Reviewer’s report

Title: Safety and outcomes according to practitioners and techniques for percutaneous native renal biopsy

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Reviewer: Joji Tokita

Reviewer's report:

Thank you for the opportunity to review this article on operator differences in outcomes (i.e. tissue yield) and safety of ultrasound guided techniques in percutaneous native kidney biopsy.

The authors develop a compelling story for further evaluation of modern approaches to obtaining tissue for diagnosis of parenchymal kidney disease. I have followed the framework provided by the journal in providing my commentary.

When assessing the work, please consider the following points:

1. Is the question posed by the authors well defined?

This was a retrospective single center study comparing outcomes of percutaneous native kidney biopsy when performed by nephrologists using an ultrasound guided blind technique, nephrologists using real time ultrasound guidance, and abdominal ultrasound radiologists using real time ultrasound guidance. Biopsies performed by nephrology were conducted by either a first or second year fellow whereas radiology performed biopsies were performed by an attending radiologist with specific expertise in abdominal imaging.

The authors state that the aim of the study is to show that renal biopsy should be performed by nephrologists. Presumably this would be evidenced by one or more of the following:

- tissue diagnosis/glomerular yield is superior or improved when performed by nephrology vs radiology
- complication rates were lower when performed by nephrology vs radiology
- other clinical, safety, or procedural risks were minimized when performed by nephrology vs radiology

2. Are the methods appropriate and well described?

The methods section is reasonably well developed, detailing inclusion and exclusion criteria, time frame of data collection, location of the center, and relevant background information regarding the laboratory and clinical parameter that were measured and reported.
Major Compulsory Revisions:

Of note, on line 9, reference is made to 346 cases performed by nephrologists, however in the previous sentence, the authors state that a total of 441 cases were performed. This needs clarification and may be an error.

There was no explanation with regard to how or why patients were stratified to either nephrology or radiology for biopsy. Was this random, sequential, or was there some other underlying pattern or practice in place?

The study’s stated aim was to show that biopsy performed by nephrology was superior to biopsy performed by radiology, however, although both groups used real time US guidance, it was not clear whether there were agreed upon standards or targets between the groups. Did radiology know that glomerular yield was essentially the primary endpoint? The number of passes and cores with observable gloms would be an important piece of information to know although one surmises that if the complication rates were similar, the pass and tissue capture rates would also be similar. There is also no mention made of the type of ultrasound device used for image acquisition, specifically whether there was any difference between equipment that used by the nephrology service and that used by radiology. Standardized use of a needle guide and other procedural details remain of critical importance in light of the end point of interest here. (i.e. was this outcome the result of a difference in operator technique or were the nephrologists really superior with regard to localizing the biopsy needle to optimize tissue yield? Or was it both?)

3. Are the data sound?

Table 1 presents the clinical features of the study groups and notes differences between Group 1 and 2 and between 2 and 3 with regard to prevalence of DM and SLE, however, BMI appeared similar across all groups. Presumably the rest of the categories did not have statistically significant differences.

The authors report an average glomerular yield across the board of 25 +/- 16 with a diagnostic failure rate of 1.22%. Although the glomerular yield was superior for procedures performed by nephrologists, the authors note that the proportion of “failure to make a final pathologic diagnosis” was similar among all groups.

The frequency of major bleeding complications such as development of hematoma or requirement for transfusion was 6.8% and there were no cases of death or nephrectomy. There was no statistically significant difference between groups noted.

The data as presented appear sound and the outcomes achieved remain within what would likely be considered within expected variance for this procedure. (i.e. tissue yield rates, complication rates, etc)

4. Does the manuscript adhere to the relevant standards for reporting and data deposition?
5. Are the discussion and conclusions well balanced and adequately supported by the data?

The authors report similar complication rates and diagnostic failure rates across all three groups. They also note that the glomerular yield was statistically significantly higher for biopsies performed by nephrologists compared to radiologists; however, this did not impact the success of tissue diagnosis. As such, the conclusion in the discussion section that biopsy should definitively be performed by nephrologists on the basis of this and prior background data is rather strong without further qualification of the targets and conditions for both groups. The study conclusion takes a more nuanced approach, suggesting that “current evidence gives preference to nephrologist with respect to percutaneous kidney biopsy.” This should be annotated “ultrasound-guided” as there are other techniques for percutaneous approach to kidney biopsy. We also note that this is a retrospective study.

6. Are limitations of the work clearly stated?

Yes

7. Do the authors clearly acknowledge any work upon which they are building, both published and unpublished?

Yes

8. Do the title and abstract accurately convey what has been found?

Yes, but could be a bit clearer. Safety and tissue yield for percutaneous native kidney biopsy according to practitioner and ultrasound technique.

9. Is the writing acceptable?

The tone of the writing should remain neutral. In the second paragraph of the background section, “Unfortunately” should be deleted and the paragraph should start with “In recent times…” The strongest language should be supported by strong data evident in the study. There were a few other areas that should be reviewed for word choice. Overall, the grammar and syntax otherwise appears acceptable.

**Level of interest:** An article of importance in its field

**Quality of written English:** Needs some language corrections before being published

**Statistical review:** Yes, but I do not feel adequately qualified to assess the statistics.
Declaration of competing interests:

I declare that I have no competing interests.