Reviewer’s report

Title: Non breathing-related sleep fragmentation and imaging markers in patients with atherosclerotic cerebral small vessel disease (CSVD): a cross-sectional case-control study

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Reviewer: Shahid Khan

Reviewer's report:

The manuscript by Zhou and colleagues represent a bioinformatics approach to identify differentially expressed miRNAs and mRNAs in synovial of osteoarthritis (OA) via RNA-sequencing. The authors performed next-generation based RNA sequencing and identified significant differences at mRNA and miRNA levels in OA patients compared to controls. The data presented in this article is interesting. However, the authors need to address some major concerns before publication in BMC Medical Genetics.

Major concerns:

1. The main weakness of the study is the number of samples used in the RNA-Seq experiment. The authors used only 5 affected and three control individuals for the current study. The current number of participants is not sufficient for such kind of studies. The author needs to add more samples for the successful replication of study findings and to confirm the top regulated transcripts identified in this study.

2. In addition, qRT-PCR or immunohistochemistry should be performed to confirm some target transcripts in patients' samples.

3. The bioinformatics-based prediction of miRNA targeting mRNA through RNA-Seq data provides initial information but not conclusive evidence of regulation. The author should at least confirm few target mRNA through luciferase assay (to confirm the miRNA binding with target mRNA) or use the western blot to identify differentially expressed gene at the protein level.

4. The author reported that a large number of studies have been done to explore miRNAs and genes associated with OA. What was the purpose of the current study is missing in the introduction?

5. Link is missing between previously identified OA genes and differentially expressed mRNA/miRNA identified in current studies. The author should discuss it in detail and explain the differences and similarities between current and previous studies, such as samples ethnicity, etc.
6. They performed protein-protein interaction (PPI) network analysis and there is no information on the method, results, and discussion sections that what is identified in this analysis and how it could be correlated with the current study.

7. All figures are blurry and difficult to read, and the author should provide detail information in the legend to clearly understand the figures.

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.

Yes

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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Please indicate the quality of language in the manuscript:

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