Author’s response to reviews

Title: Acupuncture Attenuates Cognitive Deficits and Increases Pyramidal Neuron Number in Hippocampal CA1 Area of Vascular Dementia Rats

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Response to Reviewers

Reviewer #1:
No major compulsory revision and mini revision were needed.
Response: We have conducted some indispensable revisions, and we hope that these revisions are now acceptable for a fair review of the science.

Reviewer #3:
1) The authors should identify the increased neuronal type (e.g. pyramidal cells or interneurons) in the hippocampal CA1 area by acupuncture treatment, because the function of the pyramidal cells and the interneurons, especially the inhibitory GABAergic neurons are totally different. The authors should perform immunostaining for neurons with GAD65, GAD67, VGLUT1 and VGLUT2...
Response: The total number of neurons of the rat hippocampus should be include the following five subregions: (1) the granule cell layer of the dentate gyrus, (2) the hilus of the dentate gyrus, (3) the pyramidal cell layer of CA2/3, (4) the pyramidal cell layer of CA1, and (5) the cellular layer of subiculum (PMID: 19489004). In present study, the increased neuron number described as total neuron number is inappropriate and confusable. Hence, we confirmed that the estimated neurons in hippocampal CA1 area are the pyramidal neuron of hippocampal CA1 pyramidal cell layer. We have conducted the corresponding modification in the text, and added the corresponding description about the unbiased stereology analysis for pyramidal neuron. About the interneurons or inhibitory neurons, we will continue to study the neuronal type which may relate to cognitive deficits in the future study. And thank you for your constructive suggestions.
2) Long-term potentiation (LTP) is a molecular mechanism underlying the learning and memory. The authors should provide evidence clarifying that whether or not the hippocampal LTP is also involved in acupuncture-induced improvement of cognitive deficits in MID rats.

Response: Our previous study (PMID: 25481359) have shown that acupuncture reversed LTP impairment of MID rats. And in the discussion section, we also added some citations (PMID: 18692547, 21064218) about the relationship between hippocampal LTP and acupuncture-induced improvement of cognitive deficits. These studies suggested that acupuncture could improve behavioral performance after cerebral insults and enhance the hippocampal LTP. However, due to insufficiency in evidence, its underlying mechanisms remain unclear. In order to providing the scientific and objective evaluation, we propose that “further research into the hippocampal LTP involved in acupuncture-induced improvement of cognitive deficits in MID rats is warranted” in the end of this paragraph.