requires a specific care.

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Left ventricular dysfunction in asymptomatic patients with systemic lupus erythematosus
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Objective.— Systemic lupus erythematosus (SLE) has been associated with an increased risk of cardiovascular disease. The aim of this study is to assess left ventricular (LV) function in asymptomatic patients with SLE.

Methods.— We included 58 female SLE patients without symptoms or signs of heart failure or angina (group I), and 58 healthy female subjects (group II). The 2 groups had similar mean age, mean blood pressure and body mass index. All included subjects had no evidence of valvular or ischemic heart diseases. We used standard echocardiography and tissue Doppler imaging (TDI).

Results.— There is no difference in conventional indices of global LV function. However, we observed lower mitral annulus systolic velocities measured by TDI suggesting subclinical LV systolic dysfunction (3.5 ± 1 cm/s vs. 7.8 ± 0.9 cm/s, P < 0.01). We also find impaired diastolic function with lower mitral annulus early diastolic velocities Em (7.2 ± 1.1 cm/s vs. 11.7 ± 1.8 cm/s, P < 0.01) and higher ratio of transmitral E wave velocities to Em velocities (12.2 ± 1.9 vs. 7.4 ± 1.2; P < 0.01). Among SLE patients, impaired LV systolic and diastolic indices are significantly pronounced in the subgroup with longer disease duration (> 10 years).

Conclusion.— This study shows the presence of LV systolic and diastolic dysfunction in asymptomatic SLE patients. Tissue Doppler imaging may provide a useful tool to monitor the disease process and treatment response of this subclinical myocardial dysfunction.

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Early diagnosis of left ventricular diastolic dysfunction in diabetic patients: A possible role for natriuretic peptides
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Purpose.— Epidemiological studies show a strong correlation between diabetes mellitus (DM) and heart failure. DM may result in cardiac and structural abnormalities (diabetic cardiomyopathy) before symptoms onset. The diagnosis of left ventricular (LV) dysfunction at this stage could offer the possibility of an early therapy to stop the progression to overt heart failure. The aim of the study was to verify whether BNP might detect preclinical diastolic dysfunction (LVDD) in type 2 diabetic patients.

Methods.— We enrolled 142 consecutive ambulatory patients (69 males and 73 female, age 35—65 years) with type 2 DM and without history of coronary artery disease. All patients underwent clinical evaluation, laboratory assessment of brain natriuretic peptide (BNP) and echocardiographic examination for detection of systolic (ejection fraction &lt;8804; 40%) or diastolic dysfunction and LV hypertrophy (LV mass &gt; 50 g/m².7).

Results.— No patients showed systolic impairment of left ventricular function, whereas diastolic dysfunction was detected in 64 (45%) cases (all impaired relaxation). Median BNP was 30 pg/mL without any significant difference between 78 patients with normal left ventricular function and 64 with diastolic dysfunction;
in 60 (43%) patients showing HbA1C greater than or equal to 8 (uncontrolled diabetes), normal function was found in 36 and diastolic dysfunction in 24, with a significant difference of BNP at multivariate analysis (OR = 1.03, 95%CI = 1.04–1.09, P = 0.002). In uncontrolled diabetic cohort, BNP was a strong predictor for LVDD (OR = 3.1, 95%CI = 1.5–6.1, P = 0.004) along with the duration of diabetes (OR = 2.1, 95%CI = 1.3–3.2, P = 0.034). BNP > 25pg/mL was a cut-off value with high accuracy to detect a LVDD.

Conclusions.— BNP could be a cheap, easy and useful tool to screen patients with preclinical ventricular diastolic dysfunction among those particularly prone to develop cardiovascular complications, such as uncontrolled diabetic patients.

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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.

Patients and methods.— We included 1351 patients, diabetics and non-diabetics, admitted in unit of heart failure in our Center of Cardiology from May 2006 to October 2010. 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.— One thousand three hundred and fifty-one patients were studied, the median age was 63 years. Three hundred and sixty-seven (27%) are diabetics. Overall, it exists 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.

