Reviewer’s report

Title: Blood Oxygen Level Dependent Magnetic Resonance Imaging for Detecting Pathological Patterns in Lupus Nephritis Patients: A Preliminary Study Using a Decision Tree Model

Version: 2 Date: 25 Apr 2017

Reviewer: Joel Neugarten

Reviewer's report:

This is a well written and well executed study that addresses an interesting and important issue-the use of noninvasive MRI imaging technology to predict histology in lupus nephritis.

Major

1. The major limitations of the study have been clearly delineated by the authors themselves. The number of subjects studied is small and the spectrum of histologic abnormalities studied is narrow. The study lacks class II, V or VI patients, most of their patients had a mixed membranous component to their underlying proliferative pathology, chronicity was limited and GFR was well preserved. Applicability to what clinicians encounter in general practice is thus limited. Any clinically-relevant predictive model would need to deal with a broader range of pathology comparable to what is seen in practice. The real challenge is greater than merely differentiating class III from class IV LN but also assessing the extent of disease activity versus chronicity. The lack of ADC in DWI MRI also limits interpretation of their results since these data would be expected to enhance the predictive power of noninvasive techniques.

2. I am skeptical that the specificity/sensitivity of the best model is sufficient to support clinical decision-making and thus obviate the need for kidney biopsy.

3. A major additional limitation is the lack of a standardized pre-study protocol. Hydration status, sodium balance, and ARB, ACEI, diuretic and anti-oxidant therapy were not standardized. All these factors can influence R2*

Minor

1. The discussion section should be shortened

2. The first line of the Background section of the Abstract is difficult to understand
Are the methods appropriate and well described?
If not, please specify what is required in your comments to the authors.

Yes

Does the work include the necessary controls?
If not, please specify which controls are required in your comments to the authors.

Yes

Are the conclusions drawn adequately supported by the data shown?
If not, please explain in your comments to the authors.

No

Are you able to assess any statistics in the manuscript or would you recommend an additional statistical review?
If an additional statistical review is recommended, please specify what aspects require further assessment in your comments to the editors.

I am able to assess the statistics

Quality of written English
Please indicate the quality of language in the manuscript:

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