

Tremor dominant vs non-tremor early Parkinson's disease: differences in dopamine transporter imaging

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Introduction: Dopamine active transporter with single-photon emission tomography (SPECT) is a reliable tool in the diagnose of Parkinson's disease (PD), whereas his association with clinical features and his role as a prognostic value of disease is still debated [1]. Considering clinical phenotypes of PD, a supposed correlation of striatal dopamine uptake with bradykinesia but not with tremor may indicate different pathophysiology for these extrapyramidal signs.

Objective: The aim of this study was to evaluate the relationship between the two main clinical motor phenotypes of PD and nigrostriatal degeneration investigated through 123I-FP-CIT SPECT.

Methods: We selected 35 patients (17/18 F/M, mean age 60±8,7) with a diagnosis of idiopathic PD (H&Y 1 or 2; disease duration less than 36 months). We excluded any subject with cognitive impairment or suspect of atypical Parkinsonism. Patients were assessed using the Unified Parkinson's Disease Rating Scale (UPDRS) motor score and H&Y staging and were then subtyped into 17 tremor-dominant (TD) and 18 non-tremor (NT) PD patients. Semi-quantitative SPECT analysis of ipsilateral and contralateral regions of putamen and caudate were taken into consideration. We used Student t test to compare the subgroups.

Results: Tremor dominant group and non-tremor patients were similar in matter of age, gender and clinical variables (UPDRS III, H&Y, disease duration). TD and NT groups presented a similar reduction of 123I-FP-CIT density in controlateral putamen; however, TD group showed lower reduction of radioligand in contralateral and ipsilateral caudate (p=0,018; p=0,003) and ipsilateral putamen (p=0,01) compared to NT patients.

Conclusions: Our results, showing patients with tremor having less severe dopaminergic defect compared to patients without tremor, consist with the hypothesis that tremor in PD is generated by mixed mechanism, besides nigrostriatal degeneration. The similar contralateral putamen degeneration observed in both groups, may be related to compensatory mechanism.

References

[1] Vogt T et al., 2011. Park Relat Disord; 17(6): 459-63.