DECREASED REACTIVE MOTOR CONTROL AND INCREASED IMPULSIVENESS IN PARKINSON'S DISEASE PATIENTS WITH LEVODOPA-INDUCED DYSKINESIAS

S PICAZIO, [1]V PONZO, [1] F DI LORENZO, [1] C CALTAGIRONE, [1,2] L BRUSA, [3] G KOCH [1,4]

1.Non-Invasive Brain Stimulation Unit, IRCCS Santa Lucia Foundation, Rome, Italy; 2.Department of System Medicine, University of Rome Tor Vergata, Rome, Italy; 3.UOC Neurologia, Ospedale S. Eugenio, Rome, Italy; 4.Stroke Unit, Department of Neuroscience Policlinic Tor Vergata, Rome , Italy

Introduction

Chronic dopamine replacement therapies in Parkinson's disease can induce side effects, among which the most common are levodopa-induced dyskinesias (LID) and impulse control disorders (ICD). It has already been suggested that both might be linked to a dysfunction of inhibitory brain networks; however, this lacked behavioral evidence. For this reason, the first aim of the current study was to determine whether PD patients with LID show features of altered motor inhibition in parallel with increased impulsivity when compared to PD patients without LID and healthy subjects. Secondly, we wanted to investigate the effects of levodopa intake on reactive and proactive motor inhibitory performance in the two groups of patients.

Methods

Two matched samples of PD patients with (n=10) or without (n=10) LID and a control group (n=10) participated in the study (***Table 1***). All groups were evaluated by the Barratt Impulsiveness Scale-11 (BIS-11) to assess impulsivity traits. Furthermore, all participants performed a stop-signal task (SST) to evaluate reactive-motor-inhibition and a Go/NoGo task to evaluate proactive- inhibitory-control (***Figure 1***). PD patients were tested both following a night of levodopa withdrawal (OFF condition) and under the effect of their usual levodopa medication (ON condition), on different days.

Results

PD patients with LID showed higher impulsivity scores than PD patients without LID (***Figure 2***). Dyskinetic patients presented also delayed stop signal reaction times indicating a worse performance in reactive-inhibition (***Figure 3***). A positive correlation was found between the slow to inhibit a motor command and impulsiveness scores (***Figure 4***). Farther, in the dyskinetic group a positive correlation was found between stop reaction times and the severity of involuntary movements (***Figure 5***). Levodopa intake was not able to modulate SST performance in both groups of patients. No difference among groups emerged to the Go/NoGo task. However, under the effect of levodopa all patients were faster (***Figure 6***) and dyskinetic patients were significantly less accurate (***Figure 7***).

Conclusions

Reactive- but not proactive inhibitory-control is compromised in dyskinetic patients in parallel with increased impulsivity, suggesting a failure to inhibit underling LID and ICD. Levodopa can selectively modulate proactive motor control, especially in presence of LID.

The occurrence of high impulsivity scores and deficits in reactive-motor-inhibition, selectively found in dyskinetic patients, indicates levodopa-induced-dyskinesia as a symptom of a wider behavioral disinhibitory condition.

Table 1

Variable	PD with LIDs	PD without LIDs	HS	P Value
Gender (male/female)	4/6	6/4	5/5	.67 [a]
Age (years)	67.1 ± 9.1	68.6 ± 6.2	68.3 ± 8.4	.89 [b]
Education (years)	10.4 ± 4.8	11 ± 4.2	11.4 ± 4.7	.79 [b]
Age at onset (years)	57.5 ± 9.6	59.6 ± 6.5	---	.61 [c]
Disease duration (years)	9.8 ± 4.9	9 ± 3.5	---	.71 [c]
UPDRS-ME OFF	25.7 ± 3.2	24.4 ± 3.7	---	.39 [c]
UPDRS-ME ON	12.6 ± 2.8	12.7 ± 2.6	---	.95 [c]
Mean dose levodopa (mg/die)	621.7 ± 203.2	613.2 ± 143.4	---	.92 [c]
AIMS	6.7 ± 2.3	---	---	---
MMSEc	27.3 ± 1.7	27.8 ± 2.1	28.5 ± 1.3	.56 [d]
MMPc	28.6 ± 3.1	30.4 ± 1.6	30.62 ± 1.3	.22 [d]
FABc	15.9 ± 1.9	15.7 ± 2.3	16.2 ± 1.6	.79 [d]

