

($p=0.041$) compared to stable patients. Additionally, the former were more likely to have been admitted for AHF with no identifiable precipitant factor compared to the latter (60.0 vs 32.6%; $p=0.015$). Over a median follow-up of 19.5 (IQR: 9.4-29.0) months, 68 (32.2%) patients died and 87 (41.2%) had at least one HF hospitalization. In multivariate analysis adjusted for age, estimated glomerular filtration rate and NT-proBNP, day-hospital decompensation remained predictive of the primary endpoint (HR: 1.81; CI: 1.05-3.13; $p=0.033$), mostly due to increased risk of HF hospitalization (HR: 1.87; CI: 1.01-3.46; $p=0.046$).

Conclusions: Recurrent congestion after AHF in our HF management program is a significant event in the vulnerable phase, and it was an independent predictor of major outcomes. These results further unveil the pervasiveness and prognostic value of recurrent congestion despite assertive measures to optimize outpatient diuretic treatment.

Acute Heart Failure – Diagnostic Methods

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Left ventricular global longitudinal strain and free wall strain of the right ventricle in respect to sex and systolic function among patients with acutely decompensated heart failure

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On behalf of: CATSTAT-HF

Background: Heart failure (HF) is currently classified according to left ventricular ejection fraction (LVEF) in three distinct phenotypes whereas novel indices of cardiac function such as global longitudinal strain of the left ventricle (LV GLS) and 2D free wall strain of the right ventricle (2D RV FWS) have shown to provide an additional prognostic value in this population. We aimed to determine the proportion of acutely decompensated heart failure (ADHF) patients that had abnormal LV GLS and 2D RV FWS at index admission and to examine if these indices differ significantly among three HF phenotypes and between men and women.

Methods: A total of 42 consecutive patients with ADHF as adjudicated per ESC 2016 heart failure guidelines were enrolled at our university hospital. LVEF, LV GLS, and 2D RV FWS were measured by the same cardiologist with high expertise in echocardiography and an average of three consecutive measurements was chosen as the final value. Abnormal LV GLS was defined as a value $<17\%$ and, among those with abnormal LV GLS, values <17 but $>13\%$ were considered as mildly reduced, >8 to 12.9% as moderately reduced and $\leq 8\%$ as severely reduced LV GLS. Abnormal 2D RV FWS was defined as a value $<23\%$.

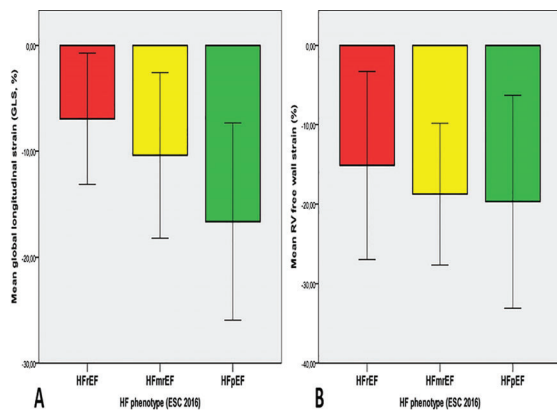


Figure 1

Results: Patients were on average 67.7 ± 11.8 years of age with mean LVEF of $39.1 \pm 15.9\%$ while both sexes were equally represented (21 women and 21 men). A total of 83.3% (N=35) of patients had abnormal LV GLS whereas 81% (N=34) of patients had abnormal 2D RV FWS. Nearly half of patients had severely reduced strain (47.6%, N=20) with about one-quarter having moderately reduced strain (26.2%, N=11). LV GLS was mildly reduced in 9.5% (N=4) of patients while only 16.7% of patients (N=7) had normal strain values. Mean LV GLS values significantly differed in respect to HF phenotypes ($p<0.001$) with the following values: 6.93 ± 3.10 , 10.38 ± 3.90 and $16.63 \pm 4.65\%$ among patients with LVEF $<40\%$, LVEF 40-49%, and $\geq 50\%$, respectively (Figure 1A). On another hand, mean 2D RV FWS values did not significantly differ among HF phenotypes ($p=0.142$) with the following values: 15.11 ± 5.91 , 18.73 ± 4.45 , and $19.68 \pm 6.69\%$ among patients with LVEF $<40\%$, LVEF 40-49% and $\geq 50\%$, respectively (Figure 1B). Finally, LV GLS values did not significantly differ between men and women (9.78 ± 5.88 vs. $10.48 \pm 5.18\%$,

respectively) whereas women had significantly higher 2D RV FWS values compared to men (19.53 ± 6.11 vs. $14.04 \pm 4.82\%$, $p=0.007$).

