

Paradoxical effect of smoking on motor progression and dopaminergic putaminal denervation in Parkinson's disease.

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Introduction

Many epidemiological studies have found a highly significant negative association between cigarette smoking and Parkinson's Disease (PD) (1). However, previous studies showed no significant clinical protective effect of cigarette smoking in patients already diagnosed with PD (2-4).

Objectives

The aim of this study is to explore the influence of smoking status on motor progression and changes in dopaminergic imaging in PD.

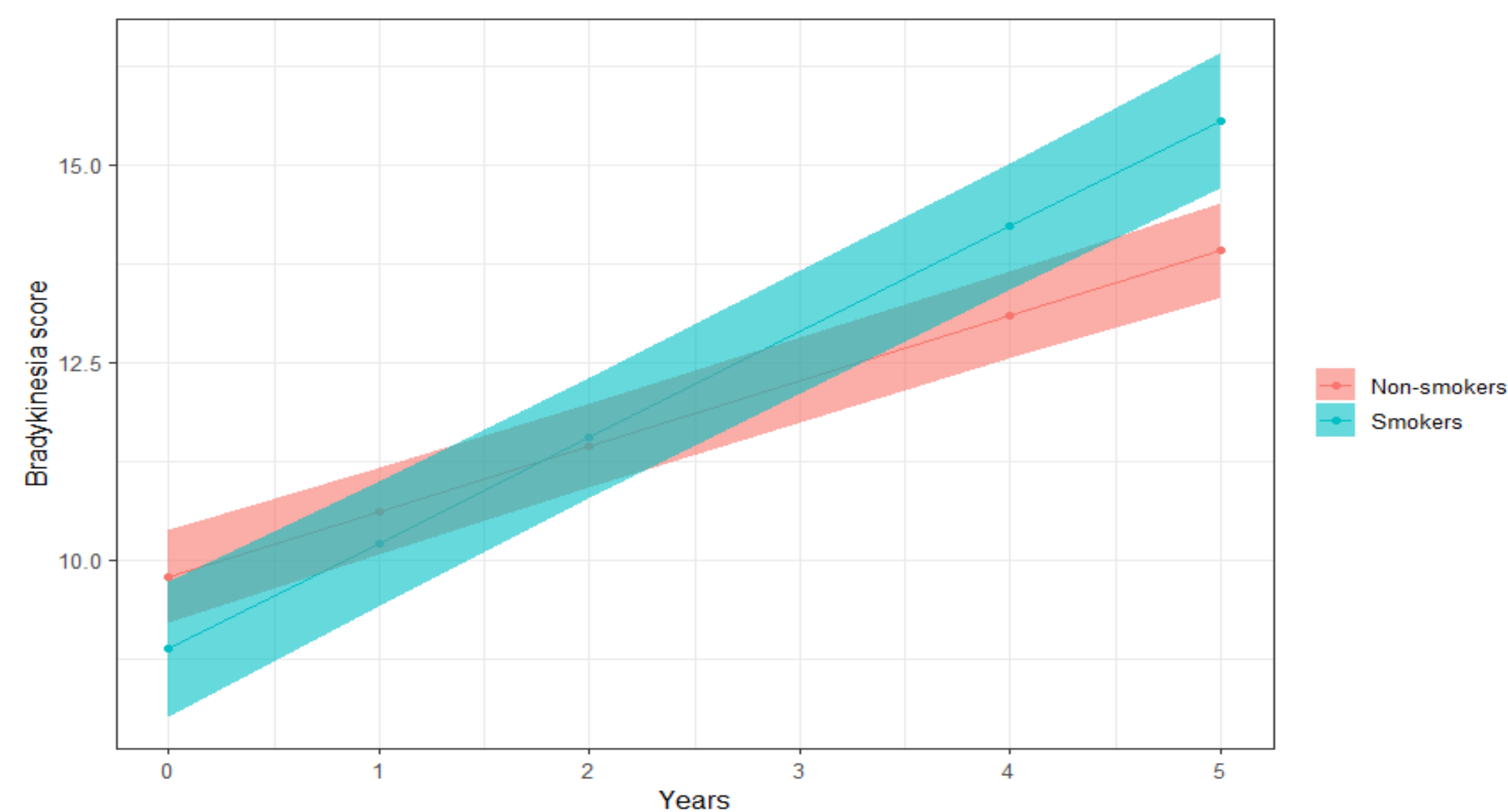


Figure 1. Predicted trajectories for Bradykinesia score in "smokers" and "non-smokers" PD patients.

Materials & Methods

From the Parkinson's Progression Markers Initiative (PPMI) cohort, we included 140 PD patients who completed the Parkinson's Disease Risk Factor Questionnaire (PDRFQ), Smoking History section. Patients were categorized in "smokers" and "non-smokers" based on the response to the following question "In your lifetime, have you ever regularly smoked cigarettes, that is, at least one cigarette per day for 6 months or longer?". Data extracted included demographics, a battery of motor assessment and , [123I]FP-CIT SPECT scan to assess dopaminergic striatal denervation. Chi-squared test and Mann-Whitney U test assessed the differences between groups at baseline. Linear mixed models (LMM) corrected for possible confounders (age, sex, disease duration) were used to assess differences between "smokers" and "non-smokers" in the 5-year progression of motor symptoms and changes in dopaminergic imaging.

