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Relationships between changes in time of quality of life and changes in time of the results of cardiopulmonary exercise test and echocardiography at a follow-up of patients with heart failure

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Purpose: Cardiopulmonary exercise testing, echocardiography and plasma NT-proBNP levels assess patients (pts) with heart failure (HF). Quality of life (QoL) in HF is measured by Minnesota Living with Heart Failure Questionnaire (MLHF) and Specific Activity Questionnaire (SAQ). It is not known whether changes in QoL questionnaire scores correlate to changes in the results of the aforementioned laboratory tests during the follow-up of pts with HF.

Methods: We performed repeat measurements after a median of 26 (21 – 34) months in 30 pts with HF.

They underwent a cardiopulmonary exercise test, an echocardiography test (LVEF) and a measurement of plasma NT-proBNP. Pts completed MLHF and SAQ. Changes were calculated in all measures between the first and the second measurement (Δ). All the patients were taking β -blockers, 83% ACE/ARBs and 83% diuretics.

Results: Nonsignificant increases were found in peak VO₂ (21.47 ± 9.3 to 21.9 ± 4.9 ml/kg/min; Δ peakVO₂ = 1.14 ± 3.5 ; NS), VE/VCO₂ slope (34.47 ± 7 to 35.13 ± 5.1 ; Δ VE/VCO₂ = 0.66 ± 5.8 ; NS), LVEF (32.17 ± 6.27 to 32.48 ± 7.6 %; Δ LVEF = 0.16 ± 2.7 ; NS). NT-proBNP levels decreased nonsignificantly from a median value of 375.5 pg/ml to 235 pg/ml; median Δ NT-proBNP = -21 pg/ml; NS. SAQ scores improved significantly (6.86 ± 1 to 7.48 ± 1.15 ; Δ SAQ = 0.625 ± 1.43 ; $p=0.029$) and MLHF scores decreased significantly from 21.5 ± 9.3 to 16.6 ± 13 (Δ MLHF = -4.13 ± 9.5 ; $p=0.033$). Δ SAQ correlated with Δ MLHF ($r=-0.417$, $p=0.03$) and Δ peakVO₂ ($r=0.448$, $p=0.017$). Δ MLHF correlated with Δ LVEF ($r=-0.557$, $p=0.007$). Δ VE/VCO₂ correlated with Δ peakVO₂ ($r=-0.417$, $p=0.025$). Δ NT-proBNP only correlated with Δ peakVO₂ ($r=0.518$, $p=0.004$) and Δ VE/VCO₂ ($r=0.538$, $p=0.003$), but with neither questionnaire.

Conclusions: Significant changes in quality of life expressed by MLHF scores relate to nonsignificant changes in left ventricular ejection fraction, while significant changes in activity capacity as measured by SAQ relate to nonsignificant changes in peak oxygen consumption.

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Both questionnaire scores and laboratory tests can predict hospitalization and death in patients with heart failure

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Purpose: We compared the prognostic value of quality of life questionnaires, cardiopulmonary exercise testing (CPX), echocardiography, plasma NT-proBNP in identifying patients (pts) who will be hospitalized for deterioration and/or die from heart failure (HF).

Methods: Sixty-two pts with HF were followed-up for a mean period of 27 ± 7 months for hospitalization for worsening HF and death. They all underwent a CPX on a treadmill and echocardiography test (LA, LVEF). A measurement of plasma NT-proBNP was taken and pts completed the Minnesota Living with Heart Failure Questionnaire (MLHF) and Specific Activity Questionnaire (SAQ).

Results: Two pts (3%) died due to HF and seven pts (11%) were hospitalized for worsening HF. The area under the ROC curve (AUC) for NT-proBNP to identify pts that were hospitalized or died was 0.864 ; $p=0.001$. The AUC for peak VO₂, anaerobic threshold and VE/VCO₂ slope to identify these pts was 0.895 ; $p<0.001$, 0.853 ; $p=0.001$ and 0.922 ; $p<0.001$, respectively. LA and LVEF identified these pts with an AUC: 0.843 ; $p=0.001$ and 0.805 ; $p=0.004$, respectively. MLHF and SAQ identified these pts with an AUC: 0.771 ; $p=0.01$ and 0.743 ; $p=0.02$, respectively. When MLHF score was combined with NT-proBNP the AUC increased to 0.885 ; $p<0.001$.

