Reviewer’s report

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

Version: 1  Date: 25 May 2014

Reviewer: Tibor Kovács

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Major Revisions

1. The authors state that no tests were administered at follow-up although this information could have been useful to interpret the results.

2. The conversion rate of aMCI to AD during the follow-up is high (7 out of 12), especially taking the short follow-up duration (6-18 months) in consideration (no mean of follow-up is given). In addition, aMCI and AD patients at baseline had no differences in cognitive tests, except RCFT copying, which is clinically rather unusual and probably might influence the main message of the paper.

3. The authors analysed structures “considered to be involved in olfaction”, such as total volume of hemispheric white matter, cortical grey matter, thalamus, total ventricular volume (all of these are too rough to compare in initial cases of AD), and the hippocampus and amygdala (which are known to be altered in AD and their volume loss is related to olfactory deficits) and mention that they did not analysed the volume of the entorhinal cortex, or the olfactory bulb. These methodological problems should have been corrected before publication (manual tracing, secondary analysis).

4. Keeping in mind the very small number of patients, the significant differences in age and gender between the analysed groups is difficult to explain and interpret (such as a F/M ratio approximately 1:4 in SSIT "impaired OI" group).

3. It needs an explanation what is the reason why the hippocampal volume correlates with MMSE in controls but not in patients, also the case with TWT delayed recall.

Minor Revisions:

1. In the introduction, authors state that OI "can discriminate neurodegenerative diseases, such as... AD from normal ageing", and a little below that "O1 ability is therefore not suitable for differential diagnoses".


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.