Reviewer's report

Title: Alzheimer’s disease: structural and cognitive basis of odor identification deficits

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Reviewer: Latha Velayudhan

Reviewer's report:

The paper is well written, however I have number of concerns.

1. The paper is titled, 'Alzheimer’s disease: structural and cognitive basis of odor'. Unfortunately the abstract and paper do not convey this accurately. The paper explores association of cognitive measures and olfactory identification with structural brain measures, in aMCI and early AD subjects. The title needs to be amended.

2. The sample size is very small: 6 AD patients combined with 12 aMCI patients. They are then further classified into 'intact' and 'impaired' olfactory groups. It is not clear how many of them were AD or aMCI in the 'intact' and 'impaired' OI groups.

3. Entorhinal cortex is an important anatomical substrate implied in Alzheimer's disease, cognition and olfaction. Unfortunately the paper doesn't include this region at all.

4. More details of the MRI structural measurements are required. Was it 1.5 T or 3 T MRI?

5. Smoking can impair olfactory identification function. There are 8.3% current smokers under 'impaired OI' group under B-SIT. Was there any correction for smoking done in the analysis.

6. The limitations of the study need to be clearly stated.

7. Results and Discussion: There is no mention of testing association of olfactory identification with cognition (as the title of the paper implies), which is disappointing.

8. There have been number of neuroimaging and longitudinal studies, that support role of medial temporal lobe in olfactory deficits in AD and MCI, also cited by authors in the background. There is little in this study that is novel. In discussion it is pertinent to discuss findings in the current study with previous known literature in this area.
Level of interest: An article of limited interest

Quality of written English: Acceptable

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