Reviewer’s report

Title: Different pattern of cortical excitability in Major Depression and Vascular Depression: a Transcranial Magnetic Stimulation Study

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Reviewer: Thomas Kammer

Reviewer's report:

The authors aim to compare motor cortex excitability in elderly patients with major depression with and without signs of subcortical vascular disease. To that aim they investigated 3 x 11 subjects, one group with so called vascular depression (late onset of depression and SVD), one group with major depression with earlier onset and without SVD, and one age-matched control group. They applied a battery of corticospinal measurements including resting motor threshold, CSP, and ICI and ICF for both hemispheres. They found subtle differences between MD and VD patients, namely an asymmetry in RMT in MD patients as well as a prolonged CSP. They conclude that data from motor cortex support the concept of two different entities in elderly depressed patients.

This is an interesting study despite the restriction of small sample size. I have some questions on the data, and there were some minor omissions in the methods section.

1. In the result as well as in the abstract the authors state "scores at tests evaluating frontal lobe abilities were higher in patients". This holds not true, the only difference observed was in StroopT, but no difference was observed in StroopF as well as in FAB. Please correct this statement. It is of interest whether VD and MD patients differ significantly in this parameter, or whether the significant result stems only from the difference to Control subjects.

2. What was the reason for admission of VD patients? Why was there no antidepressant medication at all in these patients?

3. There is no information on the white matter state of the MD group and the control group. Was there a systematic inspection of the MR pictures of these groups including white matter scoring?

4. Age-matched controls: How was the mental and physical state evaluated? I only found the results of some tests in Table 2.

methods:

1. The ISIs for ICI and ICF reported in the methods section differ from the values depicted in the graphs.

2. CMCT, Amplitude ratio, and F-waves require a peripheral stimulation that has not been mentioned in the methods section.

3. In table 4 there are several inconsistencies in the repetition of the results.
(group and side). They probably stem from different rounding procedures.

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Table 3: hystory shoud read history

**Level of interest:** An article of importance in its field

**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