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Exacerbated muscle sympathetic nerve activity and blunted vagal reactivation in patients with heart failure and sarcopenia

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Background: Although sympathetic overactivity at rest and impaired parasympathetic reactivation after exercise have been described in patients with heart failure (HF), their interaction in sarcopenic patients with HF is still unknown.
Purpose: The aim of this study was to evaluate the impact of the autonomic modulation assessed by muscle sympathetic nerve activity (MSNA) and heart rate recovery (HRR) after exercise in sarcopenic and non-sarcopenic patients with HF, and to determine their possible screening to detect sarcopenia.
Methods: We enrolled 80 male stable patients with HF in New York Heart Association functional class I-IV (NYHA) and left ventricular ejection fraction (LVEF) <40%. All patients underwent a maximal cardiopulmonary exercise testing on cycle ergometer. Maximal heart rate was recorded and HRR was assessed at 1st and 2nd minutes immediately after exercise. MSNA was measured using microneurography. The sum of the lean mass of the arms and the legs divided by the height in meters squared was assessed by dual energy x-ray absorptiometry (DXA). Sarcopenia was defined as the appendicular muscle mass ≤7.26 kg/m^2 and maximal voluntary contraction by handgrip <30 kg. Blood samples were also drawn in the morning after an overnight fasting.
Results: Sarcopenia was identified in 21 patients (26.25%). Patients with sarcopenia were older (58±8 vs. 53±9 years, p=0.015) and presented higher MSNA than those without (45±11 vs. 39±10 bursts/min, p=0.012). In addition, sarcopenic patients showed lower HRR at 1st min (13±8 vs. 20±10 beats/min, p=0.008), but at 2nd min, both sarcopenic and non-sarcopenic showed similar response (25±14 vs. 30±14 beats/min, p=0.104). Absolute peak VO2 (1.073±0.32 vs. 1.543±0.48 L/min, p<0.001), absolute peak VO2/lean mass (23.9±7.0 vs. 28.9±9.9 ml/kg/min, p=0.016), peak ventilation (51.7±12.6 vs. 65.6±17.5 L/min, p=0.001) and power output (67±27 vs. 108±50 watts, p<0.001) were also lower in patients with sarcopenia than those without. Logistic regression showed age (hazard ratio, 0.908; 95% confidence interval, 0.831–0.991; p=0.031), MSNA (hazard ratio, 3.441; 95% confidence interval, 1.032–11.480; p=0.044) and HRR at 1st min (hazard ratio, 3.455; 95% confidence interval, 1.089–10.961; p=0.035) to be independently associated with sarcopenia adjusted for hemoglobin, creatinine, LVEF, NYHA and aetiology (Chagas, Yes/No). Using receiver operating characteristics (ROC), we calculated the optimal MSNA value to identify patients with sarcopenia as >39 bursts/min, which had a sensitivity of 76.19% and a specificity of 54.24%. The area under the ROC curve was 0.67 (95% confidence interval, 0.55–0.77).
Conclusion: MSNA shows a good sensitivity for the detection of sarcopenia in patients with HF. In addition, HRR after exercise can be clinically used to detect an impaired parasympathetic activity in sarcopenic patients with HF.

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Assessment of the relationship between novel proteins and cardiac cachexia in heart failure patients with reduced ejection fraction: adropin and irisin

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Background: Cardiac cachexia is a serious and life-threatening complication of heart failure with reduced ejection fraction (HFrEF).
Purpose: The aims of the study were to evaluate adropin and irisin levels in cachectic and non-cachectic patients with HFrEF.
Methods: The clinical records of patients who were admitted to the outpatient cardiology clinic for HFrEF were screened. Cachectic patients were identified and assigned to the study group (n=44). HFrEF patients without weight loss were enrolled as the control group (n=42). The serum adropin and irisin levels of all the patients were measured.
Results: Body mass index (BMI), tricipital skinfold thickness (TST) and arm muscle area (AMA) were significantly lower in the cardiac cachexia group than the non-cachectic group. BNP, adropin and irisin levels were significantly higher in the cachectic group than non-cachectic group (for all p values <0.01). NYHA class and BNP levels were significantly positively correlated; however, BMI, AMA, TST and serum albumin were significantly inversely correlated with adropin and irisin levels. In the multivariate analysis, adropin (odds ratio [OR] 1.021, 95% CI: 1.004–1.038, p=0.017) was the only independent predictor of cachexia in patients with HFrEF.
Conclusion: Adropin and irisin are novel markers that may help to identify cardiac cachexia in HFrEF patients.

