PPMI Imaging Core

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Technical site visits

Completed

Northwestern
IND- New Haven
Johns Hopkins
Federico II - Naples
Parkinson’s Institute- Sunnyvale
Univ Pennsylvania
Univ Rochester
APDC- Sun City, Az
Baylor
Univ Alabama-Birmingham
Boston University
Portland
Innsbruck
Marburg
Tübingen
Univ Washington
Tampa
Emory Univ
San Diego
Cleveland Clinic

Pending

London
PPMI Imaging Studies In-house at IND

- 78 SPECT DAT studies
- 19 DTI MRI
- 54 Structural MRI

- 6 potential PD subjects with normal DAT (SWEDD rate about 13%)
- 1 potential HC subject with abnormal DAT
DaTSCAN SPECT Imaging
Quantitative Analysis

1. Core lab reconstruction from raw projection data, including attenuation correction based on phantoms from site visit
2. Spatial normalization of image creates consistent orientation
3. Apply standard volume of interest template on caudate, putamen, occipital regions
4. Extract count densities and calculate Striatal Binding Ratios (SBR)
Equilibrium Binding Ratio

Striatal Binding Ratios (SBR)

= Specific striatal binding/occipital reference region

= (Total striatal count density – Occip count density) / Occip reference count density

= Total striatal density/Occip count density – 1

= Binding Potential (BPnd)
Mean Striatal Binding Ratio (SBR)
SBR Lowest Putamen

PPMI baseline

- striatum PD (n=34)
- striatum HC (n=31)
- striatum exclud PD (n=5)
SBR Putamenal Asymmetry

PPMI baseline

- Asymmetry putman SBR

- Al putmn PD (n=34)
- Striatum HC (n=31)
- Striatum exclud PD (n=5)
SBR Ratio Caudate:Putamen

PPMI baseline

Mean C:P ratio

CP putmn PD  CP putmn HC  CP putmn ex PD  CP putmn ex HC

- striatum PD (n=34)
- striatum HC (n=31)
- striatum exclu PD (n=5)
Conclusions

• Initial quantitation consistent with literature SBR values suggesting good between-site standardization of SPECT

• SWEDDs rate about as expected (12-15%) in de novo PD, SBR outcomes more similar to controls, but limited data

• First longitudinal data expected shortly
DTI Update
Future directions/challenges

• Radiotracer availability
• Phantom correction of data-to reduce variance
• Additional imaging biomarkers- e.g. resting state MR, novel scintigraphic targets
Imaging Data and Information Flow

Study Site
- Neurology
- Radiology/Nuclear Medicine

IND Core Lab
- Image quality assurance and review,
  processing, visual analysis

CTCC

LONI

Play a Part in Parkinson’s Research