Associations between Brain Atrophy and Financial Capacity in Prodromal and Clinical AD
Kerr D, Bartel T, McLaren D, Marson D

Objective: Financial capacity (FC) clinically shows early impairment in patients with prodromal and clinical Alzheimer’s disease (AD). We used structural MRI to investigate brain atrophy and FC in cognitively normal elderly (CN), patients with MCI due to AD (MCI), and patients with mild dementia due to AD. Method: Participants were 44 CN, 23 MCI, and 24 AD individuals diagnosed in consensus conference. Participants completed the Financial Capacity Instrument (FCI), cognitive assessments, and structural MRI. We used SPM8 with DARTEL to estimate participants’ local grey matter volume (GMV). Voxel-wise analyses investigated group differences in GMV and GMV relationships with FCI total score, while controlling for age, education, and total brain volume. We report clusters with \( p < 0.05 \) corrected for multiple comparisons. Then, we performed cognitive predictor analyses for regions showing significant FCI-GMV relationships. Results: As expected, CN had greater GMV than MCI, and CN/MCI both had greater GMV than AD. In the MCI group, we observed a positive relationship between FCI and GMV in bilateral temporal association cortices, with executive function (EF) as the most significant cognitive predictor. In the AD group, we observed positive relationships between FCI and GMV in right angular/parietal/occipital cortices, with arithmetic skills as the most significant cognitive predictor. Conclusion(s): Temporal and parietal/occipital cortical atrophy was associated with impaired FCI performance in patients with MCI and mild AD, respectively. Cognitive predictor results suggested earlier involvement of EF deficits in FC impairment, with semantic loss in arithmetic skills emerging later. The findings offer an initial neuroanatomical-cognitive model for loss of financial skills across AD disease phase.