PARKINSON'S PROGRESSION MARKERS INITIATIVE

Play a Part in Parkinson's Research

DaT-SPECT Pre-Processing

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Summary

Beginning in December 2024, SPECT imaging obtained at PPMI imaging centers following the PPMI protocol was transferred to the XingImaging core lab for curation and quantitative analysis. SPECT images acquired prior to December 2024 were collected and analyzed by Invicro, the previous PPMI imaging core lab. SPECT images underwent the pre-processing steps outlined in the method section.

Method

The raw projection files from the SPECT (Single Photon Emission Computed Tomography) scans acquired for PPMI were imported to a HERMES system (http://www.hermesmedical.com) for iterative reconstruction using the HOSEM algorithm. Standardized reconstructions using the HERMES system were carried out to ensure consistency in the reconstruction process across all participating imaging centers, as well as to align with the data processing methods defined at the onset of the PPMI study. To maintain uniformity in the reconstruction procedure across centers, standardized parameters, including fixed numbers of iterations and subsets, were applied within the HERMES system. The iterative reconstruction process within HERMES was performed without the use of attenuation correction or post-filtering.

Following reconstruction in HERMES data were transferred to the quantitative image analysis software, MIAKAT. Within MIAKAT, a standard template (head mask) image was mapped onto the subject's SPECT image via an affine transformation and used for Chang (order zero) attenuation correction using scanner-specific attenuation coefficients (mu values). The attenuation corrected image was then smoothed with a Gaussian filter (6 mm full width half max).