Associate Editor Comments to Author:  
1. Please clarify this sentence (page 4, methods, study population): "Other the ones declined, participants underwent extensive cognitive testing, lumbar puncture for CSF collection (Harrington et al., 2013) and MR imaging."

Sorry for the confusion. We have revised the sentence to be:

“All participants went through MR imaging and extensive cognitive testing section but only 47 of them agreed to undergo lumbar puncture for CSF collection (Harrington et al., 2013).” (pg.4)

2. Similarly, the methods state 56 participants were recruited.  For table 1, it states that only 47 participants completed lumbar puncture.  The abstract and limitations both states only 30 participants completed the study.  Please clarify how many were recruited, how many underwent cognitive testing/MRI, and how many also agreed to lumbar puncture.  Given the breakdown of CH vs MCI, I suggest also defining how many in each group agreed to the lumbar puncture.

We have revised this in the abstract to:

“A total of 56 non-demented participants (68-94y) were recruited and gave informed consent. All of them went through MR imaging on a GE 1.5T scanner but only 47 underwent lumbar puncture for CSF analysis.”

We made a note in the Methods section to indicate the participants who declined lumbar puncher for CSF analysis.

“All participants went through MR imaging and extensive cognitive testing section but only 47 of them agreed to undergo lumbar puncture for CSF collection (Harrington et al., 2013).” (pg.4)

We also correct the limitation section dealing with sample size:

“There are several limitations to this study. First, we only have a group of 57 non-demented subjects.” (pg. 8)

Further, we polished the demographic (Table 1) by adding the ratio of CH and MCI in CSF analysis. The Table is shown below:

**Table 1.** Study population demographics and clinical parameters.

|  |  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- | --- |
|  | **N** | **Sex (F:M)** | **Cognitive Status (CH: MCI)** | **Mean** | **Median** | **IQR** |
| **Age** | 56 | 40:16 | 39:17 | 80.72 | 80 | 75.5-86 |
| **WM-Hyper (µL)** | 7196.53 | 4173.4 | 1855.70-8438.03 |
| **WM-Hypo (µL)** | 6407.05 | 3728.15 | 2423.5-7735.93 |
| **beta-Amyloid (pg/ml)** | 47 | 35:12 | 34:13 | 760.58 | 742.07 | 552.75-873.09 |
| **Tau  (pg/ml)** | 308.61 | 286.62 | 172.04-383.10 |

3. What was the neuropsychological battery used?  Please provide additional information on this and scores as appropriate.

Sorry for the confusion on the Cognitive passement. We modified this section to add additional information:

“Cognitive classification used the following criteria: study participants were included if they had no or minimal cognitive impairment after medical and neuropsychological assessment, using the Uniform Data Set-3 criteria of the National Alzheimer’s Coordinating Center after consensus clinical conference (<https://www.alz.washington.edu/WEB/npsych_means.html>). The CH group were asymptomatic with Clinical Dementia Rating (CDR) of zero and neuropsychological measurements within one standard deviation of mean according to published normative values (as referenced in Harrington et al., 2013). Mild cognitive impairment (MCI) participants were those individuals with CDR of 0.5 and fulfilled the current MCI criteria (Seshadri et al., 2011).” (pg.4)

4. Given that the sample included both cognitively healthy and MCI participants, is it possible that one subgroup might be driving your findings?  This should be explored and/or controlled for in the analyses.  I also suggest providing additional details regarding your study population in the results section of the manuscript in addition to the table.

Thanks for the suggestion. We explored the effect of CH and MCI had on age, WM-hyper and WM-hypo, -amyloid and tau and found no significate between group difference between CH and MCI. We also took cognitive status as co-factor in our analysis and find that it did not alter our findings either. We add the following line in the beginning of the Results section:

“To prevent CH or MCI from driving the findings, evaluations of cognitive status influencing age, WM-hyper, WM-hypo, and CSF markers are performed prior to this analysis. The cognitive status was not significantly associated with any parameters in this study.” (pg. 5)