

Amygdala subfield atrophy on 7T MRI in dementia with Lewy bodies

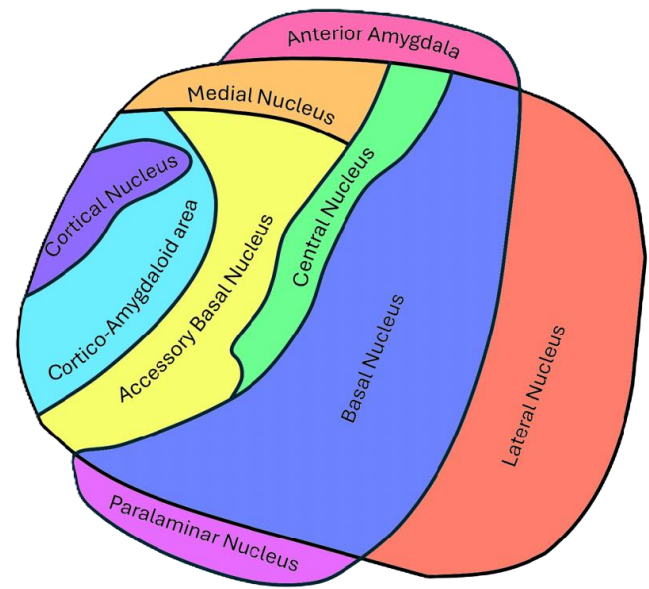
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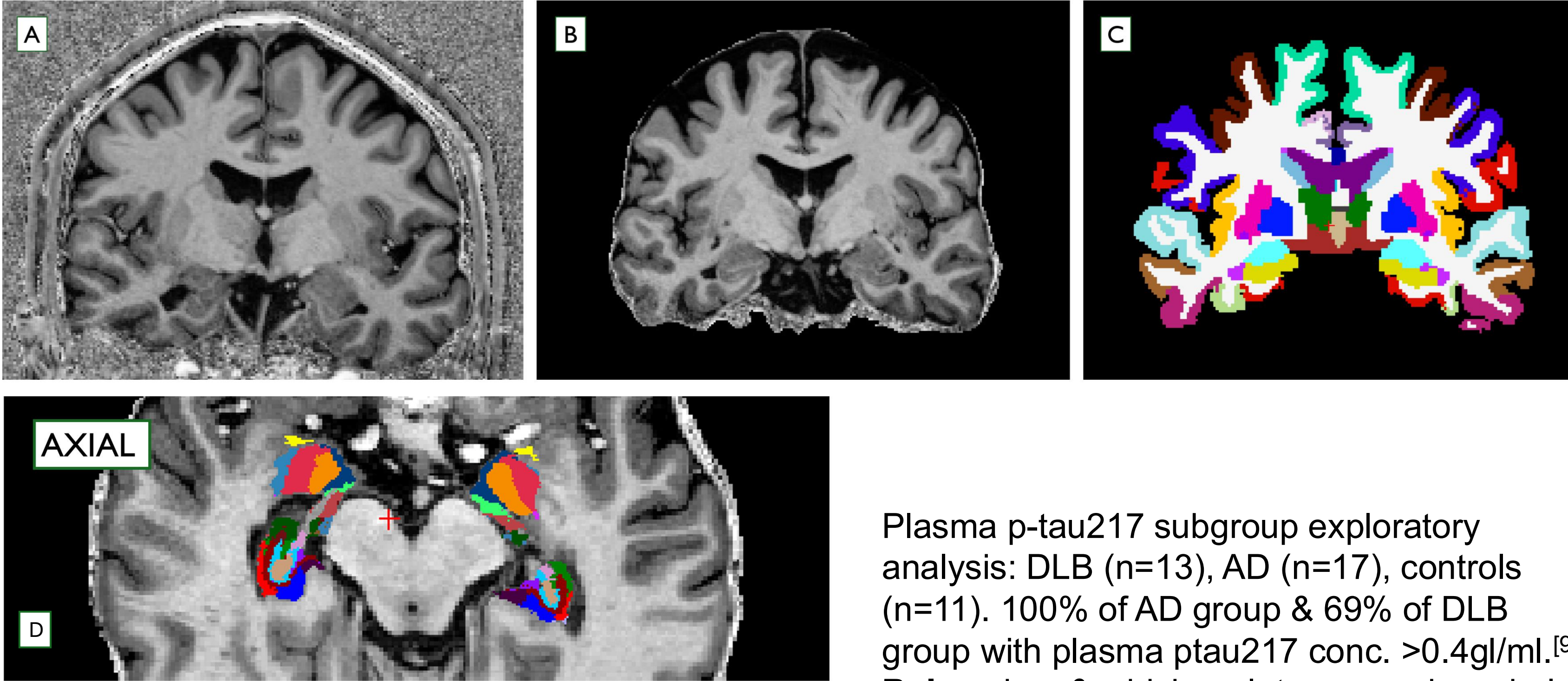
INTRODUCTION

