Reviewer's report

Title: Abnormal oscillatory brain dynamics in schizophrenia: A sign of deviant communication in neural network?

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Reviewer: Klaus Mathiak

Reviewer's report:

Rockstroh et al. present a study on neuromagnetic delta oscillations in schizophrenia, depression and healthy controls. Resting MEG was analyzed in the 1-4 Hz band with a single dipole model. For sufficient high explained variance and if not too close to the center this location was chosen as source estimate. With the entire time series the density of such sources was determined in 2x4 brain areas. Higher source density was found in frontal and central areas in schizophrenia and a reduction in depression. In frontal areas the activity correlated negatively with depression and positively with flattened affect and positive symptoms. The authors suggest that the altered slow wave activity may index neuronal dysfunctions.

In general this is an interesting study focusing on an important research question to determine endophenotypes or biological markers of psychiatric disorders. The patient and control groups are reasonably large for this undertaken. However a number of unclear points does not recommend the paper for publication in the present form. Indeed I see these findings as interesting observation but they should be handled with care and overinterpretation e.g. brain protection should be avoided. Finally the writing is in parts done too carelessly to allow for a throughout evaluation of the manuscript. Therefore I put a list of criticism that should be addressed before considering reevaluation:

Pointwise criticisms:
Page 3, line 2-4: Please give references for this finding in MEG.

P3 L13: “If …” then? I do not get the sentence straight.

P4 L7 from below: Why do you not mention attention?

P4 L6 fb ff.: That is quite a bold statement. Why do you emphasize the difference with EEG so much? Likewise the intra- versus extra-cellular hypothesis of EEG vs MEG signal is not really settled and not helpful in context of the present paper.

P6 L 10: It should be: “…treated for schizophrenia or schizoaffective disorder”

P6 L14: F20.0 is paranoid and F20 Schizophrenia; and not a subtype.

P6 L2 fb: please be more specific about the drug abuse “mainly cannabis”. Were participants explicitely asked or did that come from the clinical history?

P7 middle: “depressive sample” should be something like “the group of patients suffering from depression”

P7 L8 fb: Does these F4 diagnoses meet criteria for Major Depression as well?

P8 L1: The control sample was matched with respect to something?

P8: You miss out the sampling rate. It is unclear what results after factor 16 down sampling. And thus how many time points were used for dipole fitting.

P9 L3: Is 100 nAm equivalent to 1 cm2 of activated cortex? I do not see such a relation.

P9 L9: Does that mean (using nasion etc as reference) that the surface information from the Polemus system was not used?

P9 L8 fb: In the previous sentence you claim that the logarithm of the density yields a normal distribution; why and how do you do the z-transformation then after?
P9 L5 fb: What are temporal, .. PARTS of the brain? I know temporal lobe etc.

P10 L1: What is the variable Z?

P10 L7: At least here you should give a better indication how you test normal distribution and how good is actually was.

P10 ff: you are using ASWA, SWA, and ASWAM frequently and seemingly quite interchangeably. This is more confusing than helpful.

P11 L9ff: In this sentence the subject is missing. Probably “…ASWA was more…”.

P12 L1: How is the ant-post gradient calculated?

P12 L10 fb: Sentence is wrong and replace “normal” with “healthy.”

P12 L6 fb: replace “twp” with “two.”

P13: after “[59]” a bracket is missing.

P13 L8 fb f: This citation is a bit out of the context and hardly to understand.

P14 L7: My understanding is that you use 2x4 ROIs. The usage of “small” (8cm2) voxel on an intermediate step of the calculation does not have any relevance and could be skipped.

P15 L12: What is that half sentence supposed to say? That haloperidol has a better effect on the symptoms?

P15 L 14ff: Here you start putting results again. For comprehensibility this should be in the Results section.

L4 fb: Replace “mediated” with “medicated.”

P17 Why is depression not a “brain disease?” The link of ASWA to protection of the brain seems rather arbitrary and not backed by the data.

Replace “e,g,” with “e.g.”

Fig 1: Please write schizophrenia and depression in the figure. I see no additional information in the unthresholded display. The scale on the colorbar should be Z with a normal distributed Z, but why is 1.2 already highly significant?

What next?: Unable to decide on acceptance or rejection until the authors have responded to the major compulsory revisions

Level of interest: An article of importance in its field

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