Association between cognitive function and motor symptoms in Parkinson’s disease

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Background

• Parkinson’s disease is best known for its motor symptoms (e.g., tremor, slowness, rigidity), yet many patients are cognitively impaired.
• Evidence suggests that cognition contributes to specific motor deficits in Parkinson’s disease.1
• Non-tremor symptoms have been linked to executive and visuospatial deficits.1 Patients with postural instability and gait difficulty have higher risk of cognitive impairment and dementia compared to tremor-dominant patients.2
• The association between cognition and global or specific motor performance remains unclear.

Aims: Explore associations between cognitive status and (i) global motor performance / (ii) specific motor domain performance in Parkinson’s disease

Hypothesis: Cognitive impairment will be associated with non-tremor motor symptoms

Methods

• In the OxQUIP study3, patients were tested with cognitive and motor clinical rating scales (i.e., Montreal Cognitive Assessment [MoCA], MDS Unified Parkinson’s Disease Rating Scale Part 3 [UPDRS-III]). Motor scores were divided into tremor and non-tremor scores.4

a) Results: Effect of Cognitive Status on Global Motor Performance

b) Results: Effect of Cognitive Status on Tremor and Non-Tremor Motor Scores

• Whilst the ANOVA was significant (p=.036), post-hoc tests revealed no significant difference between cognitively impaired and normal groups (p=.44). However, the difference between cognitively normal and dementia groups was significant (p=.043).

• Linear regression model revealed significant main effects of cognitive status (p=.02) and motor domain (p<.001), but no significant interaction between both (p=.72). Between cognitive groups, post-hoc tests revealed no significant differences for tremor and non-tremor motor scores.

Discussion: Cognitive status was associated with global motor performance, but no difference in motor performance between cognitively normal and impaired patients was observed

• Focusing on specific cognitive domains (e.g., executive function) may illuminate the potential interplay between cognitive and motor dysfunction in Parkinson’s disease. This approach could help develop targeted therapies to improve outcomes for patients with cognitive impairments.

References:

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