Table 2c
Pearson Correlation between aTT and MMSE and ADAS cog scores in different brain regions

		MMSE (*P*-value)	ADAS_cog (*P*-value)
aTT_L_SFG	Control (N=11; N=9)	-0.519 (0.102)	0.238 (0.538)
	Case (N= 9; N=8)	-0.364 (0.335)	0.062 (0.885)
	Control + Case (N=20; N=17)	-0.065 (0.785)	0.182 (0.485)
aTT_R_SFG	Control (N=11; N=9)	-0.542 (0.085)	0.139 (0.722)
	Case (N= 9; N=8)	0.329 (0.387)	0.170 (0.687)
	Control + Case (N=20; N=17)	-0.073 (0.760)	0.156 (0.550)
aTT_L_STG	Control (N=15; N=13)	-0.161 (0.567)	-0.197 (0.519)
	Case (N= 13; N=12)	-0.577 (0.039*)	0.078 (0.810)
	Control + Case (N=28; N=25)	0.018 (0.926)	0.087 (0.678)
aTT_R_STG	Control (N=15; N=13)	-0.138 (0.625)	-0.388 (0.190)
	Case (N= 13; N=12)	0.411 (0.162)	-0.222 (0.488)
	Control + Case (N=25)	0.095 (0.631)	-0.018 (0.932)
aTT_L_IFG	Control (N=15; N=13)	-0.100 (0.724)	-0.020 (0.949)
	Case (N= 13; N=12)	-0.671 (0.012*)	0.519 (0.084)
	Control + Case (N=28; N=25)	-0.550 (0.002*)	0.495 (0.012*)
aTT_R_IFG	Control (N=15; N=13)	-0.332 (0.227)	0.003 (0.992)
	Case (N= 13; N=12)	-0.531 (0.062)	0.167 (0.603)
	Control + Case (N=28; N=25)	-0.429 (0.023*)	0.249 (0.231)
aTT_L_IPG	Control (N=15; N=13)	-0.005 (0.986)	0.116 (0.706)
	Case (N= 13; N=12)	-0.521 (0.068)	0.496 (0.101)
	Control + Case (N=28; N=25)	-0.415 (0.028*)	0.416 (0.039*)
aTT_R_IPG	Control (N=15; N=13)	-0.220 (0.431)	-0.060 (0.847)
	Case (N= 13; N=12)	-0.317 (0.291)	0.583 (0.047*)
	Control + Case (N=28; N=25)	-0.363 (0.058)	0.432 (0.031*)
aTT_M_CG	Control (N=15; N=13)	0.130 (0.645)	0.118 (0.700)
	Case (N= 13; N=12)	-0.216 (0.477)	0.038 (0.906)
	Control + Case (N=28; N=25)	-0.380 (0.046*)	0.307 (0.136)
aTT_P_CG	Control (N=15; N=13)	0.092 (0.745)	0.086 (0.781)
	Case (N= 13; N=12)	-0.110 (0.720)	0.084 (0.796)
	Control + Case (N=28; N=25)	-0.306 (0.113)	0.298 (0.148)

* denotes a result that is statistically significant ($P<0.05$)

cingulate gyri in AD compared to HC ($P<0.05$ for all). CBF and aTT correlated with severity of disease, measured through neuropsychological tests. **Conclusions:** Using QUASAR ASL with whole brain coverage, we found patterns of regional CBF decrease typical of moderate AD in a Chinese cohort, with impairment of hemodynamic parameters indicative of underlying vascular abnormality.

P2-217 CAPITALIZING ON COMPLEMENTARY FDG PET AND FLORBETAPIR PET DATA SETS TO DISTINGUISH BETWEEN EARLY AND LATE MILD COGNITIVE IMPAIRMENT USING MULTI-MODAL PARTIAL LEAST SQUARES

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Background: We previously introduced a voxel-based image analysis algorithm known as multi-modal partial least squares (MMPLS) to characterize the linkage between covarying patterns in two or more complementary complex data sets. Here we used the MMPLS to characterize and compare covarying patterns in FDG PET and florbetapir PET images from 150 patients with early mild cognitive impairment (eMCI) and 78 patients with late MCI (lMCI) in the Alzheimer's Disease Neuroimaging Initiative (ADNI). **Methods:** MMPLS was used in conjunction with SPM8 to characterize and compare MMPLS subject scores irrespective of the subject's clinical status and free from the Type I error inflation associated with multiple regional comparisons. Brain maps of the between-group differences in covarying FDG PET and florbetapir PET latent variables were compared to maps of between-group differences in FDG PET and florbetapir PET measurements using convention univariate statistics. **Results:** Differences between the eMCI and lMCI MMPLS subject scores were highly significant (Hotelling 2 sample T 2: $P = 2.2e-06$, with no need to correct for multiple regional comparisons). By comparison, voxels associated with maximal between group differences in the florbetapir PET and FDG PET brain maps generated using conventional statistics were associated with p-values of $P = 3.1e-06$ and 9.0e-06, respectively, prior to any correction for multiple regional comparisons and p-values of $P = 0.015$ and $P = 0.082$ after correction. Between-group florbetapir PET and FDG PET brain maps simultaneously generated using the MMPLS were similar to those generated in independent comparisons with conventional univariate statistics. **Conclusions:** When applied to FDG and florbetapir images from the same persons, the MMPLS appears to distinguish between eMCI and lMCI patients with improved statistical power and freedom from multiple regional comparisons. Additional studies are needed to clarify the value of voxel-based image analysis algorithms that capitalize on two or more complementary data sets from the same persons in the early detection, tracking, and differential diagnosis of AD and the evaluation of AD-modifying treatments.

P2-218 COMPARISON OF PERFORMANCE OF EARLY DIAGNOSTICS OF ALZHEIMER'S DISEASE BETWEEN VOLUME AND THICKNESS MEASUREMENTS OF MEDIAL TEMPORAL STRUCTURES USING STRUCTURAL MRI

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Background: The role of structural brain magnetic resonance imaging (MRI) is becoming more and more emphasized in the early diagnostics of Alzheimer's disease (AD). Selective atrophy in medial temporal structures has been reported to be characteristic for early AD. This atrophy can be featured by reduction of volume or cortical thickness. This study aimed to compare performance of early diagnostics of AD between volume and thickness measurements of medial temporal structures. **Methods:** Standard 1.5T screening/baseline T1-weighted images obtained using volumetric 3D MPARGE protocol from 257 subjects (101 healthy controls (HC), 67 stable mild cognitive impairment within one year (S-MCI), 39 MCI to AD progressors within one year (P-MCI), 52 AD) from Japanese Alzheimer's Disease Neuroimaging Initiative (J-ADNI) database were used for evaluation. Average volume of left and right hippocampus (HV) and entorhinal cortex (EV) corrected for total intracranial volumes and average thickness of left and right entorhinal cortex (ETH) were measured using FreeSurfer software. For voxel-based morphometry of medial temporal structures, we used software of Voxel-based Specific