Reviewer’s report

Title: ACTN4 and the pathways related to cell motility and adhesion contribute to the brain metastasis of lung cancer

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Reviewer: Fathia Mami-Chouaib

Reviewer’s report:

In the manuscript entitled “ACTN4 and the pathways related to cell motility and adhesion contribute to the brain metastasis of lung cancer” by Gao et al, the authors study gene expression profile of lung cancer, benign and metastatic brain tissues from only one patient by transcriptomic approach. They found that ACTN4 is over expressed in metastatic brain tissue, compared to other tissues, that they claim to be involved in cell motility, adhesion and metastasis formation.

The experiments are well performed and the results are interesting. However, the study lacks more convincing functional data regarding ACTN4 gene implication in metastasis formation in the brain tissue. The authors should address the following points in order to improve the quality of their manuscript:

Major Compulsory Revisions

1- As highlighted by the authors, the present study is based on only one patient. To improve the quality of their manuscript and confirm their results, the authors should include additional patients.

2- The increased expression of ACTN4 gene in the brain metastasis only suggests its implication in the metastasis process of lung tumor cells but could not be considered as an evidence as claimed by the authors.

3- Because clusters were defined by RPKM values, it is important to briefly explain what is RPKM value and specify the reason of this choice to determine the clusters. In the figure 1, it will be necessary to use a drawing to explain the signification of cluster squares, in particular the line across the square.

4- In Figure 6, the ACTN4 gene was validated by RT-PCR on the same samples than the RNAseq. It would be more significant and pertinent to validate this gene and others genes obtained from RNAseq results in additional lung tumor samples from different patients.

Minor Essential Revisions

1- The reason of the use of abbreviations N16, T16 and T30 to distinguish between samples is not explained and it is not evident during the reading of the text.

2- The legend of figure 6 is not the same than in the manuscript. It is the same for table 1.
Level of interest: An article whose findings are important to those with closely related research interests

Quality of written English: Acceptable

Statistical review: No, the manuscript does not need to be seen by a statistician.

Declaration of competing interests:

I declare that I have no competing interests.