

Vascular risk factors and Mild Cognitive Impairment in Parkinson's disease: the **PA**rkinson's disease **CO**gnitive impairment **S**tudy



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Objectives

Vascular risk factors have been associated with cognitive impairment, dementia and worse prognosis in the general population, but their role on cognitive dysfunction in Parkinson's disease (PD) is still unclear.

To evaluate the possible association between vascular risk factors (smoking, BMI, diabetes, hypercholesterolemia, hypertriglyceridemia, hypertension, atrial fibrillation and myocardial infarction) and *Mild Cognitive Impairment in PD patients (PD-MCI)*.

Materials and method

The **PA**rkinson's disease **CO**gnitive impairment **S**tudy (**PaCoS**) is a multicenter study involving two Movement Disorder centers located in Southern Italy. Patients affected by PD diagnosed according to the Gelb's diagnostic criteria, were consecutively enrolled in the study. PD-MCI was diagnosed with modified level-II Litvan's criteria. PD severity was evaluated with the Unified Parkinson Disease Rating Scale – Motor Evaluation (UPDRS-ME) and the Hoehn-Yahr (HY) scale. Presence of vascular risk factors was based on clinical history, anthropometric measurements, blood analysis, blood pressure readings and informations on medical drug use. Univariate and multivariate logistic regression analysis was used to test the association between variables.

Results

The study included 627 PD patients (57.4% men; mean age 67.9±9.6 years), with a mean age at onset of 64.4±10.5 years, and a mean disease duration of 3.5±4.8 years. The mean UPDRS-ME score was 25.9±13.5 with a mean HY stage of 2.0±0.7. Fifty-nine (9.42%) patients were classified as PD with dementia and were excluded from the analysis. PD-MCI was diagnosed in 303 (48.4%) subjects, and was more common among men than women (62% versus 37.9% respectively). Among the vascular risk factors evaluated only diabetes was significantly associated with MCI at univariate analysis (OR 2.09; 95% CI 1.30-3.34). After multivariate analysis the association between diabetes and the presence of MCI was still significant with an adjusted OR of 1.78 (95%CI 1.07-2.97).

Demographics and clinical variable of the PaCoS sample

	Normal cognition (n=265)	PD-MCI (n=303)
Sex (M)	145 (45.1%)	188 (62.0%)
Age	64.9 ± 9.9	69.8 ± 8.7
Education	8.0 ± 4.8	7.6 ± 4.6
Age at onset of PD	62.0 ± 10.5	66.5 ± 9.8
Disease duration	2.9 ± 3.9	3.4 ± 4.3
UPDRS-ME	22.8 ± 11.8	25.8 ± 12.6
Hoehn-Yahr stage	1.9 ± 0.5	2.0 ± 0.6
Phenotype		
- TD	95 (37.4%)	76 (25.8%)
- PIGD	133 (52.4%)	184 (62.4%)
- Mixed	26 (10.2%)	35 (11.9%)

Logistic Regression analysis

	Univariate analysis			Multivariate analysis		
	OR	95%CI	p-value	OR	95%CI	p-value
Sex (M)	1.34	0.96-1.88	0.086	1.41	0.98-2.04	0.062
Age	1.06	1.04-1.08	0.000	1.05	1.03-1.07	<0.0001
Hoehn-Yahr stage	1.57	1.17-2.10	0.002	1.50	1.09-2.07	0.011
Hypertension	1.51	1.08-2.12	0.01	1.19	0.81-1.75	0.358
Diabetes	2.09	1.30-3.34	0.002	1.78	1.07-2.97	0.026
Infarction	1.63	0.95-2.81	0.073	/	/	/
TIA	0.87	0.05-13.99	0.922	/	/	/
Stroke	0.51	0.12-2.18	0.371	/	/	/
Smoke	1.66	0.82-3.33	0.153	/	/	/
Phenotype						
- TD	1	/	/			
- PIGD	1.73	1.19-2.52	0.004	1.64	1.09-2.44	0.015
- Mixed	1.68	0.93-3.04	0.084	1.72	0.92-3.21	0.088

Discussion and conclusion

Our study suggests that diabetes may contribute to cognitive impairment in PD probably with a mechanism which leads to cerebral hypoperfusion and white matter lesions. Accordingly, these findings may have relevant prognostic and therapeutic implications.

REFERENCES

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