Reviewer's report

Title: Transcranial sonography for diagnosis of Parkinson's disease

Version: 1 Date: 8 September 2009

Reviewer: Jana Godau

Reviewer's report:

The authors investigated the value of TCS for the diagnosis of IPD in one of the largest cohorts examined to date. Cutoff values were identical to those published previously for another ultrasound system and showed excellent diagnostic parameters. The authors conclude that (1) TCS is a valuable tool for diagnosis of iPD and (2) that the method is not substantially influenced by the ultrasound device. The manuscript is generally well written and scientifically sound. However, there are some issues that need to be addressed:

Major compulsory revisions

(1) The control group is significantly younger than the patient group (difference of median age 17 years, no overlap of quartiles) and the authors found a significant positive correlation between age and areas of SN echogenicity. Therefore, in ROC analysis sensitivity and specificity of SN echogenicity for iPD diagnosis may be overestimated. This needs to be addressed in the discussion.

(2) The authors conclude from their data that the method is not substantially influenced by the device used, implying that the cutoff value for SN hyperechogenicity can be applied to all ultrasound systems. However, although the data strongly support TCS as a valuable diagnostic tool, this generalisation needs to be qualified, since no comparison of ultrasound systems has been performed neither in this nor in previous studies.

(3) Figure 2 shows very low echogenicity of the substantia nigra, which is the typical finding in restless legs syndrome and therefore does not constitute a normal finding in a healthy adult. Please replace the figure by another one showing normal SN echogenicity (i.e. SN area 0.13 cm²) and mark the SN as done in figure 3.

Minor essential revisions

(4) p6, ll 7/8: What does “combined measurements of left and right side” mean? Average of both sides? Was a correction for multiple comparisons performed?

(5) p7, ll 5-8: Please add the “area under the curve” (AUC) to the results of ROC analysis.

(6) p7, ll 21-24. The listing states no correlation of age and SN echogenicity in the NCD group. Please clarify.
(7) p9, l 7: “collective” is a germanism, “cohort” might fit better.
(8) p9, l 20: It should read “probably” and “due to the small sample size”.

Discretionary revisions

(9) Table 1 does not give supplementary information and might therefore be omitted.

Level of interest: An article of importance in its field

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

Statistical review: No, the manuscript does not need to be seen by a statistician.

Declaration of competing interests:

I declare that I have no competing interests.