Reviewer’s report

Title: CASE REPORT: A GIANT ARACHNOID CYST MASKING ALZHEIMER’S DISEASE

Version: 2 Date: 26 Mar 2019

Reviewer: Kayako Matsuo

Reviewer's report:

I appreciate and found the manuscript greatly improved. However, I would like authors to work more because of the following points.

(1)

My first point is, again, their fMRI analysis procedure.

First of all, I apologize my rigidity in advance.

I have read authors’ responses to my previous first point as well as to my request to show a section view of fMRI results.

I am afraid I think authors might have a basic misunderstanding of fMRI processing or image processing in general. I would like authors to understand that not only segmentation (I appreciate the effort to provide the parcellation data) but also any image processing includes an error. If you process images with a large distortion such as a giant cyst, the error might also become large. The activation shown in Figure 3 might be falsely enlarged or compressed because of the errors during the image processing.

In this regard, our image technologist once warned me that "be careful, image tells a lie." To minimize such a "lie" or error as much as possible, we usually perform fMRI statistics using slices in the native space of the patient, i.e., to avoid errors caused by warping procedures.

My misunderstanding previously was that I thought authors also followed such a standard procedure of statistics using slices, and then rendered the results on the surface base. For this reason, I requested authors to show a section view of fMRI results. But now, I understand that they only conducted a surface base statistics, as they wrote "whole analysis was done using a surface-based approach" in their comment.

If you performed fMRI statistics in the surface base, it inevitably included the image processing errors caused by the surface rendering (as well as errors by segmentation and parcellation). How
did authors check the false activity ("lie") presented by an erroneous enlargement or compression during the surface rendering?

I am sorry to be harsh. However, as a scientist, I would, again, like authors to show a section view of activation *after* performing a standard fMRI statistics using just slices in the native space without any warping. I mean, authors would conduct statistics using slices in a voxel-by-voxel manner as in a standard method and show the activation maps of slices including the central sulcus. The maps would be informative in directly understanding a correspondence between the cyst and activation. I believe many clinicians would be eager to see the results.

(2)

I would like authors to clearly explain the fMRI procedure. What movement did the patient perform during fMRI? Perhaps, flex and extend back? The authors wrote: "All 5 digits were stimulated before any digit was stimulated again." It sounds that the fingers were stimulated by an experimenter using something, but I suppose the patient voluntarily moved his fingers. Am I right? I would like authors to rewrite this part to avoid misleading.

How long did an fMRI run last and how many blocks did a run had? Thirty movement blocks and how many rest blocks? How many runs did the patient perform? Perhaps, 2 for left and right hands each?

Also, in the imaging method section, how many volumes did they acquire during fMRI?

I hope the authors clarify these points.

(3)

I think that a case presentation part would come just after Introduction in many papers. What do you think?

(4)

I am sorry again, but I would like to learn the discussion after the modifications concerning the above points. In any way. I perceive the whole manuscript including Discussion has been greatly improved. I appreciate their efforts. I would like to review this paper in the near future again.
Are the methods appropriate and well described?
If not, please specify what is required in your comments to the authors.

No

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

Unable to assess

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 recommend additional statistical review

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

Acceptable

Declaration of competing interests
Please complete a declaration of competing interests, considering the following questions:

1. Have you in the past five years received reimbursements, fees, funding, or salary from an organisation that may in any way gain or lose financially from the publication of this manuscript, either now or in the future?

2. Do you hold any stocks or shares in an organisation that may in any way gain or lose financially from the publication of this manuscript, either now or in the future?

3. Do you hold or are you currently applying for any patents relating to the content of the manuscript?

4. Have you received reimbursements, fees, funding, or salary from an organization that holds or has applied for patents relating to the content of the manuscript?

5. Do you have any other financial competing interests?

6. Do you have any non-financial competing interests in relation to this paper?
If you can answer no to all of the above, write 'I declare that I have no competing interests' below. If your reply is yes to any, please give details below.

I declare that I have no competing interests

I agree to the open peer review policy of the journal. I understand that my name will be included on my report to the authors and, if the manuscript is accepted for publication, my named report including any attachments I upload will be posted on the website along with the authors' responses. I agree for my report to be made available under an Open Access Creative Commons CC-BY license (http://creativecommons.org/licenses/by/4.0/). I understand that any comments which I do not wish to be included in my named report can be included as confidential comments to the editors, which will not be published.

I agree to the open peer review policy of the journal