Reviewer's report

Title: Improved Operator Agreement and Efficiency Using the Minimum Area Contour Change Method for Delineation of Hyper-intense Multiple Sclerosis Lesions on FLAIR MRI

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Reviewer: Balasrinivasa Sajja

Reviewer's report:

The manuscript titled “Improved Operator Agreement and Efficacy Using the Minimum Area Contour Change Method for Delineation of Hyperintense Multiple Sclerosis Lesions on FLAIR MRI” by Wack et al. presented an approach that improves the MS lesion delineation and minimizes inter-operator agreement and also helps improving lesions delineations in longitudinal studies. This heuristic approach may be useful in multicenter and longitudinal studies.

Discretionary Revisions:

Comment: The technical advancement in this manuscript is not significant. However, the authors have demonstrated the usefulness of iso-contours to refine operator’s delineation of MS lesions and also application to longitudinal studies. From application point-of-view, this is significant.

Minor Essential Revisions:

1. The technical description of MACC procedure should belong to methods section instead of Introduction section. Of course, one can still discuss what the MACC method does and why this approach is important in Introduction.

2. What phenotype of MS (e.g. RRMS, PPMS) patients are included in the study? How does the present method perform in “black hole” lesions delineation?

3. Page 3; Line 9: Detection error (DE), the size of ROIs….
   Is this size of ROIs or number of ROIs?

4. Page 8; Line 14: realigned to the baseline scan … need more details on this. For longitudinal studies, image alignment (registration) is a critical step particularly, in case of small lesions.

5. MACC refines the input ROI (in both inter-rater improvement and longitudinal studies) using image information in a controlled manner by using a set constraints as discussed in the manuscript. How does this approach perform compared with other techniques that are used for similar purpose like, Region Growing, Fuzzy connectivity methods (starting with same ROIs and appropriate parameters)?

6. Inclusion of details about MACC software implementation is recommended.

Major Compulsory Revisions:

None.
Level of interest: An article whose findings are important to those with closely related research interests

Quality of written English: Acceptable

Statistical review: No, the manuscript does not need to be seen by a statistician.

Declaration of competing interests:

I declare that I have no competing interests