Author's response to reviews

Title: Clinical Utility of Gray Scale Renal Ultrasound in Acute Kidney Injury

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Author's response to reviews: see over
We thank the reviewers for their insightful comments on our manuscript. Where it is possible, we have made the suggested changes that we believe have improved the quality of the paper.

Specific Comments:

1. We agree that color Doppler may be important in the evaluation of renal function particularly in the transplant population. However, we did not stress this area because less than 50% of patients had the procedure and resistive indices were not reported. We believe that since many of the ultrasounds were ordered by trainees that there was a “reflex” order of “renal ultrasound with dopplers” in play.

Therefore, we added the following to our discussion: We are unable to comment on the utility of renal dopplers in the evaluation of AKI because the test was obtained in less than 50% of subjects and there were no specific indications for its performance. Further, resistive indices were rarely reported. Whether there is a specific role for Doppler examination of renal blood flow in evaluating AKI remains an area of active investigation.

2. We agree the incidence of obstruction is low compared to some studies. Although this could be explained by excluding patients with AKI diagnosed with obstruction by another means, we are restricted by the study design. We started with a renal ultrasound data base. It was beyond our capabilities to screen all AKI patients then see who did and did not have an ultrasound. However, we believe that the number of patients with AKI and obstruction diagnosed by other means (renal scan, IVP, or CT scan) and didn’t have an ultrasound as part of their evaluation would be low. We modified the Discussion as follows: Further bias may have been introduced by excluding cases of AKI due to obstruction which were diagnosed by other radiologic methods.

3. We believe the exclusion criterion regarding complete clinical data was vague and misrepresents the meaning we had intended. We excluded patients when data was incomplete, including missing laboratory data or demographic data. In our medical system, we use a combined electronic and paper system. Therefore there were occasions when we didn’t have critical data.

To address this issue we added the following statements:

Methods: Patients were excluded from analysis if clinical data were missing.

Discussion: Also, since our study indicates that medical history may reduce the rate of unnecessary RUS, our results may not apply when medical history is unavailable.
4. Our intent was not to imply that renal ultrasonography was useless but rather that its utilization could be modified to reduce unnecessary testing. We have therefore done the following:
   a. Changed the title to *Clinical Utility of Gray Scale Renal Ultrasound in Acute Kidney Injury*
   b. We modified in the discussion the following sentence: *It does not suggest that findings of non-obstructive hydronephrosis, kidney size, and cortical echogenicity and thickness are not useful in determining the presence of chronic kidney disease in the setting of renal insufficiency.*
   c. We modified the discussion to read: *The main weaknesses in our study are the retrospective design and the single institution setting which may lead to selection bias. Further bias may have been introduced by excluding cases of AKI due to obstruction which were diagnosed by other radiologic methods.*

5. We modified our definition of obstructive nephropathy to the following: *Obstructive nephropathy was considered the cause of AKI if prompt renal recovery (decrease in serum creatinine within 24 hours) ensued after a urological procedure or bladder catheterization.*