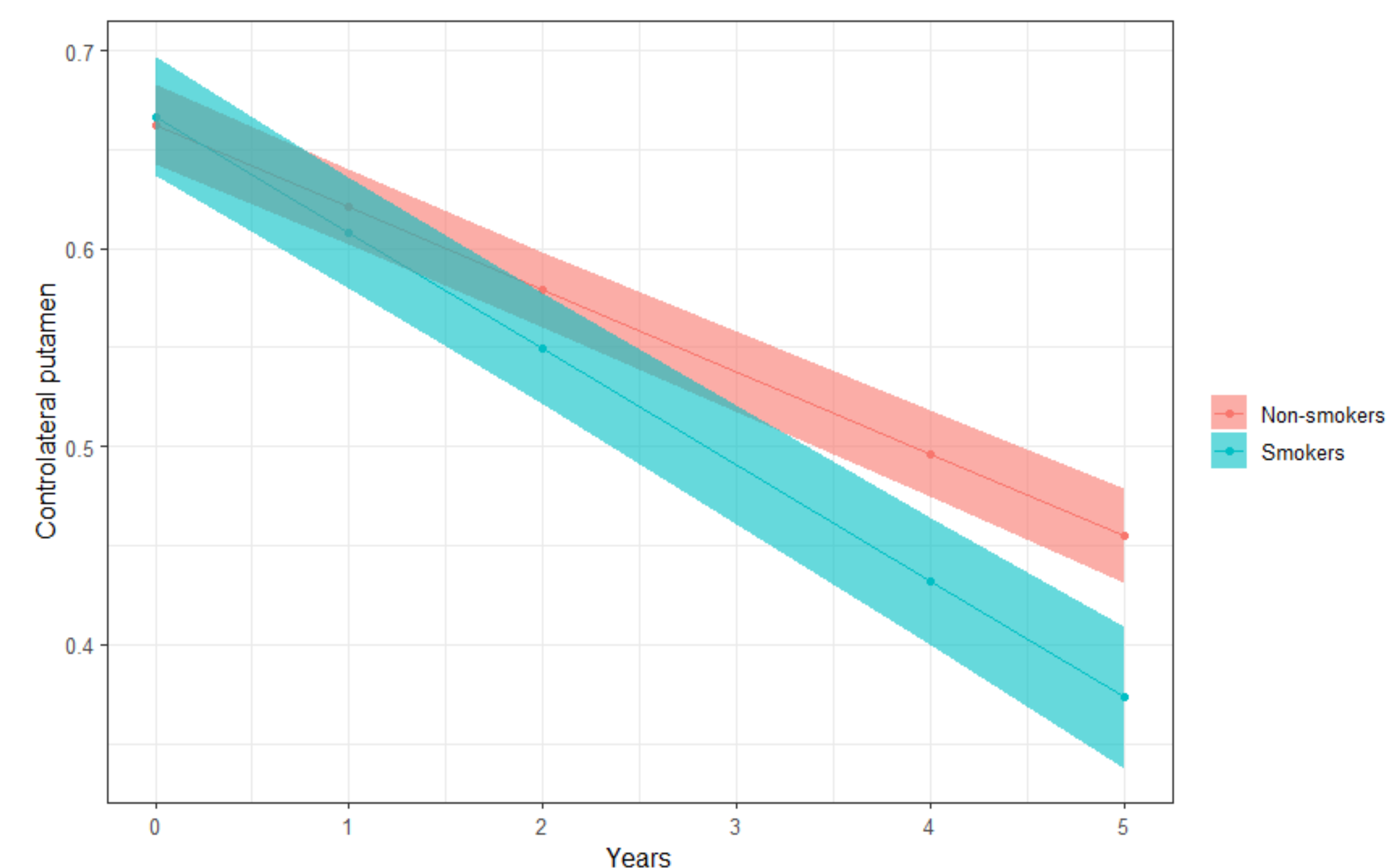


Figure 2. Predicted trajectories for the contralateral putamen [123I]FP-CIT binding in "smokers" and "non-smokers" PD patients

Results & Discussion

There were 45 PD patients who have regularly smoked and 95 PD patients who have never regularly smoked cigarettes. No statistical differences between "smokers" and "non-smokers" were seen at baseline for age ($P=0.051$), sex ($P=0.235$), disease onset ($P=0.638$) and any clinical measure. We observed a trend for faster progression of motor symptoms measured by MDS-UPDRS-III for "smokers", compared with "non-smokers" ($P=0.054$). Furthermore, "smokers" showed a faster progression in the "Bradykinesia" score ($p=0.007$, Figure 1) and faster dopaminergic denervation in the putamen contralateral to the affected side ($p=0.034$, Figure 2).

Conclusions

Smokers PD patients showed a faster motor progression and dopaminergic denervation compared with non-smokers PD patients.

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