APPENDIX 6: BRAIN REGIONAL ATROPHY AND HYPERINTENSITY MEASUREMENT PROTOCOL

1.a. Skull Removal - Skull is removed using semi-automatic procedure based on two-dimensional PD/T2 histogram.

1.b. Binary mask is created and coregistered into T1 space, as T1 segmentation requires skull removed.

2.a. Segmentation - T1 scan is then segmented using automatic process which accounts for scan inhomogeneity. Algorithm fits gaussian curves to T1 histograms.

3.a. Lesion - Using semi-automatic procedure, lesions are localized based on 2D histogram of PD/T2.
4. **Tri-feature Coregistration** - T1 and PD/T2 scans are aligned into AC-PC space. Grey matter, white matter and CSF information are taken from T1. Lesion information comes from PD/T2. This information is combined to produce global counts.

5.a. **Regional Parcellation-Surface Rendered View** - Brain is AC-PC aligned, and divided into sections based on sulcal landmarks and stereotaxic Talairach grid.

5.b. **Axial View** - When lobar mask is applied to the combined image, information regarding regional tissue and lesion volumes is obtained.

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