Conclusion.— 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 diabetics with chronic heart failure. In general, our results were consistent with most of the European and American studies. These findings emphasize the importance of individualised management and need for more comprehensive recruitment of diabetics in clinical trials.

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Serial measurements of NT-proBNP are predictive of non-high dose anthracycline cardiotoxicity in breast cancer patients
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Background.— A well-known side effect of anthracycline’s chemotherapy is cardiotoxicity. It consists in developing a dose-dependent cardiomyopathy with an incidence ranging from 2 to 20%. Assessment of biohumoral markers may be useful in early detection of subjects at high risk of developing cardiotoxicity, as demonstrated by studies carried out in patients undergoing a high-dose chemotherapy. However, there are few studies considering both the measurement of natriuretic peptides and not-high-dose protocol of chemotherapy.

Aim.— The aim of the study was to evaluate the possibility of early detection of subjects at high-risk for developing left ventricular dysfunction in breast cancer patients undergoing non-high-dose chemotherapy (NHDC).

Methods and results.— In 71 patients treated with anthracycline NT-proBNP, CK-MB and cardiac Troponin I (cTnl) were evaluated before each drug administration and 24 hours after. Left ventricular dimension/function was assessed by echocardiography at baseline, every two cycles, at the end of chemotherapy, 3, 6 and 12 months during the follow-up. NT-proBNP, CK-MB and cTnl values were normal at baseline in all the patients. Throughout the chemotherapy, CK-MB were normal, cTnl was abnormal only occasionally in 4 patients, NT-proBNP showed abnormal values. According to these NT-proBNP modifications, the patients were divided into 2 groups: group A (50 patients), where normal values (23 cases) or temporary alterations (27 cases; i.e. increase at 24 hours and then decrease to normal values) were detected; group B (21 patients) with persistent NT-proBNP abnormalities throughout all the measurements. The Group B showed follow-up left ventricular impairment greater than the Group A. The percentage difference (baseline-peak) NT-proBNP was predictive for LV impairment at 3, 6 and 1-year follow-up; percentage difference (baseline-peak) NT-proBNP higher than 36% was predictive for LV impairment at the same follow-up interval times.

Conclusions.— Serial evaluation of NT-proBNP may be a useful tool in order to early detect the patients at high-risk of cardiotoxicity, among those treated with NHDC.

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Contribution of right ventricular echocardiographic parameters in evaluation of the prognosis of dilated cardiomyopathy
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Introduction.— The evaluation of the prognosis of patients with dilated cardiomyopathy (DCM) is an essential step in their care. Doppler echocardiography is a noninvasive, reliable and available method for the diagnosis and also for the prognosis’s study of these patients. But the study ultrasound of the right ventricle (RV) is not a part of the practice of the cardiologist.

Purpose of study.— Determine which of the echocardiographic parameters that assess systolic and diastolic function of the RV, those predicting of the occurrence of secondary cardiac events (death, hospitalization for decompensated heart failure and ventricular arrhythmias poorly tolerated) in patients with DCM.

Materials and methods.— Prospective study in 61 patients with DCM symptomatic heart failure (class II–IV NYHA) who are stable with medical treatment. All these patients received a conventional echocardiographic examination with emphasis on studying the RV parameters: fractional shortening surface RV (FRSRV), the systolic excursion of the tricuspid annulus to the TM (TAPS), and systolic pulmonary artery pressure (SPAP), that is completed by a study at tissue pulsed Doppler at the tricuspid annulus wave (Sa, Ea and Aa).

All patients were regularly monitored. We studied the correlation between echocardiographic parameters of RV and the occurrence of secondary cardiac events.

Results.— There were 61 patients in a period from February 2006 to September 2007. The average age of patients was 62±9.86 years (40 to 81 ans) with a sex-ratio of 2 m/1 woman. Forty-eight percent were patients in NYHA class III. The average fractional ejection of left ventricle was 29 ± 7.2%. DCM was ischemic in 59% of cases. During follow-up (11 ± 5 months), 5 patients died, 22 were hospitalized for decompensated heart failure and 2 patients had a ventricular tachycardia. We have shown that the parameters predictors of mortality are: TAPS < 12 mm and a FRSRV < 33%. Parameters predictive