Author's response to reviews

Title: Renal Ultrasound Provides Low Utility in Evaluating Cardiac Surgery associated Acute Kidney Injury

Authors:

Allen Young (allenhyoung@gmail.com)

Todd Crawford (tcrawfo9@jhmi.edu)

Alejandro Pierre (asuarez8@jhmi.edu)

J Magruder (jmagrud3@jhmi.edu)

Charles Fraser (cfrase11@jhmi.edu)

John Conte (jconte@jhmi.edu)

Glenn Whitman (gwhitman@jhmi.edu)

Christopher Sciortino (sciortinocm@upmc.edu)

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Reviewer reports:

Reviewer #1: This retrospective review of 90 patients undergoing heart surgery who postoperatively developed abnormal renal function had ultrasound of the kidney to help in management. The authors only found 4 patients who benefited from this ultrasound study, concluding that this modality should be scrutinized rather than "viewed as universal measure".

Comments:

1) the article is well written and from a reputable group;

Thank you for your time and attention to this manuscript. The authors feel that the diagnostic approach to cardiac surgery-associated acute kidney injury represents an opportunity for improvement. At our institution, and we believe this also occurs at other institutions, renal ultrasound is often a knee-jerk reaction to a rising serum creatinine (reduced GFR). While this diagnostic modality may certainly have a role in post-surgical patients who have undergone pelvic surgery, where injury to the collecting system or intraabdominal abscess increases the risk of ureteral obstruction/injury and resulting hydronephrosis, these risk factors are not present in
the cardiac surgery patient and thus, the role of renal ultrasound in this patient population is quite limited.

2) There are 8 authors for a small retrospective study, and not sure what their contributions were to this manuscript;

Allen Young, Todd Crawford, John Conte, Glenn Whitman, and Christopher Sciortino were responsible for the study design and methodology. Allen Young, Todd Crawford, Alejandro Suarez Pierre, Charles Fraser, and Trent Magruder were involved in data collection, analysis, and writing of the manuscript. John Conte, Glenn Whitman, and Christopher Sciortino were responsible for revising the manuscript and providing supervision.

3) There are some serious limitations to this study as mentioned by the authors due to the retrospective nature of the study;

The authors agree that this small, retrospective study is vulnerable to some inherent limitations, but we also firmly believe that the information contained within this manuscript is important and possesses the ability to alter postoperative care practices.

4) Similar studies have been done in the past, coming to same conclusion, and the authors themselves mentioned those articles in references 20-22;

The authors mention these studies as they each lend support to our findings and our conclusion.

5) Not sure what the authors mean by stating that this "modality should be scrutinized rather than viewed as universal". Not sure cardiac centers see this modality as universal in cases of abnormal renal function post surgery.

Perhaps not all centers regard renal ultrasound as an essential diagnostic modality in patients faced with cardiac surgery-associated acute kidney injury, but many do. We hope to reach a large volume of cardiac centers in spreading the message contained within our manuscript.

6) This reviewer is not convinced that this retrospective studies adds to the literature or to changes in clinical practice.

The authors respect your opinion, but must admit that we disagree with this assessment. An important study like this possesses the ability to generate additional questions and at least challenge providers to ponder the utility of this diagnostic modality, if not to dissuade providers from ordering it altogether. Drawing attention to unnecessary resource utilization is an increasingly important topic in the cardiac surgery literature.
Reviewer #2: I ask this question every time I get a renal consult on one of my patients and no one ever has the answer - other than "we always order it". I think this will be an interesting and important paper in the area and will help guide decision making. My only minor comment is regarding the description (and table) of the initial patient population in which they describe the number of patients with Kidney disease and the number with stage III disease. Can this be expanded to be more comprehensive regarding the specific severity - if any - of the other patients. The assumption - and my potential take home message is that if the kidney disease was either none or minor going into a cardiac operation, then if there is AKI, then renal ultrasound is of limited value - inclusion of more specifics regarding the baseline status of the kidney function would help clarify this.

The authors very much appreciate your recommendation and have gone back into the database and medical records to analyze severity of pre-existing kidney insufficiency. We collected the glomerular filtration rates for all the patients prior to their cardiothoracic operations and classified their pre-existing kidney function stage based on the scale developed by the Kidney Disease Outcomes Quality Initiative (KDOQI). Our findings were updated to the initial patient population on Table 1. Based on this newly collected data, we found that there were no significant differences in abnormal renal ultrasound findings between patients with no kidney disease versus those with prior CKD. However, for the 4 patients that had ultrasounds leading to altered clinical management, 3 of those patients had pre-existing CKD. Our take home message now states that although universal renal ultrasound are of limited value, they may be beneficial in changing clinical management for patients with certain pre-existing conditions such as severe chronic kidney disease. Thank you again for providing this recommendation to enhance our paper.