Figure 1

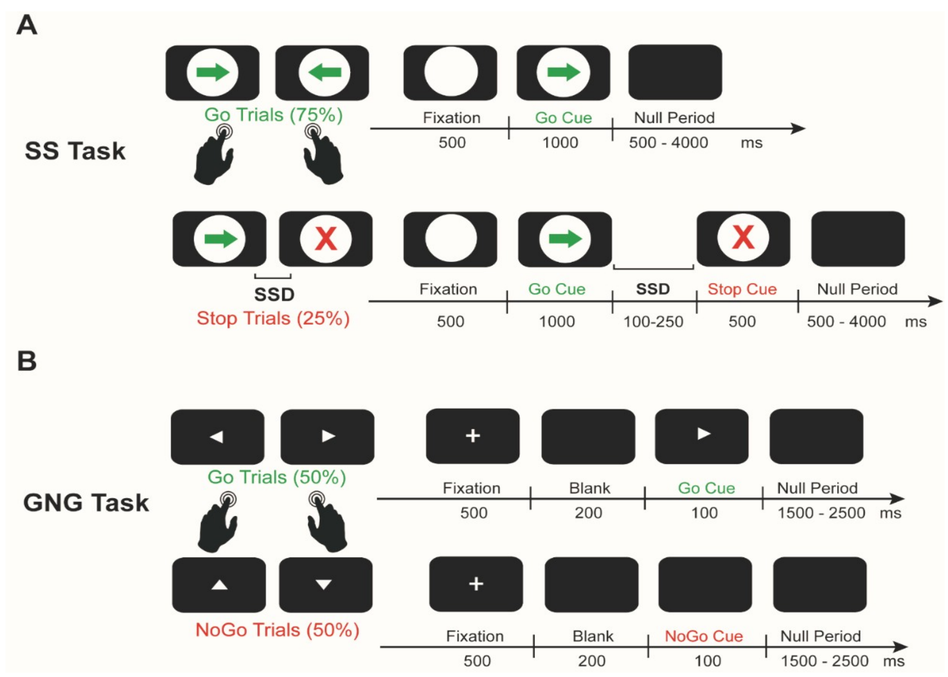


Figure 2

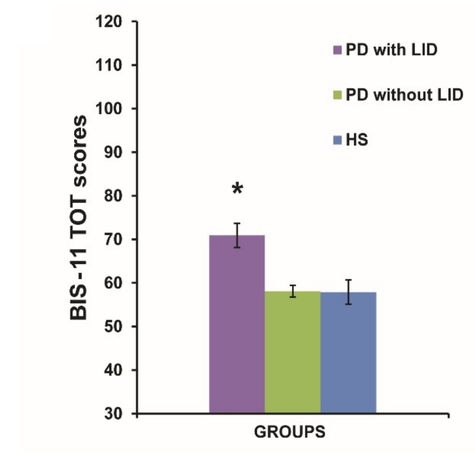


Figure 3

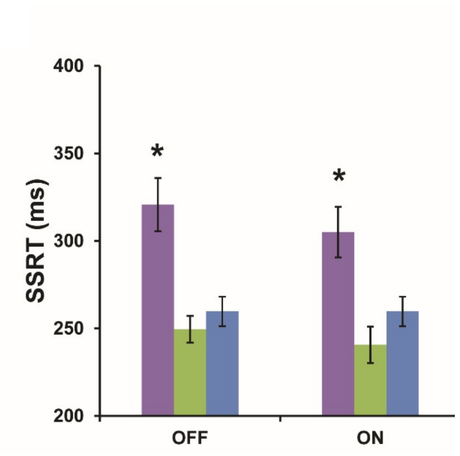


Figure 4

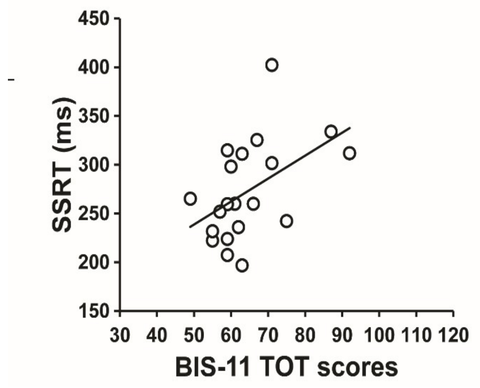


Figure 5

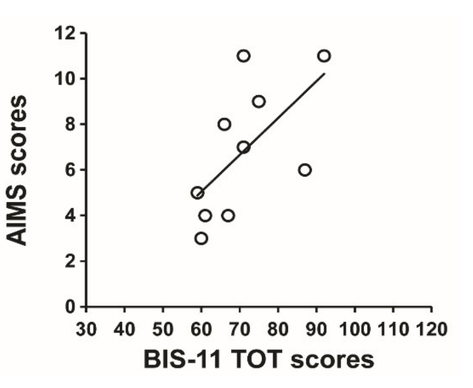


Figure 6

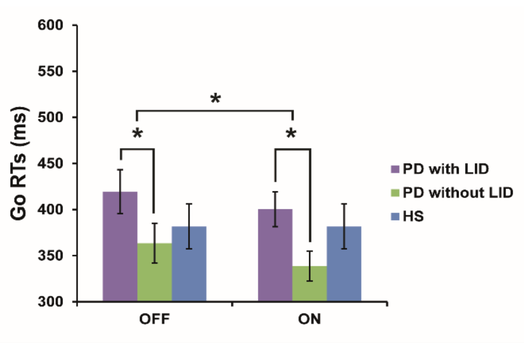
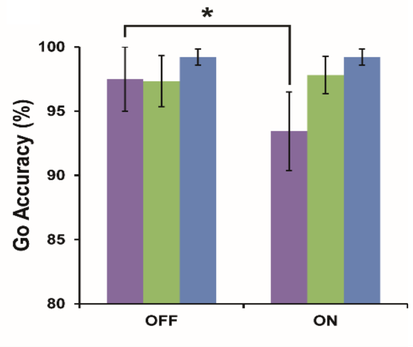


Figure 7



XLVIII CONGRESSO NAZIONALE
14-17 OTTOBRE 2017 – NAPOLI

WebPoster
http://congress.wooky.it/NEURO2017/