Reviewer's report

Title: Inflammation biomarker discovery in Parkinson's disease and atypical parkinsonisms

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Reviewer: Chin-Hsien Lin

Reviewer's report:

The article entitled "Inflammation biomarker discovery in Parkinson's disease and atypical parkinsonisms" by Santaella et al aimed to find inflammatory biomarkers in CSF to differentiate PD and atypical parkinsonism syndromes. The authors enrolled 25 controls, 46 PD patients, 15 multiple system atrophy (MSA), 9 vascular parkinsonism and 7 patients with PD mixed with vascular parkinsonism. Multiplex Proximity extension assay (PEA) was conducted covering 92 biomarkers.

This work trying to identify disease-related inflammatory CSF biomarkers to differentiate PD from atypical parkinsonism syndromes are commendable. In addition, the study cohort was diagnosed after a 12-year follow up study, which is also a merit.

However, I have some concerns for this study.

1. The significance of the statistical analysis should be corrected by Bonferroni correction for multiple comparison, which was not used in the study. The P value would not be 0.05 and will be much lower to reach the significance level. In this case, the difference beta nerve growth factor (β-NGF) and DNER would not be different between MSA and PD as the P values was 0.03 in both group.

2. The exact P value in each comparison should be addressed, not only address as &lt;0.05.

3. What is the definition for H-Y or UPDRS progression?

4. Is there any correlation between age and the CSF biomarkers, ex: β-NGF, DNER,…

5. This study did not cover the other atypical parkinsonism syndrome, for example PSP, CBS or DLBD, which should be listed as one of the study limitations.

6. How did the authors diagnose the group of PD combined with vascular parkinsonism syndrome?

Are the methods appropriate and well described?
If not, please specify what is required in your comments to the authors.

No
Does the work include the necessary controls?
If not, please specify which controls are required in your comments to the authors.

Yes

Are the conclusions drawn adequately supported by the data shown?
If not, please explain in your comments to the authors.

No

Are you able to assess any statistics in the manuscript or would you recommend an additional statistical review?
If an additional statistical review is recommended, please specify what aspects require further assessment in your comments to the editors.

I am able to assess the statistics

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