Reviewer's report

Title: Does the Swedish Interactive Threshold Algorithm (SITA) accurately map and monitor visual field loss attributed to Vigabatrin.

Version: 2
Date: 8 January 2014

Reviewer: Paul H Artes

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8 January 2014 (I apologise for the delay with my review).

The authors aim to assess the utility of the SITA-Standard algorithm “for mapping and monitoring VGB attributed field loss.” This is an important matter – at present it is unclear whether the SITA-Algorithms are suitable for measuring non-glaucomatous visual field damage. The authors have collected valuable material to help answer this questions, but I do have some concerns about the analysis and the interpretation.

Principal concerns:

1. Fig 2 shows that SITA-Standard (SS) has substantially larger variability than Full Threshold (FT) – quite unlike what is stated in the abstract and the text of the paper.

   This is a very interesting finding that must be adequately discussed. For example, is it possible that the faster pacing of the SITA-Algorithms makes them more taxing (and therefore more variable) to patients who are treated for epilepsy?

   Given that the differences between SITA-Standard and SITA-Fast are smaller than those between FT and SS, I find it difficult to follow the authors’ argument that SS is “as good as Full Threshold” while SF is not.

2. Clinically, the most relevant question is how the SITA fields show the *spatial pattern* of VGB-damage (nasal constriction). This is not easy to appreciate from a global analysis as performed here. The best solution that I can think of is to show the results from the 3 strategies alongside each other (at least the greyscale plots, perhaps with total-deviation probability maps). At least a few examples should be provided in the paper, and if possible the full set of results given as supplementary material.

3. With the small sample of 16 patients, the pointwise differences (between-algorithm differences in Fig 3, test-retest differences in Fig 4) are quite imprecise - in particular the 10th and 90th percentiles. They are hard to compare “by eye”, and yet there is no quantitative comparison. I suggest that this analysis does not add any relevant information to that available from Fig 2 and should be omitted.
4. Instead of the analyses shown in Figs 5 and 6, would it not be better to do this analysis at the level of each patient, by summing the a nominal score for each probability level (p>0.05=0, p<0.05=1, p<0.02=2, etc) of each location, across the visual field, to a single score? This way it would be possible to compare the techniques to each other (scatterplot, 1 point for each eye), and at the same time understand how they compare in eyes with different degrees of damage.

Minor comments:

1. I recommend that the authors add references to some of the newer (post-2000) review articles on vigabatrin and associated visual field loss.

2. A more in-depth discussion of the problems with visual field examination in patients with epilepsy would help the reader understand why this is an important but difficult topic.

3. References to “monitoring” in the paper should be re-considered (e.g. Abstract, Purpose). This study is cross-sectional and therefore cannot tell us much about how the different algorithms track visual field change over time.

4. The article could be tightened considerably. One paragraph of the "background" section seems to be lifted from the study protocol and does not keep to the “simple past” tense (“Vigabatrin recipients will have their visual field examined via both SITA strategies and the Full Threshold algorithm.”

5. Abstract should provide summary information on the severity of the visual field damage in the sample of patients (distribution of MD).

6. “Pointwise analysis of the thresholds at each stimulus location was normally distributed for each algorithm using Kolmogorov-Smirnoff testing.” Did you really carry out 76 Kolmogorov-Smirnov tests? Since it is impossible that the threshold distributions are truly Gaussian, I suggest to delete this sentence.

7. “The findings that both SITA Standard was on average approximately twice as fast (456.55 seconds) and SITA Fast approximately 3 times as fast (280.85 seconds)…” I suggest that the test durations would be more intuitively stated as “7.6 min” and “4.7 min”.

Level of interest: An article whose findings are important to those with closely related research interests

Quality of written English: Needs some language corrections before being published

Statistical review: Yes, and I have assessed the statistics in my report.

Declaration of competing interests:

I have no competing interests. However, I have previously acted as an expert
witness for the UK Crown Court in a group litigation concerning Sabril (Vigabatrin), from 2005 to 2008.