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MINI-FOCUS ISSUE: DECOMPENSATED HEART FAILURE

Decongestion Strategies and Renin-Angiotensin-Aldosterone System Activation in Acute Heart Failure

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Robert J. Mentz, Susanna R. Stevens, Adam D. DeVore, Anuradha Lala, Justin M. Vader, Omar F. AbouEzzeddine, Prateeti Khazanie, Margaret M. Redfield, Lynne W. Stevenson, Christopher M. O'Connor, Steven R. Goldsmith, Bradley A. Bart, Kevin J. Anstrom, Adrian F. Hernandez, Eugene Braunwald, G. Michael Felker

High-dose diuretics in acute heart failure (AHF) patients are thought to activate the renin-angiotensin-aldosterone system (RAAS); and alternative decongestion strategies, such as ultrafiltration, have been proposed to mitigate this activation. This study analyzed 427 AHF patients enrolled in the DOSE-AHF (Diuretic Optimization Strategies in Acute Heart Failure) and CARRESS-HF (Cardiorenal Rescue Study in Acute Decompensated Heart Failure) studies. We assessed the relationships between 2 markers of renin-angiotensin-aldosterone system (RAAS) activation (plasma renin activity [PRA] and aldosterone) from baseline to 72 h to 96 h with decongestion strategy and 60-day outcomes. High-dose loop diuretic therapy did not result in RAAS activation greater than that with low-dose therapy. Ultrafiltration resulted in PRA increase greater than that of stepped pharmacologic care. Neither PRA nor aldosterone was significantly associated with outcomes.

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Advance Directives Among Hospitalized Patients With Heart Failure

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Discussing advance directives (ADs) with patients with heart failure (HF) is critical for identifying treatment goals consistent with patients' values and preferences. This study assessed the frequency and correlates of ADs among 44,768 admissions for HF from 24,291 patients over 5 years. Only 12.7% of patients had documented ADs. Age, sex, race, socioeconomic status, risk for adverse in-hospital outcomes, length of stay, hospice discharge, palliative care consultation, and a do-not-resuscitate order were associated with having ADs. An increase in ADs over time was noted, but >80% of patients did not have ADs documented at the end of the study period.

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**Intravenous Fluids in Acute Decompensated Heart Failure**

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Intravenous fluids are provided to many hospitalized patients. This study examined 131,430 hospitalizations in patients with heart failure and determined the use of intravenous fluids among patients receiving loop diuretics during the first 2 days of hospitalization, as well as in-hospital outcomes. Overall, patients in 13,806 (11%) of the hospitalizations were treated with intravenous fluids and had higher rates of subsequent critical care admission, intubation, dialysis, and hospital death compared with those who only received diuretics ($p < 0.01$ for all). Many hospitalized patients with heart failure and diuretic therapy also receive intravenous fluids during their early inpatient care. Such practice is associated with worse outcomes and warrants further investigation.

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EDITORIAL COMMENT**Simultaneous Use of Intravenous Fluids and Diuretics in Patients Hospitalized With Heart Failure: When the Left Hand Does Not Know What the Right Hand Is Doing**

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STATE-OF-THE-ART PAPER**Impact of Diabetes on Epidemiology, Treatment, and Outcomes of Patients With Heart Failure**

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The prevalence of patients with concomitant heart failure (HF) and diabetes mellitus (DM) continues to increase with the general aging of the population. In patients with chronic HF, prevalence of DM is 24% compared with 40% in those hospitalized with worsening HF. Patients with concomitant HF and DM have diverse pathophysiologic, metabolic, and neurohormonal abnormalities that potentially contribute to worse outcomes than those without comorbid DM. In addition, although stable HF outpatients with DM show responses that are similar to those of patients without DM undergoing evidence-based therapies, it is unclear whether hospitalized HF patients with DM will respond similarly to novel investigational therapies. These data support the need to re-evaluate the epidemiology, pathophysiology, and therapy of HF patients with concomitant DM. This paper discusses the role of DM in HF patients and underscores the potential need for the development of targeted therapies.

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