

Alpha power is associated with hippocampal volume in Alzheimer's disease: A combined MEG & MRI Study

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1. Background

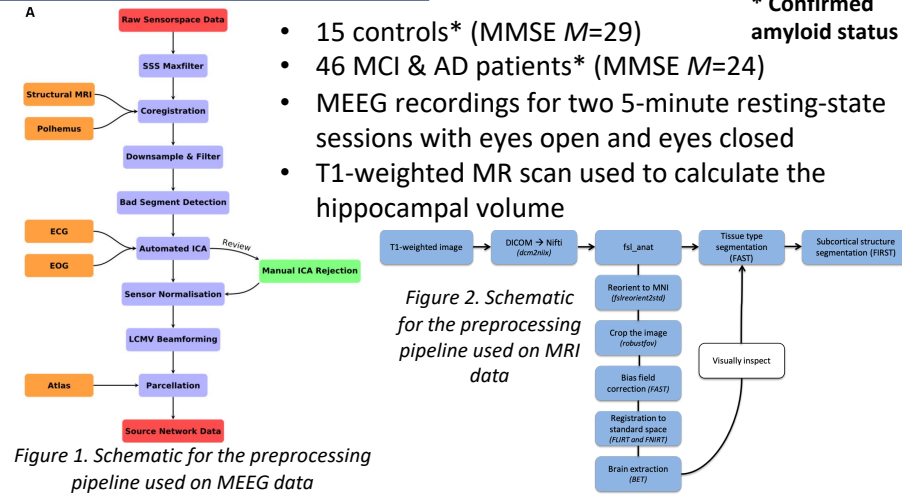
- *New Therapeutics in Alzheimer's Disease* (NTAD) is a multi-centre, longitudinal study to develop reliable and sensitive biomarkers in the early stages of Mild Cognitive Impairment (MCI) and Alzheimer's disease (AD) ¹
- Hallmark of MEEG abnormalities in AD patients is changes to power/frequency of alpha ^{2,3}

2. Aims

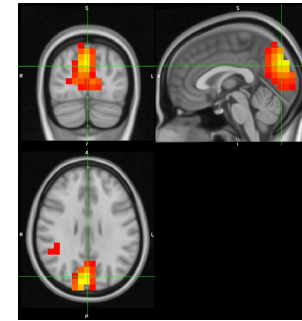
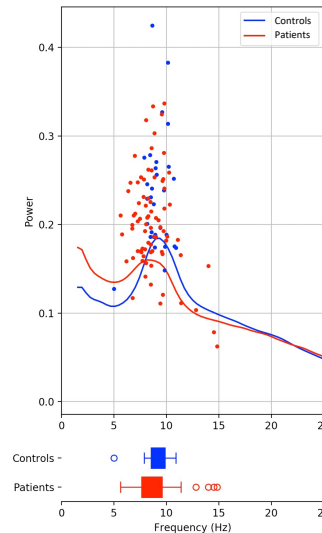
In this study we explored;

- The spontaneous alpha oscillations in the existing NTAD cohort
- How they relate to diagnostic condition (patients vs. controls), resting task (eyes open vs. eyes closed), and hippocampal atrophy

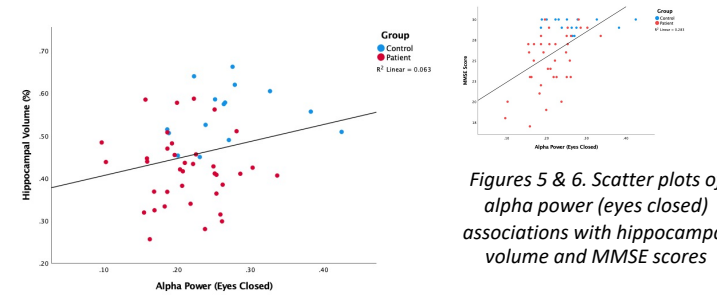
3. Methods



4. Results



Alpha oscillations in occipital cortex are *slower* and *lower power* in patients with AD/MCI



Individual differences in alpha peak frequency associated with hippocampal volume and MMSE

6. Conclusions

- Individual differences between alpha frequency and power between AD patients and healthy controls
- Alpha decreases with increasing cognitive impairment and is related to hippocampal volume (though specific to eyes open/closed conditions)
- Confirms a clinical benefit of MEEG measures in dementia

5. Next steps

- Data collection will be completed
- Further analyses will be conducted to standardize these measures

References

1. NTAD protocol paper; <https://www.medrxiv.org/content/10.1101/2021.05.18.21257340v1>
2. Meghdadi et al. (2021). Resting state EEG biomarkers of cognitive decline associated with Alzheimer's Disease and Mild Cognitive Impairment.
3. Moretti et al. (2004). Individual analysis of EEG frequency and band power in mild Alzheimer's disease.

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