

뇌신경재활

게시일시 및 장소 : 10 월 18 일(금) 13:15-18:00 Room G(3F)

질의응답 일시 및 장소 : 10 월 18 일(금) 15:45-16:30 Room G(3F)

## **P 2-60**

### **The Association between Cognition and Balance in idiopathic Parkinson's Disease**

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#### **Objective**

To investigate whether balance function is associated with cognitive function in patients with idiopathic Parkinson's disease (iPD) and to compare the association between freezers (FOG+) and non-freezers (FOG-)

#### **Background**

Balance deficit is a major problem in patients with iPD and deficits in balance are known to be associated with more impaired cognition. Therefore, it is important to investigate if there is an association with balance and cognitive function in subjects with iPD.

#### **Methods**

We conducted an observational cross-sectional study. Participants included 146 subjects diagnosed with iPD and 78 healthy control subjects (HC). Subjects with iPD were classified as FOG+ or FOG-. Clinical information was obtained about disease duration, history of falls, Hoehn and Yahr scale (HYS), Unified Parkinson's Disease Rating Scale (UPDRS), new freezing of gait scale, and Activities-specific Balance Confidence Scale. Balance function was assessed using mini Balance Evaluation Systems Test (Mini-BESTest). Cognitive function was evaluated using Montreal Cognitive Assessment (MoCA), Scales for Outcomes in PARKinson's disease-COGnition (SCOPA-COG), and individual cognitive tests such as Trail Making Test (TMT), Stroop test, Go/No-Go test, Flankers test, Shifting test and Judgment of Line Orientation (JoLO). Partial correlations and multivariate linear regression analysis were used to determine independent associations for all subjects with iPD and for FOG+ and FOG-.

#### **Results**

Partial correlation analysis controlling for age, disease duration and disease severity using HYS showed lower SCOPA-COG score and longer TMT B time were significantly associated with lower Mini-BESTest score in FOG+ and longer TMT A time was significantly associated with lower Mini-BESTest score in FOG-. Multiple linear regression analysis showed that

UPDRS III score, age, and TMT B time are significant factors contributing to balance function in subjects with iPD.

## Conclusions

Cognitive function is significantly associated with balance function in subjects with iPD. TMT B time is a main factor contributing to Mini-BESTest score in subjects with iPD. The association between cognitive and balance function differs in FOG+ and FOG-.

**Acknowledgment :** This study was supported by NIH (R01AG006457, Horak), Department of Veterans Affairs (5I01RX001075, Horak), and National Research Foundation of Korea grant funded by the Korea government (2015R1C1A1A02037513, Jung).

Table 1. Clinical characteristics of participants.

	PD FOG- (n = 81)	PD FOG+ (n = 65)	HC (n = 78)
	Mean ± SD	Mean ± SD	Mean ± SD
Age (years)	68.4±7.7	68.7±7.7	68.4 ± 8.1
Gender (M/F)	50 / 30	45 / 19	47 / 31
Non-fallers / Fallers / not answered	58 / 18 / 5	28 / 35 / 2	52 / 8 / 18
Disease duration (years)	4.9 ± 4.2	8.0 ± 5.4	
Number of falls in recent 6 months	0.4 ± 1.0	2.0 ± 3.0	0.2 ± 0.4
MDS-UPDRS-I	9.8 ± 5.8	11.2 ± 5.5	
MDS-UPDRS-II	11.1 ± 6.2	16.7 ± 6.7	
MDS-UPDRS-III	36.5 ± 10.6	46.2 ± 12.4	
MDS-UPDRS-IV	3.2 ± 3.1	3.7 ± 3.6	
MDS-UPDRS-III-PIGD score	3.9 ± 2.4	6.6 ± 3.2	
Hoehn and Yahr stage	2.1 ± 0.5	2.5 ± 0.8	
New Freezing of Gait score	0 ± 0	13.9 ± 5.8	0 ± 0
Activities-specific Balance Confidence scale	86.0 ± 13.1	73.8 ± 17.3	96.0 ± 5.2

Table 2. Balance and global cognitive characteristics for participants.

	PD FOG- (n = 81)	PD FOG+ (n = 65)	HC (n = 78)
	Mean ± SD	Mean ± SD	Mean ± SD
Mini-BESTest total score	19.7 ± 4.1	16.8 ± 5.3	24.1 ± 2.5
Anticipatory subscore	4.0 ± 1.3	3.3 ± 1.4	4.8 ± 1.3
Reactive subscore	3.9 ± 1.5	3.3 ± 1.9	5.0 ± 1.0
Sensory subscore	5.2 ± 1.2	4.8 ± 1.4	5.9 ± 0.4
Dynamic gait subscore	6.6 ± 1.5	5.4 ± 1.9	8.4 ± 1.2
Global cognition			
MoCA	25.8 ± 3.3	25.6 ± 3.7	26.9 ± 2.2
SCOPA-COG	28.4 ± 5.0	27.7 ± 5.7	32.1 ± 3.6

Table 3. Partial correlations for cognitive test results and Mini-BEST score for FOG- and FOG+

	PD FOG- (n = 81)	PD FOG+ (n = 65)
SCOPA-COG score		0.83 (p=0.01)
TMT A time	-0.63 (p=0.049)	
TMT B time		-0.77 (p=0.02)
Flanker score	-0.79 (p=0.006)	

*Significant associations only: age, disease duration and disease severity using HYS included as covariates.*