Reviewer's report

Title: The influence of Methylphenidate on the power spectrum of ADHD children - a MEG study

Version: 2  Date: 6 June 2005

Reviewer: Tomás Ortiz Alonso

Reviewer's report:

General

----------------------------------------------------------------------------------

Major Compulsory Revisions (that the author must respond to before a decision on publication can be reached)

1. The study design makes impossible to affirm that effects showed in Results section are exclusively produced by MPH treatment. The need of a control or at least a placebo-placebo group is peremptory. For example, the same group of children might have received a placebo-placebo treatment the day before. Although feasibility may explain some particular decisions, in this case the cost/benefits ratio for the inclusion of a placebo-placebo condition is clearly favourable.

2. Similarly, study design makes also impossible to affirm that improvement of D2 test scores is exclusively produced by MPH treatment. Considering that children respond to the same test twice (pre and post-treatment) within one day, the possible spurious effect of practice is quite evident. Was a parallel version of the test used? If not, it is not available?

3. Results. The main finding of the study, is based on the significant interaction of TIME and REGION factors. All subsequent analyses derive from this previous one. However it is hard to understand how an isolated significant interaction effect can be considered as reliable, when it is not accompanied by the significant main effect of TIME or REGION factors. This subject should be carefully reviewed by an expert. Most of the subsequent analyses present the same serious inconvenient.

4. Page 6, results. Why ANOVA results for D-2 test are presented as percentiles? The description of Statistical Analysis mentions that "D2 test score was the dependent variable". Does it means that once ANOVAs were performed on raw test scores, means were transformed into percentiles? Or ANOVAs were performed on percentile scores? If so, why? Do percentile scores meet the criteria for ANOVA analysis? Additionally, it seems that pre-treatment percentile for D2 was 41.2. This means that the median value for the ADHD group was close the 50 percentil, namely, that group scores were "normal". At least some of the children may exhibit scores very close to 50 or even higher. Therefore, is D2 a sensitive test to evaluate attention in this group of children?

----------------------------------------------------------------------------------

Minor Essential Revisions (such as missing labels on figures, or the wrong use of a term, which the author can be trusted to correct)

1. Page 5 "Data Analysis MEG". The description of how channels are divided into 6 cortical regions, etc., is hard to follow. It should be modified.

----------------------------------------------------------------------------------

Discretionary Revisions (which the author can choose to ignore)
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 limited interest

Quality of written English: Acceptable

Statistical review: Yes