

TURUN YLIOPISTO
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KINOS, MAIJA: Differences in striatal dopamine transporter density between tremor dominant and non-tremor Parkinson's disease

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Parkinson's disease (PD) can manifest with a tremor dominant or a non-tremor (akinetic-rigid) phenotype. Although the tremor dominant subtype may show better prognosis, there is limited information of phenotypic differences in the level of striatal dopamine transmission. The present study investigated striatal dopamine transporter (DAT) binding characteristics in a large sample of patients with and without tremor.

[¹²³I]FP-CIT SPECT scans of 231 patients with a clinical diagnosis of PD and abnormal FP-CIT binding (157 with tremor, 74 without tremor) and 230 control patients with normal FP-CIT binding (148 with tremor, 82 without tremor) were analyzed using an automated region-of-interest analysis of the scans (BRASS). Specific striatal binding ratios were compared between phenotypes and groups using age, sex, symptom duration, predominant side of symptoms, dopaminergic medications and scanner as covariates.

Patients with PD had 28.1-65.0 % lower binding in the striatum compared to controls ($p < 0.001$). PD patients with tremor had 9.0-10.5 % higher FP-CIT uptake in the mean and left caudate nucleus compared to PD patients without tremor, whereas there were no differences between tremulous and non-tremor control patients ($p < 0.05$). No significant effects of tremor on DAT binding were seen in the anterior or the posterior putamen.

PD motor phenotype is associated with the extent of caudate dopamine terminal loss in PD, as dopamine function is relatively more preserved in tremulous PD patients. Symptom type is related to caudate dopamine function only in association with parkinsonian dopaminergic degeneration, not in intact dopamine systems of patients with non-PD tremor.

Parkinsonin tauti, striataalinen dopamiinitransportteri, CIT-SPECT