Conclusions: A vast majority of ADHF patients have significantly reduced strains of both left and right ventricle and it seems that these functions worsen according to the LV systolic function. Men seem to have a significantly worse strain of RV compared to women while no such differences were observed in terms of LV GLS. This difference might reflect different pathophysiology and etiology of HF in men compared to women, however, this would require elucidation in further studies.

Acute Heart Failure: Biomarkers

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Non-ischemic myocardial injury in heart failure is significantly associated with a higher symptomatic burden and higher circulating levels of ssT2, inflammation mediators and natriuretic peptides

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Background: Myocardial injury (MI) defined as an elevation of cardiac troponins beyond a certain threshold is frequently encountered during the acute worsening of heart failure (AWHF) and is associated with an adverse prognosis. The MI has many potential causes other than myocardial ischemia and underlying etiology must be carefully investigated. In this study, we aimed to assess whether the symptomatic burden of the disease as assessed with the New York Heart Association (NYHA) classification will differ between AWHF patients with and without MI of non-ischemic etiology. Furthermore, we sought to assess potential difference between those two groups in terms of circulating levels of soluble suppressor of tumorigenicity 2 (ssT2) reflecting adverse myocardial remodeling under stressed conditions and biomarkers reflecting inflammatory response (C-reactive protein, CRP and neutrophil-to-lymphocyte ratio, NLR) and ventricular overload (N-terminal pro b-type natriuretic peptide, NT-proBNP).

Methods: A total of 85 consecutive patients with AWHF, NYHA class II-IV, and without acute coronary syndrome (ACS) as an underlying cause of hospitalization were examined at our Cardiology Department. ACS was ruled out in all patients based on serial 12-lead electrocardiography tracings, clinical evaluation of symptoms/medical history and/or by diagnostic coronary angiography. All patients had their peripheral blood sampled within 24 hours of index hospitalization. The MI was defined as an elevation of high-sensitivity cardiac troponin I (hs-cTnI) beyond the upper limit of the 99th percentile, adjusted for sex, as following: >34.2 ng/L for men and >15.6 ng/L for women. All variables had normal distribution.

Results: Patients were on average 71.7 ± 9.1 years old, with predominance of women (51.8%) and with a mean left ventricular ejection fraction (LVEF) of $44.1 \pm 16.8\%$. Most of the patients had reduced LVEF (43.5%), followed by preserved LVEF (38.8%) while 17.6% of patients had midrange LVEF. The mean hs-cTnI value was 68.9 ± 101 ng/L. Slightly less than half of the patients (48.2%, N=41) had a myocardial injury with a mean hs-cTnI value of 132 ± 108 ng/L, while 51.8% (N=44) of patients did not have a myocardial injury with mean hs-cTnI value of 14 ± 8 ng/L. Both compared groups did not differ significantly in terms of age ($p=0.952$), body mass index ($p=0.947$) and estimated glomerular filtration rate ($p=0.288$). Patients with AWHF and with myocardial injury, compared to those without, had significantly higher NYHA class (3.2 vs. 2.8, $p=0.017$) and higher levels of circulating ssT2 (62.1 ± 45.2 vs. 40.2 ± 32.5 ng/mL, $p=0.018$), CRP (26.9 ± 29.6 vs. 11.4 ± 14.0 mg/L, $p=0.002$), NLR (5.6 ± 3.6 vs. 3.7 ± 2.2 , $p=0.005$) and NT-proBNP (9763 ± 10319 vs. 4825 ± 7821 pg/mL, $p=0.023$) (Figure 1).

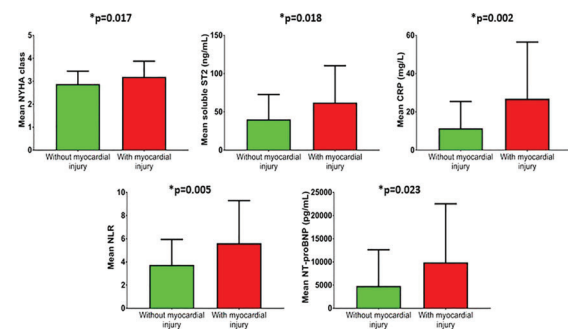


Figure 1