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BIOMARKERS

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Biomarkers (non-neuroimaging)/Prognostic utility

Serum NFL as a predictor of disease progression in dementia with Lewy bodies

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Abstract

Background: CSF and plasma neurofilament light chain (NfL) levels have been consistently proposed as reliable markers of neurodegeneration able to discriminate between Parkinson's disease (PD) and atypical parkinsonisms. Increased Serum NfL might predict worse motor and cognitive progression in PD patients at single subject level.

Method: plasma NfL was assessed in a longitudinal study including 93 patients with Parkinson's disease and 27 patients with DLB who underwent an extensive motor and cognitive assessment and after 2 years of follow-up. The study evaluated the correlation between NfL plasma levels and motor, non-motor symptoms, cognitive and behavioral abnormalities in the two cohorts, as well as benignant/malignant phenotypes and motor/cognitive progression in PD after 2 years of follow-up.

Result: Serum NfL correlated with age and age at onset in the cohort. In DLB, NfL correlated with disease duration, hyposmia and neuropsychiatric symptoms, but not with motor function assessed by UPDRS-III. We found no significant associations between NfL and disease progression in DLB patients. In PD, higher NfL levels correlated with hyposmia (p=0.01), total UPDRS-II and UPDRS-III scores (0.001), gait speed (0.04) and several disability milestones, including mild cognitive impairment (0.001), symptomatic dysautonomia (0.001), loss of independency in activities of daily living (p=0.01) and instrumental daily living (p=0.001). At two years of follow-up, NfL was the best marker in multivariate regression analyses for both motor and cognitive progression beyond malignant/benignant phenotypes.

Conclusion: Elevated serum NfL levels are associated with fast progression in PD patients and could thus represent target of interventions in specific subpopulation of patients.