

Dopamine transporter scan (DaTscan), clinical impression of severity index and cognitive impairment in Parkinson's disease: data from a non motor natural history study.

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BACKGROUND

The Clinical impression of severity index of Parkinson's disease (PD) (CISI-PD) is a valid tool to assess the severity of PD in a comprehensive (motor and cognitive) manner in clinical practice.

OBJECTIVE

To analyse and compare the association between DaTscan ratios and duration of disease and the clinical global impression of severity of Parkinson's disease (PD).

METHODS

Clinical and CISI-PD data related to PD as well as caudate, putamen and striatum uptake ratios with DaTscan were analysed. Cross sectional data are presented.

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Table 1: Demographics

	Patients (N: 62)
Male (%)	70.97
Mean age (SD) in years	61.06 (12.7)
Age at PD onset in years	67.80 (12.8)
Mean Scopa Motor score (SD)	17.65 (9.8)
Mean LEDD (SD)	441.90 (470.8)
Mean DaT uptake caudate (SD) right	1.42 (0.59)
Mean DaT uptake caudate (SD) left	1.45 (0.57)
Mean DaT uptake putamen (SD) right	0.86 (0.47)
Mean DaT uptake putamen (SD) left	0.93 (0.39)
Mean DaT uptake striatum (SD) right	1.14 (0.52)
Mean DaT uptake striatum (SD) left	1.20 (0.47)

N = Number; SD = Standard deviation; LEDD = Levodopa Equivalent Daily Dose

Table 2: Association

	Caudate DaT uptake		Putamen DaT uptake		Striatum DaT uptake	
	left	right	left	right	left	right
Disease duration	r = -0.41	r = -0.50	r = -0.51*	r = -0.56*	r = -0.48	r = -0.54*
CISI-PD total score	r = -0.45	r = -0.46	r = -0.48	r = -0.48	r = -0.47	r = -0.48
Scopa motor total	r = -0.40	r = -0.37	r = -0.40	r = -0.34	r = -0.41	r = -0.36
MMSE total	r = 0.35	r = 0.23	r = 0.39	r = 0.25	r = 0.40	r = 0.23
CISI-PD Cognition	r = -0.45	r = -0.46	r = -0.35	r = -0.42	r = -0.38	r = -0.37

Spearman's rank correlation coefficient
 CISI-PD= Clinical impression of severity index of Parkinson's disease; MMSE= Mini Mental State Examination
 r = 0.00–0.19 – Negligible; r = 0.20–0.34 – Weak; r = 0.35–0.50 – Moderate; r > 0.50 – Strong; * – strong association

Table 3: Variable DaT caudate uptake

	Cognitively normal (N: 46)	Mild cognitive impairment (N: 13)	Dementia (N: 3)	p- value
Mean DaT uptake right caudate (SD)	1.54 (0.57)	1.15 (0.54)	0.80 (0.47)	p = 0.01
Mean DaT uptake left caudate (SD)	1.58 (0.52)	1.12 (0.55)	0.90 (0.47)	p = 0.001

Kruskal-Wallis equality-of-population rank test; N = Number; SD = Standard deviation

CONCLUSION

- 1) CISI-PD is associated with motor disease severity and duration as indicated by DaT quantification (table 2).
- 2) Less robust relationship is observed between cognitive outcomes (MMSE and CISI-PD Cognition) and DaTscan uptake (caudate, putamen and striatum) (table 2).
- 3) However, caudate DaT quantification appears to differentiate between cognitively normal, mild cognitively impaired and demented PD patients and further analysis in a larger sample is required (table 3).