BACKGROUND / RATIONALE

The Parkinson’s progression marker initiative (PPMI) is an international, multicenter, longitudinal study assessing biochemical, clinical, and imaging biomarkers of disease progression. This study is an ongoing assessment of within subject changes of dopamine transporter SPECT imaging in a large Parkinson’s Disease (PD) cohort followed longitudinally over two years.

STUDY DESIGN

Baseline (n=306), one year (n=306), and two year (n=108) 123-I-ioflupane SPECT scans were acquired from 22 centers. Data were reconstructed, attenuation corrected, and analyzed by the imaging core lab using a standardized volume of interest template for extraction of regional count densities in the left and right caudate and putamen. Striatal binding ratios (SBR) were calculated using an occipital lobe reference region. Mean percent SBR (% SBR) changes in mean, ipsilateral, and contralateral striatum were calculated.

RESULTS

- PD subjects at baseline had a mean age of 61.7 y and an average disease duration of 6.6 months.
- The baseline mean total UPDRS score was 31.9 (range 6-72).

In this ongoing study:
- 82.4% and 86.1% of PD subjects demonstrated lower mean striatal SBRs at year 1 and 2, respectively, relative to baseline SPECT.
- In this early motor PD cohort the baseline to year 1 reduction of mean SBR is approximately 11%, with some between-subject variability which may reflect the clinical variability in a progressing PD cohort. Correlational analyses with rates of change on motor rating are pending.
- The rate of striatal SBR signal change is less between year 1 and year 2 than baseline and year 1. It remains to be seen whether this effect reflects an actual slowing of the loss rate of DAT targets versus a “floor effect” on the signal change for the ioflupane SPECT scan.
- There appear to be differences in the rate of DAT signal change in early PD between ipsi and contralateral striata, with the less impaired side showing more change than the side with greater loss at baseline.

CONCLUSION

Are there Differences in the Rate of SBR Change Between Contralateral and Ipsilateral Striatum?

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PPMI is sponsored by the Michael J. Fox Foundation for Parkinson’s Research (MJFF) and is co-funded by MJFF, AbbVie, and Radiopharmaceuticals, Biogen Idec, Bristol-Myers Squibb, Covance, Eli Lilly & Co., F. Hoffmann-La Roche, Ltd., GE Healthcare, Genentech, Isis Pharmaceuticals, Laidlaw, Merck, Merckx, Pfizer, and UCB.

*Full list of authors can be found at http://www.ppmi-info.org/