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 > 25 pg/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.

doi:10.1016/j.acvd.2011.03.026

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 echocardiographic 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.

doi:10.1016/j.acvd.2011.03.027

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 non-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 (cTnI) 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 cTnI values were normal at baseline in all the patients. Throughout the chemotherapy, CK-MB were normal, cTnI 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.

doi:10.1016/j.acvd.2011.03.028

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 years) with a sex-ratio of 2 m/1 woman. Forty-eight percent of patients were 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
of hospitalization for decompensated heart failure: SPAP > 42 mm Hg, RV FRS < 39%, a TAPS < 15 mm and wave velocities Sa and Aa or DTI tricuspid annulus respectively 10.1 cm/s to 6.09 cm/s and 12.75 cm/s. Echocardiographic parameters predictive of cardiac events overall were: SPAP > 42 mm Hg, a TAPS < 11.5, a FRSRV < 38%, Sa and Aa waves to the DTI tricuspid lower respectively at 10.2 cm/s and 14 cm/s. In multivariate analysis, only the FRSRV < 38% was a factor directly related to the occurrence of cardiac events overall. Conclusion.— In current practice, assessment of the prognosis of patients with DCM is limited to consideration of the left ventricular status.

### Methods and results

Methods.— In the present prospective study of 120 adults, mean age 59.4 ± 4 years, referred for a clinically-indicated echocardiogram and in sinus rhythm, with no history of atrial arrhythmias or valvular heart disease and with an ejection fraction > 50%, we determined the LA volume, LV diastolic function status. The left atrial volume was calculated from the apical four-chamber and two-chamber views at ventricular endsystole with using Simpson’s biplane method. Diastolic dysfunction (DD) was found in 72% of classified patients. The LA volume indexed to body surface area (LAVi) increased with worsening DD: 23.8 ± 17 mL/m² (normal), 29 mL/m² (grade I), 42.5 ± 25 mL/m² (grade II) and 51.7 mL/m² (grades III). The LAVi was strongly associated with diastolic function grade (P < 0.001). Conclusion.— In patients without a history of atrial arrhythmias or valvular heart disease or an ejection fraction > 50%, LA volume expressed the severity of diastolic dysfunction.

### Impact of betablocker, as a treatment of heart failure, on the echocardiographic parameters


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Introduction.— Little study analyzed the effect of betablocker on echocardiographic, functional parameters and the capacity of exercise in case of heart failure.

**Aim.**— To analyze the impact of betablocker on several clinical, functional, echocardiographic, biochemical parameters, and to define predictive factors of improvement.

Methods.— Our study is prospective between August 2009 and June 2010 including patients followed in cardiology department of Hédi Chaker hospital for steady heart failure due to left ventricular systolic dysfunction. Patients benefited a clinical, functional (NYHA class, TM6M, Minnesota score), echocardiographic parameters and to decrease the NT-proBNP.

Results.— Forty patients have been included in the study. The mean age was 61.15 ± 9.86 years, the sex-ratio was 9. The heart failure was ischemic in 70% of cases. The mean dose of bisoprolol was 5.375 ± 0.75 mg. The tolerance to the betablocker was good at 70% of patients. A transient aggravation of the effort dyspnea has been noted at 10% of patients. Only one death occurred in the outside of the phase of titration. A reduction of the heart rate has been noted (P = 0.08). No meaningful elongation of the QRS and the QT has been noted. The NYHA class (P > 0.001) and the TM6M improved of meaningful way (P < 0.001). The left ventricle ejection fraction (LVEF) improved at 72.8% of patients. The average of the (LVEF) passed of 29.44 ± 6.51 to 34.49 ± 6.9, P < 0.001. Diastolic function improved of meaningful way at 33% of patients with improvement of the mitral profile (P = 0.08) and of replenishment pressures (P = 0.06). A meaningful improvement of the right ventricle function has been noted at 17.9% of patients. In univariate analysis, the heart rate < 76 bpm, the width of the QRS, a LVEF < 30%, 5% were predictive of improvement of the LVEF. The E/Ea ratio was predictive of diastolic function improvement and no predictive factor of improvement of the right ventricle function has been recovered.

Conclusion.— The bisoprolol permitted to improve clinical, functional, echocardiographic parameters and to decrease the NT-proBNP of meaningful way.