Conclusion: The best discriminatory power was shown by VE/VCO₂ slope. Questionnaire scores had a good discriminatory power, but lower compared to the laboratory measures. The combination of MLHF score with NT-proBNP, which are easily obtainable, also has a very high prognostic value.

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Relationship between obesity and heart failure with left ventricular systolic dysfunction

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Objective: Assessment of obese patients with heart failure by left ventricular systolic dysfunction (LVEF<40%).

Methods: We included in our study 293 patients with heart failure by left ventricular systolic dysfunction. We analyzed clinical factors (heart failure etiology, functional class, risk factors – hypertension, dyslipidemia, smoking, diabetes mellitus, BMI), electrocardiographic factors (LVH presence, conduction and rhythm disturbances), echocardiographic features (LVEF, diastolic function, LVH, systolic PAP) and laboratory data (Hb, serum creatinine, uric acid, WBC count, serum BNP). Obesity was defined as presence of a BMI > 30 kg/m².

Results: Of the 293 patients included there were 89 obese patients (30.9%) – 73 males (82%) and 16 females (18%). Heart failure was ischemic at 163 patients (55.6%). At obese patients we observed a more frequent association with hypertension (78.6% of obese patients versus 55.4% nonobese patients; $p=0.001$); dyslipidemia (70.8% of obese patients versus 42.6%; $p=0.001$); diabetes mellitus (43.8% vs. 14.7%; $p=0.0001$). Heart failure was more frequent of ischemic etiology at obese patients (66.3% vs. 50.9%; $p=0.015$). Likewise, EF was greater at obese patients (32.22 ± 6.07 % vs. 30.06 ± 6.85 %; $p=0.011$) and sinus rhythm was more frequent, too (78.6% vs. 67.15%; $p=0.047$). There were no significant differences between BNP at obese and nonobese patients (860.04 ± 803.97 pg/ml vs. 931.58 ± 881.28 pg/ml; $p=0.51$.ns), neither between diastolic function, presence of LVH, QRS duration, renal dysfunction and other factors studied.

Conclusions: A significant proportion of patients with heart failure by left ventricular systolic dysfunction are obese. At obese patients with heart failure by left ventricular systolic dysfunction there is a more frequent association with other risk factors (hypertension, dyslipidemia, diabetes mellitus) and ischemic etiology of heart failure. BNP values were not significantly different at obese patients with systolic heart failure versus nonobese patients.

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Epidemiology of chronic heart failure in a Tunisian medical center

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Introduction: The prevalence of chronic heart failure (CHF) is increasing in the world. Coronary artery disease is its most common cause in Europe. In Tunisia, valvular abnormalities were the leading aetiology of CHF in the eighties. We sought to determine its epidemiologic profile nowadays.

Methods: 99 patients were hospitalized between 2004 and 2008 for chronic heart failure in our center. We analysed their demographic features, clinical characteristics and their evolution.

Results: The mean age was 59.1 ± 15 years (24 women). 42 patients were hypertensive and 42 had diabetes mellitus. 21% had atrial fibrillation. The mean ejection fraction (EF) at the time of diagnosis was 31.9 ± 8 %, 33% of patients had EF < 30%. Coronary artery disease was the cause in 54% of CHF. Hypertension was responsible in 16% of cases. A valvulopathy was the aetiology in only 3 cases. At discharge, the ACE were prescribed in 85% of patients, and β -blockers in 41%. The mean follow up was 24 ± 12 months, 12% were in class NYHA III or IV. 50% were hospitalized for worsening HF. 53% of hospitalizations occurred during the first 12 months. During the follow up, 17 patients died, all of cardiac cause ($i.e.$ 11.5%). LVEF was the only independent predictive factor of morbid-mortality.

Conclusion: The epidemiologic profile of CHF in Tunisia had underwent a profound change during the late decade. The regression of rheumatic fever is unfortunately opposed by the high prevalence of diabetes mellitus and systemic hypertension in our population which explain this new profile tracing the european one.