Reviewer's report

Title: Association study between SNP rs150689919 in the DNA demethylation gene, TET1, and Parkinson's disease in the Chinese Han population

Version: 2 Date: 19 August 2013

Reviewer: Georgios Hadjigeorgiou

Reviewer's report:

Major Compulsory Revisions

Background

1. First paragraph. Authors present a typical candidate gene association study for Parkinson's disease (PD) based on data from an exome sequencing from their group. Authors referred to "our previous work ...." for exome sequencing albeit they did not cite any paper for this work. If these are unpublished data then they have to provide more data from exome sequencing in familial cases.

2. Second paragraph. Authors stated: "the variant c.1460C>T in the TET1 gene (rs150689919) as the most promising". Please provide a convincing etiology for this.

Methods

Subjects

1. Authors reported age- and gender- matched controls. How did they performed matching: By one-to-one, by 5- or 10- years interval? It is quite strange that the standard deviation for age for PD patients is double that of controls (albeit mean age is similar). Please provide an explanation.

2. Were controls and patients consecutive cases? Were hospital or population based? The clinical status of controls was based on interview, on files or on clinical evaluation? Please try to better define controls for neurodegenerative diseases like Alzheimer's disease, other extrapyramidal diseases apart from PD in order to minimize the possible for selection bias.

3. Please provide a power analysis in "Statistical analysis". Authors recognize that their study is underpowered in Discussion albeit they did not provide a power analysis.

Discussion

1. Most of the Discussion is not relevant to the study. Authors have to re-write the Discussion and discuss their results in comparison with other studies in the field of rare variants in PD. The role of TET1 gene has already covered in "Background".

2. Please delete second paragraph. It is not relevant.

Minor Essential Revisions
Background

1. First paragraph. Last sentence: "Genetic association studies based on the "candidate gene approach" and genome-wide association studies have revealed several genetic variants that might act as susceptibility factors for the sporadic cases [3-5]." Reference 3 and 4 are studies in Chinese population and this has to be recognize by the authors. I suggest to cite PDgene (www.pdgene.org) for those who are interested to check all studies in the field. Similarly in second paragraph.

2. Second paragraph. Please define "PolyPhen".

Discussion

1. Please delete "Unfortunately"

Discretionary Revisions

Nothing

**Level of interest:** An article whose findings are important to those with closely related research interests

**Quality of written English:** Acceptable

**Statistical review:** Yes, and I have assessed the statistics in my report.

**Declaration of competing interests:**

I declare that I have no competing interests