



FONDAZIONE IRCCS CA' GRANDA  
OSPEDALE MAGGIORE POLICLINICO



UNIVERSITÀ DEGLI STUDI  
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Does the side of onset of motor symptoms  
in parkinsonian patients have an impact on  
the global clinical phenotype?

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# Background


- Asymmetry is a well-known characteristic of Parkinson's disease
- Reports in literature:
  - LPD → visuospatial disturbs
  - RPD → verbal memory deficit
  - No differences in attention and executive functions

Verreyt et al., Neuropsychology Review, 21, 2011, 405

- Contradictory results!



# Introduction

- Retrospective study on a cohort of 350 PD patients (UK Brain Bank criteria), visited at the Ospedale Maggiore Policlinico, Milano between January 2014 and January 2019
  - Objective: to identify phenotypic differences in patients with left side motor onset compared with right motor onset
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## Results

	Total	Left onset (LPD)	Right onset (RPD)	p value
<b>Number of patients</b>	350	174	176	—
<b>Gender, male</b>	57.1% (350)	58.6% (102)	55.7% (88)	0.579
<b>Age, years</b>	70 (58; 77)	70 (57; 76)	70 (59; 77)	0.690
<b>Age at onset</b>	61 (49; 69)	61 (47; 68)	63 (51; 70)	0.122
<b>Early onset</b>	25.7% (90)	28.7% (50)	22.7% (40)	0.198
<b>Disease duration, years</b>	7 (3; 11)	7 (4; 12)	5 (3; 10)	<b>0.016</b>
<b>Hoehn &amp; Yahr stage</b>	2 (1; 3)	2 (1; 3)	2 (1.5; 3)	0.839
<b>Parkinsonian phenotype</b>				
<b>Akinetic-rigid</b>	52.0% (180)	55.0% (94)	49.1% (86)	0.278
<b>Tremor dominant</b>	48.0% (166)	45.0% (77)	50.9% (86)	

# Results

	Total	LPD	RPD	p value
Motor complications				
<b>Postural instability</b>	40.4% (141)	42.0% (73)	38.9% (68)	0.556
<b>Freezing</b>	30.2% (101)	28.5% (47)	32.0% (54)	0.490
<b>Dystonia</b>	28.1% (93)	30.7% (50)	25.6% (43)	0.304
Cognitive disturbs				
<b>Cognitive decline</b>	25.1% (84)	28.4% (48)	21.8% (36)	0.166
<b>Hallucinations</b>	22.0% (73)	24.4% (40)	19.6% (33)	0.296
Non-motor symptoms				
<b>Orthostatic hypotension</b>	22.3% (67)	22.1% (33)	22.5% (34)	0.939
<b>Constipation</b>	63.9% (193)	67.7% (105)	59.9% (88)	0.154
<b>Urinary disturbs</b>	49.8% (129)	51.5% (68)	48.0% (61)	0.575
<b>Hyposmia</b>	59.5% (129)	56.6% (77)	62.4% (83)	0.334
<b>RBD</b>	62.0% (188)	64.9% (98)	59.2% (90)	0.307
Dopaminergic therapy				
<b>LEDD, mg/day</b>	510 (300; 810)	500 (285; 755)	552 (308; 851)	0.137
<b>Motor fluctuations</b>	53.6% (157)	62.5% (90)	45.0% (67)	<b>0.003</b>
<b>Dyskinesia</b>	44.9% (133)	50.1% (73)	40.0% (60)	0.084
<b>ICD</b>	23.4% (73)	31.2% (49)	15.5% (24)	<b>0.001</b>

# The impact of left onset

Variable	OR*	C.I. (95%)	p value
<b>ICD</b>	2.407	1.326 – 4.370	0.004
<b>Motor fluctuations</b>	2.281	1.160 – 4.487	0.017
<b>Dyskinesia</b>	1.087	0.600 – 1.969	0.784

\* gender, disease duration and LEDD adjusted



# Conclusions

- Left onset of motor manifestations in Parkinson's disease:
  - may be considered a risk factor for the development of dopaminergic therapy associated complications
  - is associated to a more complex disease phenotype
- Future perspectives:
  - Longitudinal study from disease onset
  - Confirmation of asymmetry by imaging studies (DaTScan, nigrosoma-1)
  - Pathophysiological hypothesis