The harsh realities facing the use of SPECT imaging in monitoring disease progression in Parkinson’s disease

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Dr Snow is right to be cautious in his optimism concerning the use of functional imaging markers in neuroprotection studies in Parkinson’s disease as storm clouds gather over the methods and interpretation of CALM-PD and REAL-PET. The concerns, however, are not limited to the effect of drug treatment on ligand uptake. Most importantly we need to ask the weight that should be placed on the result of functional imaging studies when they are not supported by the accompanying clinical data. In addition, there are concerns about the ability of the methods for accurately monitoring progression. The key requirements for a PET or SPECT method to be used in assessing progression are sensitivity to clinical change and reproducibility. There are no data concerning either from the study of Winogrodzka and colleagues, the authors quoting reproducibility data from Seibyl et al. These data need to be presented for the benefit of the reader. The mean (SD) scan to scan variability in a group (n = 7) of patients with Parkinson’s disease was 16.8 (13.3)%. It is purely only in functional imaging that a measurement to measurement variability of ±43% (mean ± 2 SD) could be described as highly reproducible or excellent. Sensitivity provides knowledge of the amount a functional imaging marker will change with a pharmacological intervention, and I have yet to be convinced (partly because the data have not been presented) that [123I]IB-CIT SPECT can provide the necessary sensitivity to outweigh the very strong influence of scan to scan variability. The problems are compounded in studies of L-dopa versus agonist. The data of Winogrodzka and colleagues, Slomka PJ, Radou P, Hurwitz GA, et al. (2001; 75: 753-61) showed the feasibility of using [123I]FP-CIT SPECT scan to assess dopaminergic degeneration in early stage Parkinson’s disease. Nevertheless, the optimal time point for acquisition of [123I]IB-CIT SPECT studies is 20 to 24 hours after injection. Consequently, the counts statistics are better for [123I]FP-CIT than for [123I]IB-CIT SPECT studies. Interestingly, a recent preliminary study showed the feasibility of using [123I]FP-CIT SPECT for monitoring dopaminergic degeneration in Parkinson’s disease. Nevertheless, it would be of major importance that further studies focus on minimizing the variability in SPECT measures of dopamine transporter binding, and show which radiotracer is optimal for performing progression studies.

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References

There were two mistakes published in the table of the short report, Sjögren’s syndrome associated painful sensory neuropathy without sensory ataxia, by K Mori, M Iijima, M Surgiura et al in the September issue of JNPP (2003; 74: 1320-2); the digit 9 was added to the eleventh column head by accident and the second entry in the final column should read 12, not 2.

The authors of the letter entitled Meninges of the optic nerve sheath: treatment with hydroxyurea, published in the September issue of JNPP (2003; 74: 1348-50) were listed in the incorrect order. The author order should read as follows: S Paus, T Klockgether, H Urbach, U Schlegel.