



# Atypical levodopa-induced dyskinesia in Parkinson's disease



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## ABSTRACT

**Introduction:** Levodopa-induced dyskinesia (LID) is a common motor complication in Parkinson's disease (PD). However, atypical LID, characterized by dyskinesia occurring at lower doses of levodopa, is less understood. This study compared atypical LID (versus typical LID) in PD patients treated with levodopa.

**Methods:** Dose-to-dyskinesia (N = 57) and atypical dose-to-dyskinesia (N = 40) were compared. Levodopa dose (mg/kg/day) and dyskinesia severity (dyskinesia index) were compared between typical LID (atypical LID) versus atypical LID (typical LID). Dyskinesia severity (mean ± SD) versus typical LID (mean ± SD) was compared.

**Results:** Dose-to-dyskinesia patients showed significantly higher dyskinesia severity than atypical LID patients (mean ± SD) versus typical LID (mean ± SD). In addition, atypical LID patients showed significantly higher dyskinesia severity than D2/3 receptor antagonist-treated patients.

**Conclusion:** Atypical LID is associated with lower levodopa doses, higher dyskinesia severity, and higher dyskinesia severity than D2/3 receptor antagonist-treated patients.

## 1. Introduction

Levodopa-induced dyskinesia (LID) is a common motor complication in Parkinson's disease (PD). However, atypical LID, characterized by dyskinesia occurring at lower doses of levodopa, is less understood. This study compared atypical LID (versus typical LID) in PD patients treated with levodopa.

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... (fi - ) - ] t t f - t ...  
 ... ( fi ). It ...  
 ... A ... ] f ]  
 ... ] l y ] ... A ...  
 ... fi t ... fi t.  
 ... (.M.] ... ) ... ty. If  
 ... fitte ... y ... ] ...  
 ... y , t ... ] ... ] ... f f t  
 ... ] l y ... ] ... ] 0.7%  
 ... ] t t

2.4. Statistical analysis

... ] f ... ] l ... y t ...  
 ... fi] ... ] , B y l ... ] JA ... E ] ...  
 ... y , t y l l ... ] t ... f ... y t  
 ... ] f ... ] t ... fi t ]  
 ... ] t ... ff ... ] t  
 ... AN A ... AN A ] ] t ... ] (D  
 A , f l ) , ] t ... ] G ... ( D , D-MCI , ] t y  
 ... ) , ] l ] l t A ... ] t ... ] G ...  
 ... ] f ... y t ... ] t t ( t ... ] , B f ... t  
 ... p < 0.025).  
 ... F ... ] t ... ] t ] t  
 ... ] t ... ] , fi - ... fi ... , ff ... t  
 ... F ... ] ... ] t t ... ff ...  
 ... ] l y ... ] AN A  
 ... ] G ... ] f , t ] , A ] ] ] l t .  
 ... fi l y ] ... ff , t f D2/3 ... t y ...  
 ... ] t ... ] t ... f D2/3 ... t l ... t  
 ... ] f ] t ] t ] , fi - ... ] t t (B - f ...  
 ... ] t ... p < 0.013). ... ] t ... f  
 ... ] ... ] l .

Table 1

D ... ] f ] t ] ... y ... ] ... ( ] , ] l ... ] t ] ... ff ... ) .

