Difference in biomarker profiles in heart failure with reduced and preserved ejection fraction

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Introduction: Up to 50% of patients with acute heart failure (AHF) have preserved left ventricular ejection fraction (HFPEF group)[1]. Due to diverse activated pathophysiological pathways, there should be a difference in biomarkers release in heart failure with preserved ejection fraction (HFPEF) and reduced ejection fraction (HFREF). BNP is the best studied biomarker in AHF, but we want to investigate difference in release of troponin (marker of myocytes stress and injury), tumor marker CA125 (marker of congestion and volume overload om HF) and cystatin C (marker of interstitial fibrosis).

Patients and Methods: In 222 patients hospitalized due to acute heart failure (138 with REF and 74 with PEF) were determined levels of BNP at admission („dry BNP"), BNP at discharge („wet BNP"), procentual change of BNP during hospitalization, high sensitive troponin I, cystatin C and CA125.

Results: BNP at admission is lower in HFREF vs HFPEF group [1254.9 (732.7-2402.6) pg/ml vs 479.9 (240.7-865.7) pg/ml, p<0.001], as well as BNP at discharge [699.3 (271.8-1519.1) pg/ml vs 263.3 (134.4-502.2) pg/ml, p <0.001]. There was no difference in procentual reduction in BNP during hospitalization (-27.9±68.6% vs -30.8±46.8%, p= 0.73). CA125 levels were higher in HFREF 131.0 (51.9-255.5) IU/ml vs in HFPEF 64.0 (24.2-148.3) IU/ml, p=0.001. Hs troponin was more elevated in HFREF compared to HFPEF [60.2 (27.6-161.4) pg/ml vs 44.3 (26.9-88.4) pg/ml, p= 0.044]. There was no difference in cystatin release between REF and PEF group [1.42 (1.13-1.83) vs 1.6 (1.19-2.07) mg/l, p=0.18].

Conclusion: There is a different biomarker profile in AHF according to different LVEF. In HFREF population levels of BNP at admission and discharge are higher due to more reduced ejection fraction, CA125 levels were also higher due to more pronounced congestion and volume overload. Hs troponin I was elevated in both groups[2], but more in REF probably due to greater myocardial injury. Although cystatin C, as marker of fibrosis, was higher in HFPEF group with stiff and rigid left ventricle, difference was not significant[3].

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LITERATURE

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