

Effects Of Alzheimer's Disease Co-pathology On Cognitive And Psychiatric Manifestations Of Parkinson's Disease- A Longitudinal Study

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Background:

- Limited information on the cognitive and psychiatric profiles of Alzheimer's disease (AD) and Parkinson's disease (PD) co-pathology.
- Study aims to characterise clinical features and biomarkers of a longitudinal PD cohort with AD co-pathology.

Methods:

- Data obtained from the Parkinson's Progression Markers Initiative (PPMI) cohort.
- CSF p-tau/A β 42 ratio, with a cut-off of >0.025 , used to identify AD pathology.
- Three groups: PD with AD co-pathology (AD/PD, n=71), PD without AD pathology (PD, n=512), and healthy controls without AD pathology (HC, n=150).
- Longitudinal trends of clinical and biological markers studied using linear mixed-effects model.

Results:

Cognitive Profile

- AD/PD group had greater cognitive decline across global (MoCA, $p<0.001$), processing speed (Symbol Digit Modalities, $p<0.001$), working memory (Letter Number Sequencing, $p<0.001$) and language (Semantic Fluency, $p<0.001$) domains, when compared to PD and HC.

Psychiatric Profile

- AD/PD group had worsening of depression (GDS, $p<0.001$) and anxiety (STAI, $p<0.001$) when compared to PD and HC.

Function

- AD/PD had an accelerated decline in motor function (MDS-UPDRS Part III, $p=0.017$) and postural instability (Postural Instability and Gait Difficulty, $p<0.001$) compared to PD and HC.

Biochemical

- AD/PD group showed an increased rise in CSF Neurofilament Light (NfL) levels ($p<0.001$) over time when compared to PD and HC.

Conclusion:

The presence of AD co-pathology in PD patients presents a unique clinical phenotype, with a more aggressive decline in cognition, psychiatric and motor function as compared to isolated PD. It is important to recognise the impact of concomitant AD pathology in existing neurodegenerative diseases so that personalised treatment may be administered to address each of the co-pathologies.