Published online: December 30, 2019

Reviews in Cardiovascular Medicine

Letter to the Editor

Continuation of renin-angiotensin-aldosterone system blockade therapy in acute decompensated heart failure

Taha Ayach[1,*] and Vijay Lapsia[2]

[1]*Division of Nephrology, Bone and Mineral Metabolism, University of Kentucky, Lexington, KY 40509, USA*
[2]*Division of Nephrology, Icahn School of Medicine at Mount Sinai, New York, NY 10029, USA*

*Correspondence: taha.ayach@uky.edu (Taha Ayach)

DOI:10.31083/j.rcm.2019.04.581

Dear editor,

We read with great interest the article by Singhania et al. (2019) published in Reviews in Cardiovascular Medicine. The authors addressed a commonly encountered issue about discontinuation of chronic heart failure therapy, specifically Renin-Angiotensin-Aldosterone System (RAAS) blockade, during hospitalization for acute decompensated heart failure (ADHF).

Heart failure is a complex disease, associated with increased sympathetic activity and RAAS activation. RAAS blockade with Angiotensin-converting enzyme inhibitors (ACEi) or Angiotensin II receptor blockers (ARB) is a key component of the medical therapy of chronic heart failure. The beneficial effects of these agents are likely not limited to effects on preload and afterload since other vasodilators do not have the same beneficial effects on mortality. The potential mechanisms of action of ACEi and ARB in treating heart failure include reduction in sympathetic activity and RASS blockade as outlined by the authors, in addition to improvement in endothelial function, reduction in cytokine levels, and prevention of adverse cardiac and vascular remodeling (Sayer and Bhat, 2014).

However, there is limited data on continuation of RAAS blockade therapy during hospitalization for ADHF and cardiorenal syndrome, with acute kidney injury (AKI) being the major reason for discontinuation of therapy, generally secondary to prerenal state from hypoperfusion. Several studies showed mortality benefit associated with continuation of RAAS blockade therapy during decompensated heart failure hospitalization, even after adjustment for severity of illness (Gilstrap et al., 2017) and in patients who developed moderate decline in eGFR (McCallum et al., 2019).

For patients with ADHF and associated mild to moderate AKI who are already on RAAS blockade therapy, clinicians should consider cautious continuation of such therapy in the absence of significant hypotension and hyperkalemia for the potential mortality benefit. However, until better evidence from randomized controlled trials is available to guide practice, it's reasonable to hold such therapy in patients with moderate to severe deterioration in renal function with evidence of tubular injury and persistent congestion despite therapy.

Submitted: October 25, 2019
Accepted: November 14, 2019
Published: December 30, 2019

References

Gilstrap, L. G., Fonarow, G. C., Desai, A. S., Liang, L., Matsouaka, R., DeVore, A. D., Smith, E. E., Heidenreich, P., Hernandez, A. F., Yancy, C. W. and Bhatt, D. L. (2017) Initiation, continuation, or withdrawal of angiotensin-converting enzyme inhibitors/angiotensin receptor blockers and outcomes in patients hospitalized with heart failure with reduced ejection fraction. *Journal of the American Heart Association* **6**, 1-9.

McCallum, W., Tighiouart, H., Ku, E., Salem, D. and Sarnak, M. J. (2019). Acute declines in estimated glomerular filtration rate on enalapril and mortality and cardiovascular outcomes in patients with heart failure with reduced ejection fraction. *Kidney International* **96**, 1185-1194.

Sayer, G. and Bhat, G. (2014) The renin-angiotensin-aldosterone system and heart failure. *Cardiology Clinics* **32**, 21-32.

Singhania, G., Ejaz A. A., McCullough, P. A., Kluger, A. Y., Balamuthusamy, S., Dassm, B., Singhania, N. and Agarwal, A. (2019) Continuation of chronic heart failure therapies during heart failure hospitalization - a review. *Reviews in Cardiovascular Medicine* **20**, 111-120.