

CREATIVE THINKING AND CREATIVE BEHAVIOUR IN PARKINSON'S DISEASE AND HEALTHY CONTROLS

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Objectives. Creative behaviours may emerge in PD patients with dopaminergic therapy. They could be related to the compulsive and repetitive behaviours or might represent the emergence of innate qualities. We studied creative thinking in PD patients with professional artistic job, (i.e.: painter, designer, architect) (PD-A), patients who have experienced artistic abilities after the onset of PD (PD-C) and patients who have never developed creative drive (PD-NC).

Methods. We included 36 PD patients (12 PD-A; 12 PD-C; PD-NC) and 24 matched healthy controls (HC-A: 12 professional artists) and 12 not artists (HC-NA). In PD patients, neurological (H&Y and UPDRS-III) and LEDDs dosage was performed. The creative thinking was investigated by means of Abbreviated Torrance Test for Adults (ATTA) that combines indices of verbal and visuospatial creativity. All subjects were submitted to neuropsychological evaluation, behavioural (mMIDI) and mood's assessment (GDS and HAM-A).

Results.

Demographic and Clinical data	PD-C	PD-A	PD-NC	HC-NC	HC-A
N- subjects	12	12	12	12	12
Gender (M/F, n-)	7/5	7/5	7/5	7/5	7/5
Education yr, mean (SD)	13,9 (4,6)	13,7 (3,8)	11,5 (3,9)	11,4 (4,5)	14,1 (4,3)
Handedness (R/L, n-)	12/0	11/1	12/1	12/0	12/0
Age at test, yr, mean (SD)	54,9 (11,4)	53,7 (10,4)	57,5 (9,2)	56,9 (10,7)	53,4 (8,8)
Age at onset PD yr, mean (SD)	47,9 (12,3)	46,9 (10,6)	50,8 (9,6)	-	-
Side onset, R, (%)	6 (50,0)	6 (50,0)	7 (53,8)	-	-
Motor Symptom at onset PD, TPD, n- (%)	6 (50,0)	6 (50,0)	1 (7,7)	-	-

Neurological Data	PD-C	PD-A	PD-NC
Disease duration yr, mean (SD)	7,0 (3,3)	7,1 (3,4)	7,1 (3,8)
UPDRS-III in on phase, mean (SD)	15,8 (6,5)	16,7 (11,6)	18,3 (8,8)
UPDRS-item 32	0,6 (0,5)	0,5 (0,5)	0,5 (0,5)
H&Y stage in on phase, mean (SD)	2,1 (0,5)	1,9 (0,5)	2,3 (0,3)
Levodopa (LEDD) mg/die, mean (SD)	325,0 (154,5)	275,8 (270,7)	286,5 (202,7)
DA-LEDD mg/die, mean (SD)	127,9 (81,0)	153,2 (103,6)	110,0 (56,1)
Total LEDDs mg/die, mean (SD)	431,2 (204,4)	410,4 (304,3)	358,5 (200,8)

ATTA	PD-C	PD-A	PD-NC	HC-NC	HC-A
AT FLU	13,6 (3,5)	15,4 (3,5)	11,8 (2,9)	12,8 (3,7)	15,1 (2,7)
AT FLE	11,9 (3,5)	12,6 (2,9)	9,6 (2,6)	10,2 (3,3)	11,8 (3,0)
AT ORI	32,2 (16,6)	37,6 (13,0)	18,3 (9,3)*	22,4 (7,9)*	46,2 (29,3)*
AT ELA	18,9 (6,9)* ⁷	21,2 (5,7) ⁷	14,0 (5,9)* ⁷	16,0 (4,4)* ⁷	26,2 (8,0)*
AT Total	76,4 (24,2)	86,7 (20,2)	53,8 (17,7)	61,4 (16,2)	100,1 (26,0)

Legend:

PD-C: Parkinson's Disease patients who became creative after the disease onset
 PD-A: Parkinson's Disease patients who are professional artists
 PD-NC: Parkinson's Disease patients who never became creative after the disease onset
 HC-A: healthy controls (professional artist)
 AT: ATTA total score
 ATTA Subscores: FLU: fluency, FLE: flexibility, ORI: originality, ELA: elaboration.

Discussion. Creative thinking (CT) seems to be not related to dopaminergic (DA) therapy. This observation is supported by similar ATTA scores between PD-A and HC-A. The acquired artistic drive (AD) in PD-C is likely triggered by DA therapy as it emerges after the introduction of DA treatment. An enhanced AD has been reported in PD-A but it does not represent a novelty as in PD-C. AD is not secondary to impulse control deficit as impulsive disorders are present in all PD groups but are not significantly higher in PD-C. The enhanced artistic drive is not due to punning-like activities. ATTA sub-scores for elaboration and originality distinguish the CT in professional artists from non-artist independently of PD.

Conclusion. Our study suggests that newly acquired creative drive in patients with PD seems to be unrelated to DA treatment, but it could represent the emerging of innate skills and is not related to impulsivity or punning. So, these performances could be linked to repetitive and reward-seeking behaviors.

Bibliography

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