Reviewer's report

**Title:** Liver injury monitoring, fibrosis staging and inflammation grading using T1rho magnetic resonance imaging: An experimental study in rats with carbon tetrachloride intoxication

**Version:** 2  **Date:** 25 Sep 2019

**Reviewer:** Xiaolin Wang

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Shuangshuang Xie et al performed an interesting study to evaluate the merit of T1rho MRI for monitoring CCl4-induced liver injury in rat model. It comes to the conclusion that inflammation activity had a greater impact on liver T1rho values than fibrosis. There were some concerns, which need to be addressed:

1. It showed that liver T1rho values of rats with same inflammation grades showed no difference among different fibrosis stages, and only T1rho values of different inflammation grades with fibrosis stage 3 had significant difference. Can you please show the values of T1rho of different inflammation grades with fibrosis stage 3?

2. As the authors mentioned in the manuscript, a rat model of liver fibrosis may not reflect the pathologic changes of the human liver accurately. The authors should discuss more about the merit of T1rho MRI in clinical detection or diagnosis of liver disease according to the published literatures and also the new findings in this paper.

3. The authors investigated the impact of liver fibrosis and inflammation on liver T1rho values by using CCl4-induced liver injury in rats. Can T1rho be used as a non-invasive imaging technique for evaluating liver fibrosis of inflammation? Can you determine the diagnostic accuracy of T1rho for significant fibrosis or inflammation by using ROC (receive operating curve) analysis?

**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.

Yes
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:

Acceptable

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