biomaterials for biomarker determination available at BL and FUP6, were eligible for this post-hoc analysis. Of these, 147 patients (23%) with a LVEF>50% after six months constituted the subgroup "normalised LVEF" (HFnEF) and 195 patients (31%) with LVEF 41–50% the subgroup "mid-range LVEF" (HFmrecEF). In 291 patients (46%) LVEF was persistently reduced (≤40%, HFrEF). At BL, median [quartiles] N-terminal pro B-type NP (NT-proBNP [pg/ml]) levels in these 3 subgroups were 2042.5 [666.5–4384.5], 2121.5 [947.0–4909.5], 3380.0 [1057.3–7063.0], p=0.001, mid-regional atrial NP (MR-proANP [pmol/l]) 239.2 [151.7–356.1], 296.4 [166.7–407.9], 321.7 [216.6–480.9], p<0.001, hsTnI [ng/ml] 0.038 [0.019–0.060], 0.035 [0.017–0.080], 0.042 [0.023–0.081], p=0.060, and hsCRP [mg/l] 8.9 [3.8–24.4], 7.9 [2.9–20.0], 7.5 [2.6–19.6], p=0.397, respectively. At FUP6, HFnEF and HFmrecEF patients had a marked and significant decrease in all biomarkers, while only minor decreases in NT-proBNP and hsCRP and no significant changes in MR-proANP and hsTnI occurred in HFrEF patients (Figure). Median [quartiles] FUP6 values (% of BL value in brackets) for HFnEF, HFmrecEF and HFrEF were: NT-proBNP [pg/ml] 554.0 [162.0–1442.0] (27%), 808.0 [247.0–2335.0] (38%), 2162.5 [656.0–5197.3](64%), p<0.001; MR-proANP [pmol/l] 176.1 [89.7–279.4] (74%); 201.9 [122.3–340.9] (68%), 325.3 [187.3–512.3] (100%), p<0.001; hsTnI [ng/ml] 0.017 [0.009–0.03] (45%), 0.02 [0.010–0.038] (57%), 0.03 [0.016–0.048] (71%), p<0.001, and hsCRP [mg/l] 2.4 [1.1–7.0] (27%), 3.0 [1.1–6.3] (38%), 2.6 [1.1–7.2] (35%), p=0.984, respectively. Only 9.3% (19% HFnEF, 12% HFmrecEF, 2% HFrEF, p<0.001) of patients had normalized NT-proBNP (≤125pg/ml), 11.5% (23% HFnEF, 16% HFmrecEF, 4% HFrEF, p<0.001) had a MR-proANP≤85pmol/l, 17.2% (23% HFnEF, 21% HFmrecEF, 22% HFrEF, p=0.963) a hsCRP<1mg/l and 85.5% (93% HFnEF, 88% HFmrecEF, 80% HFrEF, p=0.005) a hsTnI≤0.06 ng/ml (99th percentile).

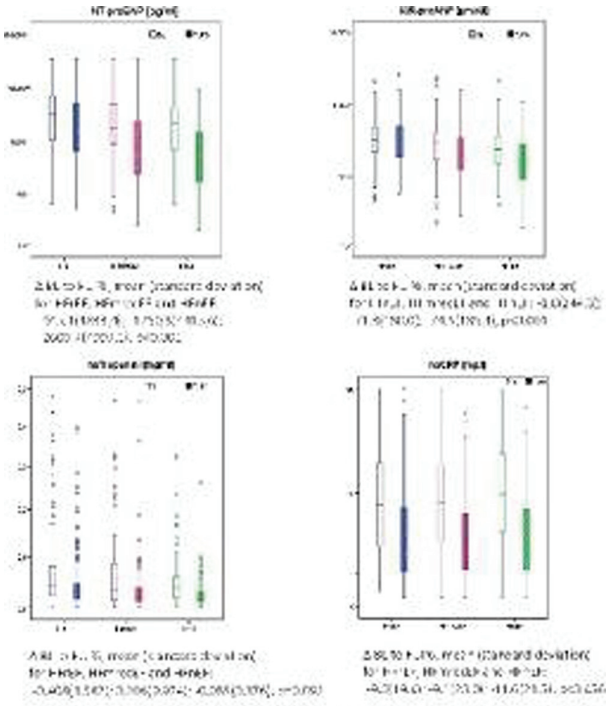

Figure: Biomarker levels at Baseline (BL, empty bares) and Follow-up after six months (FUP6, full bares) as well as changes for HFnEF (LVEF>50%, green), HFmrecEF (LVEF >40-50%, violett) and HFrEF (LVEF≤40%, blue) are illustrated as box plot with 95% confidence interval.

Conclusion: In HFnEF and HFmrecEF LV reverse remodeling was accompanied by pronounced biomarker improvement, whereas only minor changes occurred in HFrEF. Even in HFnEF biomarkers rarely normalized. The longer-term prognostic importance of these findings remains to be clarified.

