Reviewer's report

Title: Cognitive correlates of repetitive transcranial magnetic stimulation (rTMS) in treatment-resistant depression- a pilot study

Version: 1 Date: 31 May 2012

Reviewer: Samir Kumar Praharaj

Reviewer's report:

Major Compulsory Revisions

Methods:
It is not clear why two different protocols for administering rTMS were employed in the current study. How do the authors justify combining the results of these two different protocols? Considering the small sample it would be difficult to examine the effect of these two protocols in the present study.

Statistical analysis:
There is no mention regarding data normality. The data has been presented as Mean±SEM within the text and Median and Range in the tables. It is preferable to include the data as Mean±SD for all the measures in the tables (or Median and IQR if non-normally distributed). Also, for comparison 1, the authors conducted Wilcoxon signed rank test, a non-parametric test, though within the text mentioned it as paired t-test, a parametric test. For comparisons 2-4, though data were presented as Median and Range, parametric tests (RM ANOVA) were conducted. If data were non-normally distributed, which is probable considering small sample size, non-parametric alternatives to RM ANOVA may be better. Post hoc power calculations are unnecessary and may be removed. It will be useful to examine the percentage of patients who responded/remitted and whether the cognitive changes were different in them.

Discussion:
The similarities in the effect sizes in most of the comparisons of mCST variables between patients and healthy volunteers, except one rather points towards lack of effect of rTMS on cognitive functions. Also, the lack of correlation with changes in depression scores does not automatically suggest independent effect of rTMS on cognition.

The major limitations in the study were small sample and absence of sham control. The argument by authors that use of sham stimulation is questionable based on correct guesses by patients is untenable.

Minor Essential Revisions

Expand ICD-10-AM
The details of pharmacotherapy need to be given.
Discretionary Revisions
None

**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