INTRODUCTION

- Alzheimer disease (AD) is not an unitary syndrome showing different clinical phenotypes. The most common one is early onset AD (LOAD). Early-onset AD (EOAD) is characterized by an age at onset < 65 years, early multidomain cognitive impairment or focal presentations involving non-amnestic functions (language, visuospatial abilities, executive functions) (1-3), faster cognitive decline, and shorter survival than LOAD (2).
- In AD, age of onset influences clinical presentation, rate of progression (4, 5) and brain damage (6, 7).
- Longitudinal study investigating the differential impact of grey matter (GM) and white matter (WM) damage on disease progression in EOAD and LOAD is still missing.
- Understanding the relationship between MRI measures and clinical features and progression of these two variants might help to understand the underlying AD pathophysiological mechanisms.

OBJECTIVE

- To assess GM and WM MRI measures as predictors of cognitive progression in a sample of LOAD and EOAD patients with a mean follow-up of 13 months.

RESULTS

CONCLUSIONS

- Despite having similar disease duration at study entry, EOAD showed more severe cognitive deficits, faster progression and greater GM atrophy compared to LOAD. However, WM damage was severe and distributed in both groups.
- The cognitive progression of EOAD patients is driven mainly by their prominent baseline GM damage not only in temporal lobe but also in the frontal and occipital regions, and by WM damage to the CC and main fibers within the limbic (cingulum) and frontoparietal (SLF) and fronto-occipital (IFO) networks.
- LOAD patients with baseline atrophy beyond the MTL were more likely to experience a worsening of cognitive changes. In addition, most of the cognitive progression of LOAD patients was predicted by the diffuse WM tract damage.

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