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The lipid paradox in patients hospitalized for acute heart failure

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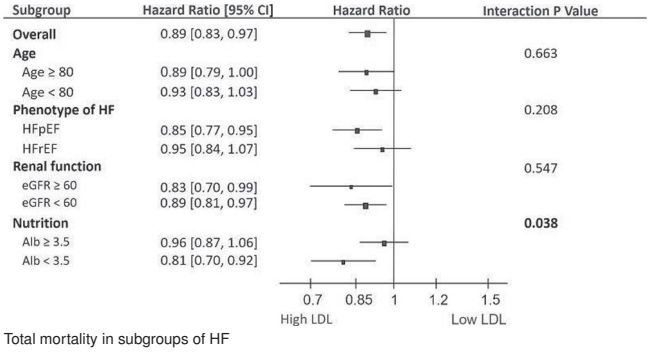
Background: While low-density lipoprotein cholesterol (LDL-C) has been a major risk in various populations, an inverse association of LDL-C levels with mortality rates was observed in patients with chronic heart failure.
Purpose: The determinants and the prognostic impacts of LDL in patients with acute heart failure (AHF) remained to be elucidated.
Methods: Consecutive patients, who have been hospitalized for AHF in a tertiary medical center, were enrolled in HARVEST registry. Subjects who have taken statin were excluded from this analysis. Patients with either reduced (HFrEF) or preserved left ventricular systolic function (HFpEF) were defined by a left ventricular ejection fraction (LVEF) of 50%. National Death Registry was linked to identify the clinical outcome of all-cause mortality and cardiovascular death.
Results: A total of 1759 subjects (age 75±14 years, 69.0% men, 42.5% HFrEF) constituted this study population. During a mean follow-up of 32.4±28.9 months, 777 patients (44.2%) died. Across the tertile distributions of LDL-C, patients with higher LDL-C were younger, more likely to be women, had higher lymphocyte blood cell counts, hemoglobin levels, sodium, albumin and total cholesterol level, and lower right ventricular systolic pressure. In multiple linear regression analysis, LDL-C correlated negatively with age, and positively with total cholesterol level, sodium level and right ventricular systolic pressure. The Kaplan-Meier survival analyses showed the lowest tertile of LDL was related to the significantly higher total and cardiovascular mortality. With the stratification by the serum albumin level, LDL-C levels was inversely related to mortality only in patients with albumin <3.5 mg/dl (0.82, 0.70–0.96) after accounting for age, sex, estimated glomerular filtration rate, LVEF, sodium and medications, but not in those with albumin ≥3.5 mg/dl (interaction P value=0.027).



Total mortality in subgroups of HF

Conclusions: The lipid paradox did exist in patients hospitalized for AHF, especially in those with malnutrition.

LIPID-LOWERING THERAPY: OLD FACES AND NEW ISSUES

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Statin use among HIV-infected adults by cardiovascular disease risk status

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Background: People living with human immunodeficiency virus (HIV) are at higher risk for cardiovascular disease (CVD) than uninfected persons, but few data are available on statin use in this population.
Purpose: To determine the prevalence of active statin use among HIV-infected persons and the proportion of patients ever using statins who had discontinued.
Methods: We conducted a cross-sectional study on statin use during 2013 at seven HIV clinical sites across the United States. Patients were categorized into mutually exclusive CVD risk groups according to the following hierarchy: history of myocardial infarction (MI) or coronary revascularization, diabetes, low density lipoprotein cholesterol (LDL-C) ≥190 mg/dL, and 10-year risk for CVD ≥7.5%.
Results: Among 12,938 patients seen in 2013, 1,799 (13.9%) were taking statins (mean age 53 years, 79.4% male, 41.1% African-American, 8.4% Hispanic). Overall, 31.3% of patients had an indication for statin use: 2.4% had a history of MI or coronary revascularization as their primary indication, 6.1% diabetes, 0.8% LDL-C ≥190 mg/dL, and 21.9% 10-year CVD risk ≥7.5%. Statins were be-

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