- Amygdala - medial temporal lobe structure implicated in emotion, memory & fear.
- In dementia with Lewy bodies (DLB) it is a major site of Lewy body pathology.^[1] In Alzheimer's (AD), amygdala-only Lewy bodies are present in ~40-60% cases^[2] & it is a site of DLB & AD co-pathology propagation.^[3]
- With improved resolution & tissue contrast, 7T MRI is ideally placed to measure amygdala subfields.^[4]



METHODS

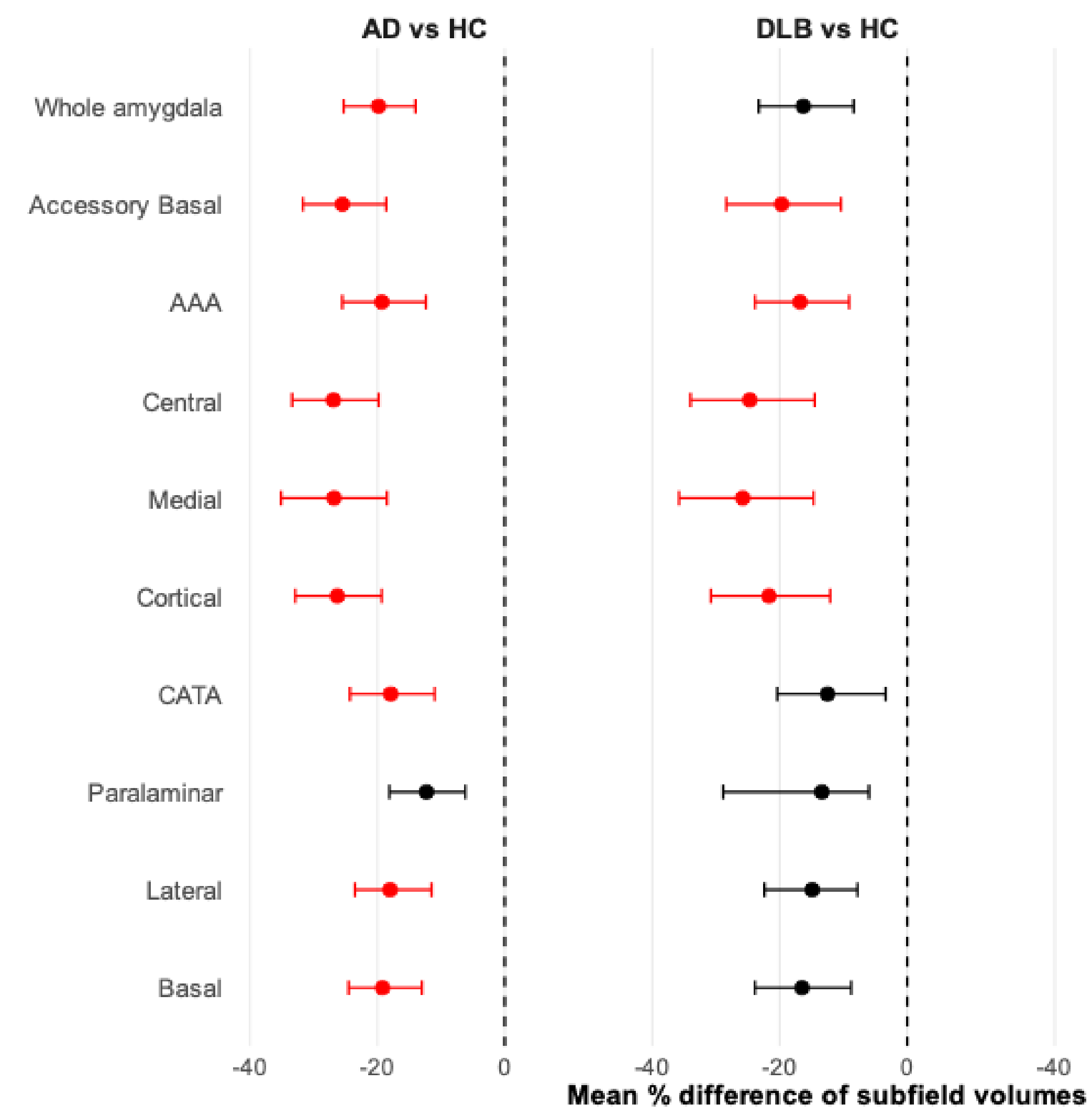
- A. 7T MP2RAGE acquisition: voxels 0.75mm³, TE/TR=1.99/4300ms
- B. Skull-stripping with SynthStrip^[5]
- C. Automated segmentation with recon-all^[6]
- D. Amygdala segmentation package^[7] in FreeSurfer(V7.4.1)^[8]



