Frailty Predicts Cognitive Impairment in Multiple Sclerosis: A Cross-Sectional Study

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OBJECTIVE

Frailty, as measured by the Frailty Index (FI), is gaining increasing relevance in the prognostic evaluation of patients with multiple sclerosis (MS). This study investigates the relationship between FI and cognitive function in MS patients, aiming to determine whether FI can serve as an independent predictor of cognitive decline, irrespective of age, education level, or overall disability.

MATERIALS

A cohort of 113 patients with a confirmed diagnosis of MS underwent neurological examination, frailty assessment using the FI, comprehensive battery of neuropsychological tests based on the Rao protocol.

METHODS

The relationship between FI, clinical characteristics of the disease, and cognitive impairment was analyzed using statistical methods: Spearman correlation and multivariable regression analysis.

RESULTS

Demographic and clinical characteristics of MS patients

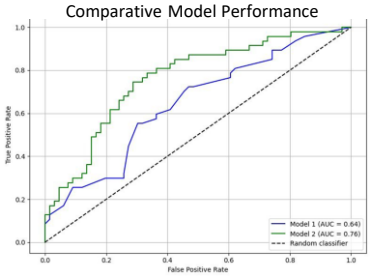
Characteristics	
Age (y), mean±SD	46.6±11.8
Females, (%)	72
Disease duration (y)	12.1± 10.7
MS phenotypes, (%) RRMS PMS	 72.6% 27.4%
Edicational level (y), mean±SD	13.2 ± 3.3
EDSS, median (IQR)	2.0 (0–7.5)
HAM-D total score, mean±SD	8.6± 7.2
HAM-A total score, mean±SD	11.0± 7.0
FI, mean±SD	0.17 ± 0.11

Neuropsychological Test Performance in MS patients

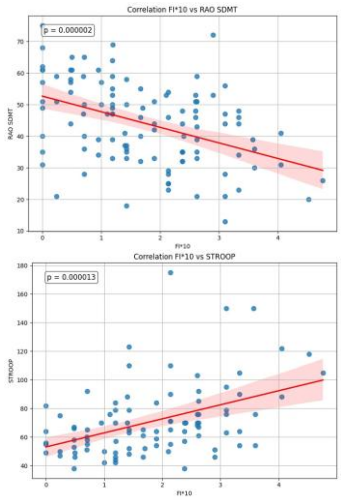
Neuropsychological test	mean±SD
RAO SRT-LTS	32.31 ± 15.78
RAO SRT-CLTR	24.75 ± 15.36
RAO SRT-D	6.60 ± 2.82
RAO SPART	16.82 ± 5.46
RAO SPART-D	5.99 ± 3.11
RAO SDMT	44.10 ± 13.07
RAO PASAT 3	36.65 ± 15.25
RAO PASAT 2	27.13 ± 13.11
RAO WLG	23.60 ± 5.70
STROOP 3 T/2 sec	71.08 ± 25.24

Multivariable analysis identified FI as an independent predictor of cognitive performance in MS patients, particularly in domains related to processing speed and executive control.

Frailty as a Predictor of Cognitive Dysfunction: Comparative Model Performance



Correlation between FI and SDMT and Stroop test



DISCUSSION

Frailty appears to have a substantial impact on cognitive outcomes, independently of age, disability, educational attainment. However, no significant associations were found between FI and measures of verbal fluency or visuospatial memory.

CONCLUSIONS

FI emerges as a valuable tool for predicting the risk of cognitive impairment in MS patients, especially in domains dependent on fronto-subcortical circuits.

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