Abstract: P266

Urinary sodium profiling in chronic heart failure to detect the development of acute decompensated heart failure.

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Topic(s):
Chronic Heart Failure - Pathophysiology

Citation:

BACKGROUND
No data is available about the dynamics of urinary sodium (Una)-concentration in patients with chronic heart failure (CHF), including its temporal relationship with acute heart failure hospitalization (AHF).

OBJECTIVE
To determine the relationship between Una-concentration and the pathophysiologic interaction with the development of AHF.

METHODS
We prospectively included stable CHF-patients with either reduced or preserved ejection fraction to undergo prospective collection of morning spot Una-samples for 30 consecutive weeks. Linear mixed modeling was used to assess the longitudinal changes in Una-concentration. Patients were followed for the development of the clinical endpoint of AHF.

RESULTS
A total of 80 CHF-patients (age=71±11 years, NT-proBNP=771[221-1906], LVEF 33±7%) prospectively collected weekly pre-diuretic first void morning Una-samples for 30 weeks. A total of 1970 Una-samples were collected, with mean Una=81.6±41 mmol/l. Sodium excretion remained stable over time on a population level (time-effect p=0.663). However, inter-individual differences revealed the presence of high (n=39, Una=88 mmol/l) and low (n=41, Una=73 mmol/l) sodium-excreters. Only a younger age was an independent predictor of high sodium excretion (OR=0.91; CI=0.83-1.00; p=0.045 per year). During 587±54 days of follow-up, 21 patients were admitted for AHF. Patients who developed AHF had significantly lower Una-concentrations (F[1.80]=24.063; p<0.001; figure panel A). The discriminating capacity of Una-concentration to detect AHF, persisted after inclusion of NT-proBNP and eGFR as random-effects (p=0.041). Additionally, Una-concentration further dropped (Una=46±16 mmol/l vs. Una=70±32 mmol/l; p=0.003) in the week preceding the hospitalization, and returned to the individual baseline (Una=71±22 mmol/l; p=0.002) following recompensation (figure panel B). While such early longitudinal changes in weight and dyspnea scores were not apparent in the week preceding decompensation.

CONCLUSION
Overall Una-concentration remains relatively stable over time, but large inter-individual differences exist in stable CHF-patients. Patients who develop an AHF-admission exhibit a chronically lower Una-concentration and exhibit a further drop in Una-concentration the week preceding hospitalization. Ambulatory Una-sample collection is feasible and might offer additional prognostic and therapeutic information.
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