

OPEN PEER REVIEW REPORT 3

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Title: Decreased GDNF in the PFC potentially evokes the cognitive impairment of Parkinson disease by blunting dopamine transmission

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COMMENTS TO AUTHORS

In this study, by using the retrospective analysis of PD patients and subacute MPTP mouse model, the authors found that decreased GDNF in the PFC triggered defects of dopaminergic synaptic transmission, as well as the degeneration of dopaminergic synaptic function, which is potential incentive of cognitive impairment in PD. These results are interesting and clinical instructively. However, there are some points need to be modified.

1. GDNF measuring assay should further provide specificity and sensitivity data to demonstrate the assay reliability.
2. All the ROC and linear regression data need to provide 95% CI to show their reliability.
3. When using T-test and ANOVA analysis, the data need to determine the distribution characteristics first.
4. The cohorts of PD patients and animal models used in 7T MR scanning need to be expanded, and a power-calculation should be done before the research design.
5. Column charts in Figure 4-5 should use scatter plots to show how stable the data is.
6. The authors found the degree centrality value of the neocortex dropped after GDNF knockdown, which indicating a decrease in prefrontal connection. How to explain GDNF knockdown could cause the whiter matter fiber connectivity change? And any references here.

Some minor points:

1. The full name of DANs and DAT need to be showed in the first appearance.
2. A list of all abbreviations is needed in the manuscript.