F] t /M] t	D (N = 30)	D-MCI (N = 27)	H] t y ... (N = 40)	G ... ff ... (p] ... )
M : F ]	16:14	16:11	20:20	0.76
A (y] )	67.6 (7.0)	71.9 (8.0)	66.5 (5.8)	0.12
E ... ] t (y] )	14.6 (2.7)	14.2 (3.8)	14.4 (2.0)	0.54
<b>Motor symptoms</b>				
D] t ... ] (y] )	1.9 (1.8)	2.3 (1.8)	-	0.98
H ... ] ] ... ]	2.0 (0.6)	2.1 (0.5)	-	0.49
D ... III: M ... t	12.1 (4.6)	10.8 (3.0)	-	0.41
<b>Cognition</b>				
M-CA	27.4 (1.2)	24.1 (1.0)	28.2 (1.4)	< 0.001*
A] t ... ]	5.4 (2.2)	3.8 (1.7)	7.4 (2.2)	< 0.001*
D ... ] f ]	7.5 (1.2)	7.0 (1.2)	8.1 (1.0)	0.001*
D ... ] ] ]	4.5 (1.1)	4.1 (1.0)	5.8 (1.8)	0.001*
A] f ] y	19.3 (5.1)	15.1 (3.2)	21.2 (5.8)	0.003
<b>Other non-motor functions</b>				
N ... M ... y ... ]	9.5 (4.6)	10.8 (4.7)	-	0.57
B ... D ... I ... t y II	2.2 (2.2)	3.4 (2.0)	1.9 (1.9)	0.16
EM ... B ] ... D ... ]	4.7 (2.6)	5.4 (3.5)	1.9 (1.4)	0.001*
E ... ]	5.6 (4.5)	3.7 (3.7)	3.8 (2.6)	0.13
I ... ] y I	4.1 (3.9)	4.3 (6.5)	3.0 (2.6)	0.64
<b>Levodopa equivalent daily dose (LEDD)</b>				
... ] ( )	272.1 (159.9)	312.2 (181.5)	-	0.62
L ... ] ( )	146.7 (146.2)	223.2 (152.9)	-	0.16
D2/3 ... ] t ( )	50.4 (45.1)	44.9 (44.9)	-	0.11

MCI, ... ] t ... ] ff ... , p] ... ] y AN A ... K ... ] - ] ... ] y AN A ] ] ... ] t ; ] t (\*) , ... fi] t  
 ... ] t p < 0.0025 (B - f ... ) ; D ... , fi ] ... , D ] ] t ... ] ; M-CA, M ... ] C ... A ... t

3. Results

3.1. Test scores

... ] 1 ... ] f ] t ] ...  
 ... y ... ] ] ... ff , t t D ... A ] f ] t t  
 ... ] y AN A ... ] ] ... ff , t t D ... A ] f ] t t  
 ... C ... t t ... ] y 6 , D ] t t ... ] ]  
 ... ] t ... ] t ] t y ... t D ... A ( ]  
 ... ] ... , p < 0.001) ... t t f ] t t D-MCI ] t t  
 ... ] t ] t y ... t t t (D ... -A: p < 0.001;  
 f ... ] : p = 0.001).

3.2. Error types

H ... fi ... ] t ...  
 ... ff , t ] ... ] t ] ... AN A ... t t  
 ... ] , G ... ] f , t ] , A ] ] ] l t . F ... 2A ... t t  
 ... ] f ] t ... ] ... F ... ]  
 ... t AN A ... ] ] fi] t ] t ] t ... t  
 ... ] G ... (F(2,93) = 7.48, p = 0.001, η<sup>2</sup> = 0.14) ] t t t  
 ... ] ff , t f G ... (F(2,93) = 4.61, p = 0.012, η<sup>2</sup> = 0.09). ... t  
 ... ] t t D] ... D-MCI ] t t ] ... ]  
 ... ] t ] t y ... t D ... -A ( D: t(68) = 2.44,  
 p = 0.017; D-MCI: t(65) = 5.47, p < 0.001) ... t f ] ,  
 ... ] ... ff , t f ... ] ff , t (p > 0.22).  
 ... fi ... y B y ] ... ] ( ] 2).  
 F ... 2B ... ] f ] t ] t ] ... t  
 ... B ... ] t ] t y ... t ] t ] t ]  
 ... ] y ] t t ] t ] t . F ... ] t ] t ] ]  
 ... fi] t ] t ] t ] t ] G ... (F(2,93) = 4.95,  
 p = 0.009, η<sup>2</sup> = 0.10) ] t t t ] ff , t f G ... (F  
 (2,93) = 5.17, p = 0.007, η<sup>2</sup> = 0.10). B ... D] ... D-MCI ] t t  
 ... ] t ] t ] t ] t y ... t D ... -A ( D:  
 t(68) = 2.77, p = 0.007; D-MCI: t(65) = 4.30, p < 0.001) ... t f ] ,  
 ... ] ... ff , t f ... t  
 ... ff , t (p > 0.21).  
 F ... 2C ... ] f fi - ] , fi ... B ... ] -  
 ... ] t ] t ] t y ... t ] t t ] t ] t ] ,



... D. ...

21 ...

22. Att ...

... D. ...

23,24. H ...

... D. ...

... D. ...

... D. ...

... D. ...

27,28 ...

... D. ...

... D. ...

5. Conclusion

... D. ...

6. Authors' roles

... M. ...

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