

## LETTER TO THE EDITOR

## Preoperative Angiotensin Axis Blockade Therapy, Intraoperative Hypotension, and the Risks of Postoperative Acute Kidney Injury

Macaulay Amechi Chukwukadibia Onuigbo, MD, MSc, FWACP, FASN, MBA

Mayo Clinic College of Medicine, Rochester, Minnesota, and Department of Nephrology, Mayo Clinic Health System, Eau Claire, Wisconsin.

We read with interest the analysis by Nielson et al., which concluded that patients undergoing major elective orthopedic surgery, who receive preoperative angiotensin axis blockade (AAB) therapy, have an associated increased risk of postinduction hypotension and postoperative acute kidney injury (AKI), with greater hospital length of stay.<sup>1</sup> We could not agree more with this conclusion.

Recently, we reported in the *British Medical Journal* our experiences with 2 patients who developed moderately severe AKI following surgical procedures while on concurrent AAB therapy, which led to prolonged hospital stays.<sup>2,3</sup> The second patient was a 46-year-old obese Caucasian hypertensive male on triple-whammy medications who developed intraoperative hypotension following an elective right-hip arthroplasty.<sup>3</sup> Baseline serum creatinine more than doubled to 2.58 mg/dL within 36 hours. Hospital stay was prolonged. He improved with treatment before discharge.<sup>3</sup> We dubbed a new syndrome of “quadruple whammy” to represent perioperative AKI following intraoperative hypotension in patients on concurrent triple whammy medications.<sup>2,3</sup>

We therefore support calls for the preemptive withholding of AAB before major elective surgical procedures, especially cardiovascular and orthopedic ones.<sup>4</sup> This is the cornerstone of a preventative nephrology paradigm called “renoprevention,” which we have repeatedly espoused since 2009.<sup>5</sup>

### References

1. Nielson E, Hennrikus E, Lehman E, Mets B. Angiotensin axis blockade, hypotension, and acute kidney injury in elective major orthopedic surgery. *J Hosp Med.* 2014;9(5):283–288.
2. Onuigbo MA, Onuigbo NTC. “Quadruple whammy,” a new syndrome of potentially preventable yet iatrogenic acute kidney injury in the ICU. *BMJ* 2013: Rapid Response, Published online February 25, 2013. <http://www.bmj.com/content/346/bmj.f678/rr/632570>.
3. Onuigbo MA, Onuigbo NTC. A second case of “quadruple whammy” in a week in a northwestern Wisconsin hospital. *BMJ.* 2013: Rapid Response, Published online March 1, 2013. <http://www.bmj.com/content/346/bmj.f678/rr/633687>.
4. Yacoub R, Patel N, Lohr JW, Rajagopalan S, Nader N, Arora P. Acute kidney injury and death associated with renin angiotensin system blockade in cardiothoracic surgery: a meta-analysis of observational studies. *Am J Kidney Dis.* 2013;62(6):1077–1086.
5. Onuigbo MA. Reno-prevention vs. reno-protection: a critical re-appraisal of the evidence-base from the large RAAS blockade trials after ONTARGET—a call for more circumspection. *QJM.* 2009;102:155–167.