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Prognostic utility of urinary biomarkers following decongestive therapy in acute decompensated heart failure

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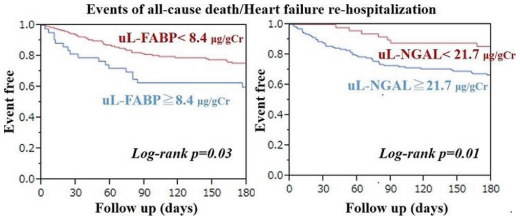
Introduction: Urinary neutrophil gelatinase-associated lipocalin (u-NGAL) and urinary liver-type fatty acid binding protein (uL-FABP) are considered biomarkers that reflect renal tubular injury. However, their predictive value has not been elucidated in patients undergoing decongestive therapy for acute decompensated heart failure (ADHF). We aimed to investigate whether u-NGAL and uL-FABP can predict prognosis in ADHF patients.

Methods and results: This prospective observational study included 208 ADHF patients (mean age: 77 years, 52% male). Urinary biomarkers, UL-FABP and u-NGAL, were measured upon admission and before discharge and were corrected for urinary creatinine. Median uL-FABP levels decreased from 7.8 to 2.9 μg/gCr (p<0.0001), whereas median u-NGAL levels increased from 35.4 to 61.8 μg/gCr (p=0.013). There were 53 events (ADHF rehospitalization and all-cause death) at 180 days (25%). Patients were then divided into two groups according to reference values. Kaplan–Meier analysis showed that groups with higher uL-FABP (≥8.4 μg/gCr) and u-NGAL (≥21.7 μg/gCr) at discharge were associated with adverse events (log-rank: p=0.03 and p=0.01, respectively). After adjusting for age, sex, and serum creatinine, multivariable Cox hazard analysis showed that higher u-NGAL at discharge was an independent predictor of adverse events [HR: 2.4 (1.1–6.0), p=0.03].



Conclusion: uL-FABP and u-NGAL at discharge may be useful biomarkers for prognosis in ADHF patients.

4937
Prognostic value of serum cholinesterase in patients with acute decompensated heart failure: a prospective comparative study with other nutritional indexes

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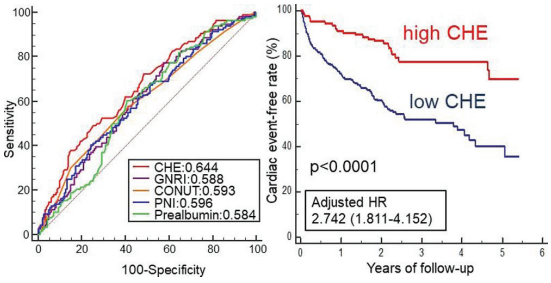
Background: Nutritional status is associated with poor outcome in heart failure patients. Serum cholinesterase (CHE), one of the markers of malnutrition, was reported to be a prognostic factor in patients with chronic heart failure. On the other hand, geriatric nutritional risk index (GNRI), the controlling nutritional status score (CONUT), prognostic nutritional index (PNI) and prealbumin are the established objective nutritional indexes. However, there is no information available on the comparison of prognostic value of CHE and these nutritional indexes in patients with acute decompensated heart failure (ADHF).

Methods and results: We studied 394 patients admitted for ADHF with survival discharge in our prospective cohort study. Laboratory data including CHE and prealbumin were obtained at discharge in all patients. We assessed nutritional status by calculating CONUT score (range 0–12, higher=worse, consisting of serum albumin, cholesterol and lymphocytes), PNI (10×serum albumin [g/dl]+0.005×total lymphocyte count [/ml]) and GNRI (14.89×serum albumin+41.7×BMI/22). The endpoint of this study is the composite of worsening heart failure readmission and cardiac death (cardiac event). During a follow up period of 2.1±1.4 years, 146 patients had cardiac events. At univariate analysis, CHE (p<0.0001), GNRI (p=0.0003), CONUT (p=0.0001), PNI (p=0.0002) and prealbumin (p=0.0049) were associated with cardiac event. However, after adjustment of CHE by multivariate Cox analysis, GNRI, CONUT, PNI and prealbumin were no longer significantly associated with cardiac event. CHE (p=0.04) was significantly associated with cardiac event, independently of serum creatinine, blood urea nitrogen level, plasma BNP level and hemoglobin concentration after adjustment of GNRI, prealbumin, age, serum sodium, chloride, and uric acid level. ROC curve analysis revealed that CHE of 240 was a fair discriminator for the prediction of cardiac event (AUC 0.644 [0.595–0.691]). AUC of CHE was the greatest compared with AUC of other nutritional indexes (GNRI:0.588 [0.538–637], CONUT:0.593 [0.542–0.643], PNI:0.596 [0.545–0.645], prealbumin: 0.584 [0.526–0.640]). Patients with low CHE had a significantly greater risk of cardiac event (44.7% vs 20.3% p<0.0001, adjusted HR 2.742 [1.811–4.152])



Conclusion: Serum cholinesterase level is the strongest prognostic marker for the prediction of cardiac event in ADHF patients.