Reviewer’s report

Title: Cognitive screening tools in multiple sclerosis revisited: sensitivity and specificity of a short version of Rao's Brief Repeatable Battery

Version: 0 Date: 14 Aug 2015

Reviewer: Luca Prosperini

Reviewer's report:

In this study, a short version of the Rao battery (SRT+SDMT+PASAT) was matched against an extensive NPS battery (gold standard) in 127 patients with MS. Sensitivity and specificity of each subtest ranged from 38 to 44% and 81 to 94%, respectively. Combining SRT, SDMT, and PASAT into a single indicator yielded increased sensitivity (78%) and reduction in specificity (65%). The Authors concluded that the short version of Rao battery here proposed (SRT+SDMT+PASAT) may represent a valid and economic screening instrument, but it cannot replace the extensive test battery.

This is a confirmative study that has the additional value to compare, for the first time, a previously proposed brief version of Rao battery with an external extensive NPS battery. However, the following issues should be addressed before the paper can be considered suitable for publication:

Major compulsory revision

The present study provide an extension with regards to a previous Italian work published on 2009; however, currently there is much effort to validate the BICAMS as quick screening tool for cognitive deficit. This latter point, as well as, the pros and cons of using SRT+SDMT+PASAT rather than BICAMS should be discussed.

I would suggest the Authors to follow the guidelines provided by the STARD initiative (see http://www.stard-statement.org/) for improving the completeness of reporting of studies on diagnostic accuracy.

Minor essential revision

The Authors correctly stated that (i) some aspects of executive functioning are not encompassed by the Rao Battery and then the Stroop test has been added in previous works; (ii) there is a considerable overlap between SRT+SDMT+PASAT. Why not include the Stroop test in their brief NPS battery? (Perhaps investigating executive function might improve specificity).
A table comparing normative values and patients' scores at the extensive NPS battery may provide useful information for readers.

**Are the methods appropriate and well described?**
If not, please specify what is required in your comments to the authors.

Yes

**Does the work include the necessary controls?**
If not, please specify which controls are required in your comments to the authors.

Unable to assess

**Are the conclusions drawn adequately supported by the data shown?**
If not, please explain in your comments to the authors.

Yes

**Are you able to assess any statistics in the manuscript or would you recommend an additional statistical review?**
If an additional statistical review is recommended, please specify what aspects require further assessment in your comments to the editors.

I am able to assess the statistics

**Quality of written English**
Please indicate the quality of language in the manuscript:

Acceptable

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