Plasma p-tau217 subgroup exploratory analysis: DLB (n=13), AD (n=17), controls (n=11). 100% of AD group & 69% of DLB group with plasma ptau217 conc. >0.4gl/ml.^[9]
Below: box & whisker plots comparing whole amygdala volumes between those with/without raised plasma ptau-217

RESULTS

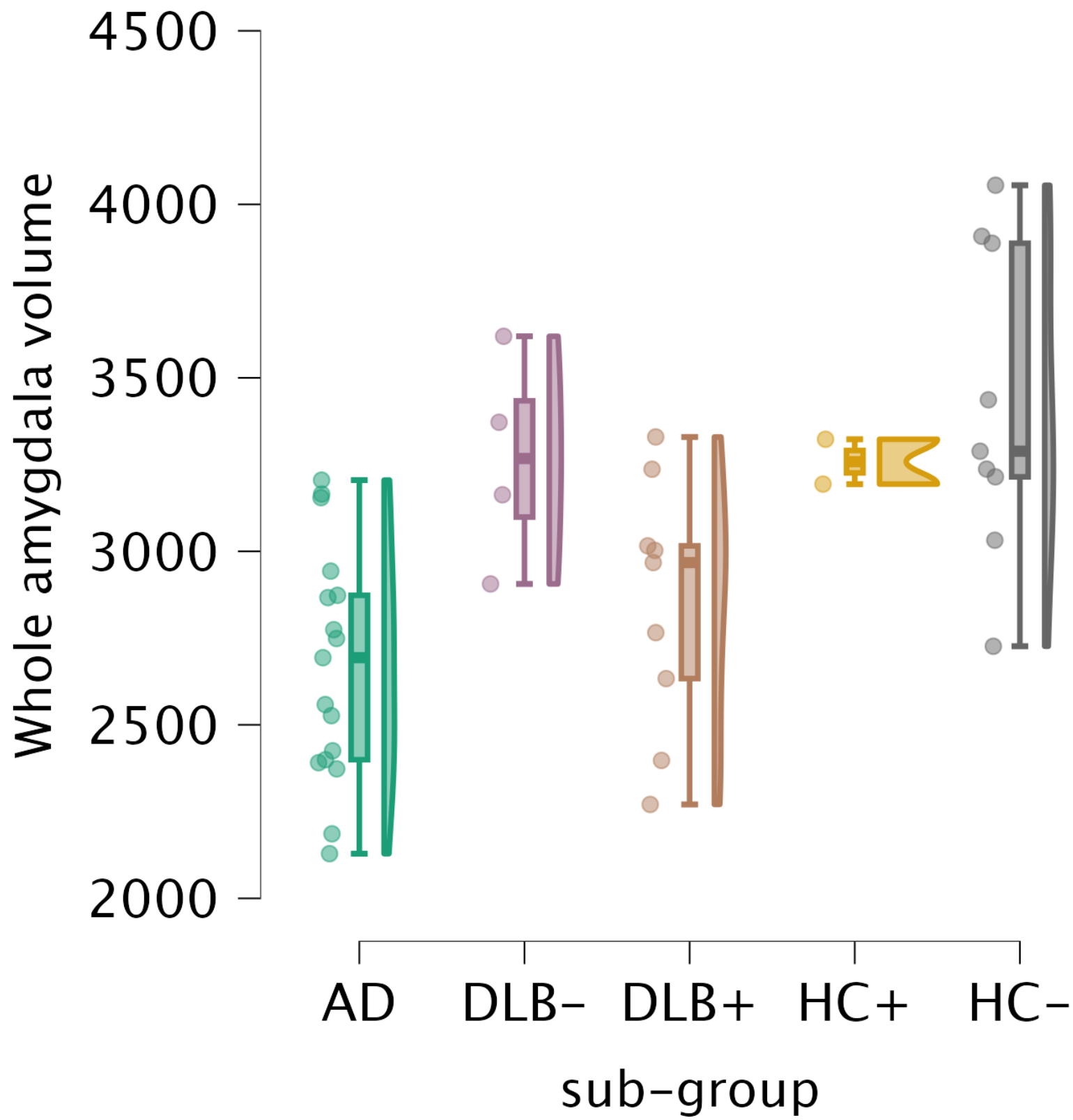
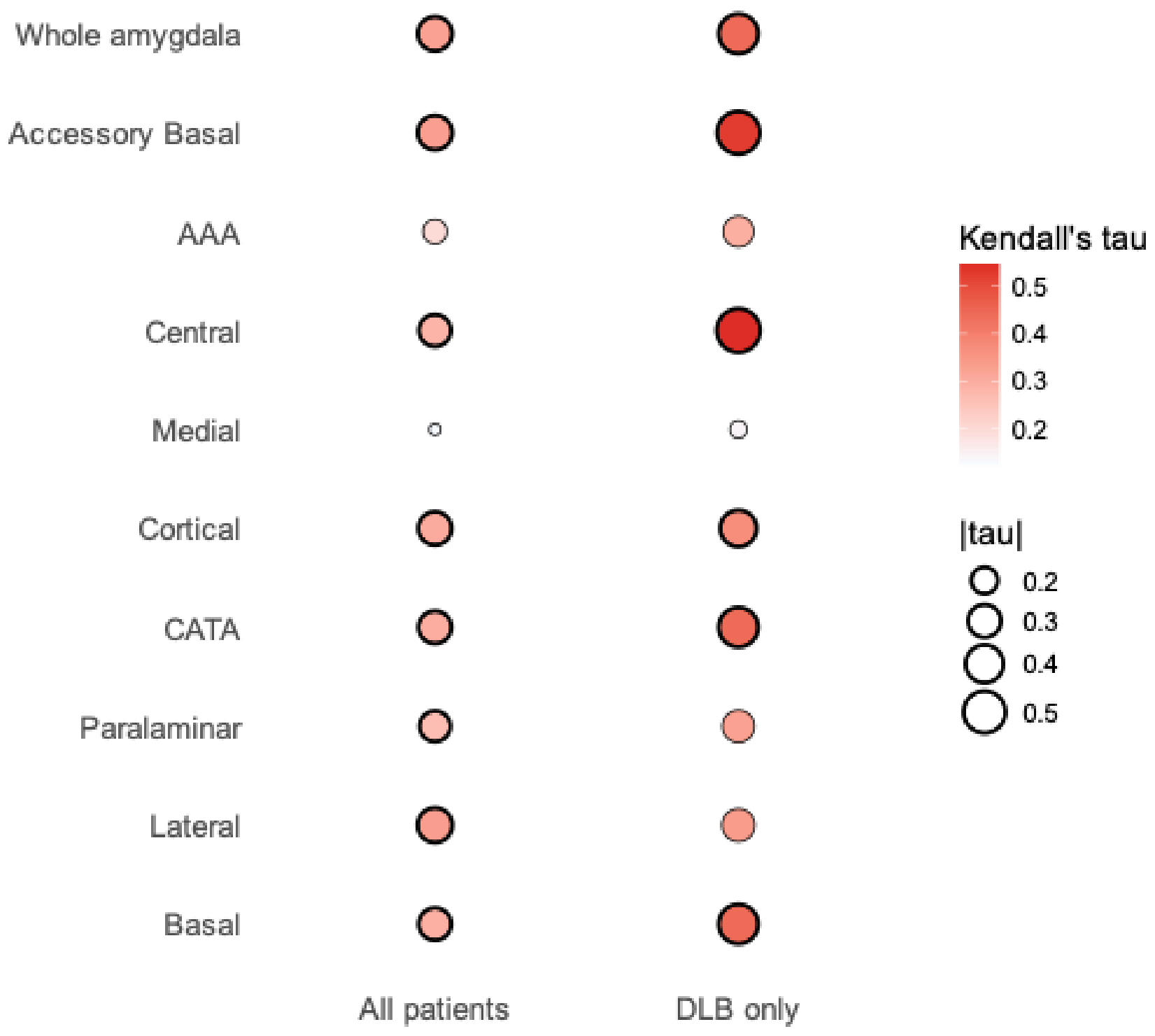
Participants: DLB (n=20, AD (n=25), controls (HC; n=19): well-matched for age & sex



Left: faceted forest plot with lines representing 95% confidence intervals calculated using non-parametric bootstrapping (2000 resamples). Bars in red indicate $P < 0.05$ for group comparisons using GLM (covariates: age, sex, education, total intracranial volume (TIV)) & subsequent type 2 ANOVA with LSD post-hoc tests

Right: Bubble plot showing Kendall's tau correlations for volumes with Addenbrookes cognitive exam scores. Thick black outline indicates statistical significance $P_{FDR} < 0.05$

Key: AAA = anterior amygdaloid area; CATA = cortico-amygdala transition area



CONCLUSIONS

Findings suggest presence of amygdala subfield atrophy in DLB which may contribute to cognitive deficits. Exploratory sub-group analysis suggests that AD co-pathology may drive amygdala atrophy in DLB.

REFERENCES & ACKNOWLEDGEMENTS

1.Seyika et al. 2025; 2.Almeida et al. 2025; 3.Gawor et al. 2024; 4.McKiernan & O'Brien, 2017; 5.Hoopes et al. 2022; 6.Fischl et al. 2004; 7.Saygin et al. 2017; 8. Dale et al. 1999; 9. Ashton et al. 2025

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