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Sodium restriction, water intake, and diuretic regimen in patients with congestive heart failure

To the editor

We have read the article published by Riegel et al.[1] with great interest and enthusiasm. Briefly, the behavioral adherence of patients with chronic congestive heart failure (HF) to dietary salt, fluid restriction and diuretic use has been prospectively evaluated. The overall adherence rates have been found to be 29% for low sodium diet, 45% for fluid restriction and 72% for diuretic regimen at the end of the 3 month follow up period. Although the restriction level of dietary sodium is not so meticulously judged by self-report, it has the lowest adherence rate among the behavioral adherence patterns as reported by the authors.[1] Effective use of drugs to maintain restored clinical stabilization in recently decompensated HF patients is still a difficult task in cardiovascular era and relies on matching the most appropriately tailored therapy to specific clinical profiles. Traditionally, cornerstones of pharmacological and nonpharmacological management in HF have been restricting dietary sodium intake, fluid restriction and diuretic treatment. Beyond the underlying reasons of non-adherence to salt restriction, there are still controversies for the beneficial effects of salt restriction in patients with congestive HF.[2–6] This controversy has also been confirmed by the American College of Cardiology Foundation/American Heart Association (ACCF/AHA) guidelines for the management of HF by downgrading the level of sodium restriction from Class I to Class IIa.[7] Moreover, normal sodium diet (120 mmol/day ≈ 3 gr/day) in association with high-dose diuretic and restricted water intake (1000 ml/day) has been shown to be the most effective treatment modality compared to low sodium diet (80 mmol/day ≈ 2 gr/day) in association with moderate fluid restriction (2000 ml/day) and conventional diuretic treatment regimens.[8] Combination of normal sodium diet with high dose diuretics (250 mg/day) and volume restriction in HF patients has been shown to alleviate the neurohormonal activation observed during a low sodium diet.[9] Daily sodium requirement of the body, tasteless low sodium diet and neurohormonal activation may partially explain the low adherence rate of sodium restriction in patients with congestive HF.

In terms of diuretic regimen, 72% adherence rate is relatively low at the end of the 3 month period in HF patients.[1] Regarding the rehospitalization of patients, each arms of the triad namely sodium, fluid, and diuretics are vitally important to tailor the treatment and to prevent fluid congestion in HF patients. Herewith, we would like to summarize a case of HF patient treated by intermittent empirical intravenous diuretic regimen. This case represents a 59-year-old man with congestive HF, who had been admitted to hospital four times within a three month duration for decompensation of HF. He had a history of coronary artery disease and anterior myocardial infarction treated by primary percutaneous coronary intervention 6 months ago. He had the typical symptoms and signs of congestive HF such as dyspnea, orthopnea, respiratory crackles, neck vein distension and pretibial edema in each hospitalization and had a left ventricular ejection fraction of 20%. Even though the gradual increase of furosemide dose from 40 mg to 160 mg and maximalization of HF treatment regimen including angiotensin converting enzyme inhibitors, beta receptor blockers, spironolactone and ivabradine, he was admitted to the hospital one month after previous discharge in a decompensated state. While discharging lastly, patient was instructed to have intermittent empirical intravenous injection of furosemide 40 mg once in every three weeks in any available medical center irrespective of HF symptoms. Thereafter the patient has been followed up by policlinic visit with three month intervals without making any changes on his latest oral medications and any deterioration on serum urea, creatinine and electrolyte balance. He has never been hospitalized due to decompensated HF within a 12 month follow up period and he has been in a functional status of NYHA class II. Likewise, intravenous diuretic strategy has been used to reduce hospitalizations and to decongest the stable patients in an ambulatory setting by countering the resistance to increased oral doses of loop diuretics.[10] Beyond the decongesting effect of intermittent injection of diuretics, this strategy is likely to increase the adherence rate of HF patients to diuretic regimen and fluid restriction.

In conclusion, given the controversies on salt restriction and lack of guidance on how to best titrate diuretics in patients with HF, further studies are compulsively needed to reduce the readmission rates and improve HF patients' quality of life in daily practice.

Authors' note

All authors have substantial contributions to conception and design, or acquisition of data, analysis and interpretation of data; drafting the article or revising it critically for important intellectual content; and final approval of the version to be published.

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