

MMSE scores (29.6 vs 28.9) and lower MACQ scores (0.6 vs. 4.7). At follow-up the proportion of non-decliners was significantly higher in the GDS1 than GDS2 group (69% vs. 37%, $\chi^2=8.4$, $p<.05$). Based on the severity of complaint, age and severity of depressive symptoms, discriminant function analyses successfully predicted 84.6% of the unstable, 63.6% of declining and 49% of the non-declining group. Overall 60.3% of the original group was correctly classified. Membership in the declining group was poorly predicted by the severity of SMCs. However, the unstable group at follow-up was associated with younger age, more depressive symptoms, and more severe SMCs at baseline. **Conclusions:** The lack of SMCs is associated with a good outcome, but once there are subjective complaints, a greater severity does not indicate greater risk of decline. Rather, more severe SMCs are characteristic for the diagnostically unstable group. Together with higher depressive symptoms and younger age, severe SMCs may designate a subgroup that should be observed with caution to avoid possible misdiagnoses.

P2-231 PERSONALITY CHANGE AND MILD COGNITIVE IMPAIRMENT

Birgitta M. Ausén¹, Gunnar Edman², Nenad Bogdanovic¹, ¹*Neurotec, Dept of Clinical Geriatrics, Karolinska Institute, Stockholm, Sweden;* ²*FoUU-enheten, Psykiatriska kliniken, Danderyd, Stockholm, Sweden.*
Contact e-mail: birgitta.ausen@ki.se

Background: Changes in personality have been reported as an early, preclinical sign in dementia. The most prominent changes are seen in patients with frontotemporal dementia. There have also been many reports of personality change in patients with vascular cognitive impairment (VCI) and Alzheimer's disease (AD). In most studies caregivers have retrospectively described changes in personality, prior to any signs of cognitive dysfunction. Few studies have assessed personality during the progression of the disease or at the level of mild cognitive impairment (MCI). **Objective:** The objective was to study the character of personality change in a group of patients with MCI and subjective cognitive impairment (SCI) and to compare their personality ratings to those of an informant. **Methods:** In the study 59 patients (33 men, 26 women) age 65.3 ± 6.7 years, examined at a geriatric clinic for memory complaints, were consecutively recruited. They had clinical examinations including neuropsychological tests, imaging, MMSE, CSF and bloodtests. The patients also had to fill in a personality inventory, Swedish universities Scales of Personality (SSP), and a structured questionnaire about life events and their subjective experience of personality change. A spouse or other close informant (20 men, 35 women), age 56.5 ± 14.3 years, had to rate the patient in an informant version of the SSP and make an overall judgement if he or she thought the patient had changed in personality or not. **Results:** The patient group expressed significantly higher levels of somatic trait anxiety, psychic trait anxiety, stress susceptibility, low assertiveness and detachment than a normal reference group. In the structured interview 69% of the patients and 56% of the informants reported an overall personality change, in the patient, related to the intellectual problems for which they had come to the clinic. In the personality inventory, SSP, there were significant differences between patient and informant ratings in somatic trait anxiety and adventure seeking, with patients scoring higher in both subscales. **Conclusions:** The results demonstrated that a majority of memory clinic patients, and their informants, recognized an overall change in personality. The personality changes seemed to have a specific character that differed significantly from normal references.

P2-232 SERUM CYTOKINE LEVELS REFLECT CONVERSION FROM CONTROL TO MCI

Sue T. Griffin¹, Robert E. Mraz², ¹*Univ Ark Med Sci/GRECC VAMC, Little Rock, AR, USA;* ²*Univ Ark Med Sci, Little Rock, AR, USA.*
Contact e-mail: griffinsuet@uams.edu

Background: The role of cytokine overexpression in the brain in Alzheimer's disease (AD) is widely studied, but Alzheimer effects on

peripheral cytokine levels is little known. Proinflammatory cytokines, in particular interleukin-1 (IL-1), are overexpressed when neurons are stressed, resulting in an IL-1 driven cascade of neurotoxic changes that are important for the development and progression of both the neuritic plaques and neurofibrillary tangles characteristic of AD. Increases in the expression of brain levels of IL-1, and other cytokines, may have importance for development of strategies for assessing brain status at the level of serum cytokines. For example, IL-1 activates the hypothalamic-pituitary-adrenal axis (HPA) such that macrophage activation and IL-1 expression decreases, suggesting that as brain levels increase peripheral levels decrease. **Objective(s):** To determine if progression from a stable or control state to a state of mild cognitive impairment (MCI) resulting from a burst of plaque and tangle pathology development and glial activation with cytokine overexpression is related to decreases in serum cytokine levels. **Methods:** We measured the levels of several cytokines, including IL-1, in three groups of participants from our UAMS Memory Center: control (n=165); MCI (n=34); and AD (n=99). **Results:** In these preliminary studies, we found significant differences between serum levels of several cytokines. Participants with MCI had lower levels of IL-1, IL-6, IL-8, and IL-10 than those clinically assessed to be either control or AD. Age and sex were not factors in these findings. **Conclusions:** These findings suggest that evaluation of serum may be used as predictors of brain function and in this way aid in both evaluation of patients as well as in development of rational treatment strategies. Moreover, they may be instructive for other conditions, for example Down's syndrome, where such progression is also evident.

Supported in part by AG12411, AG19606, and HD37989.

P2-233 FRONTAL LOBE MRI VOLUMES DIFFER IN AMNESTIC AND EXECUTIVE SUBGROUPS OF MCI

Julene K. Johnson¹, Linda L. Chao², Adam Gazzaley¹, Michael W. Weiner², Joel H. Kramer¹, Katie M. Freeman¹, Shannon Buckley², Bruce L. Miller¹, ¹*UCSF, San Francisco, CA, USA;* ²*San Francisco VA Medical Center, San Francisco, CA, USA.* Contact e-mail: jjohnson@memory.ucsf.edu

Background: Mild cognitive impairment (MCI) is hypothesized to be a transitional stage between healthy aging and dementia. Subgroups that categorize MCI into amnesic and non-amnesic MCI have been proposed. However, few studies examine a single non-memory presentation of MCI. **Objective:** To compare brain atrophy patterns in amnesic MCI and an executive presentation of MCI. **Methods:** Subjects included patients diagnosed with amnesic MCI (N=10) and executive MCI (N=15). Executive MCI was operationally defined as patients who complained of recent onset of dysexecutive symptoms (e.g., attention, multi-tasking, behavior) or had impaired scores on executive, but not memory, measures. Amnesic MCI patients met Petersen criteria and had intact executive function. All subjects were studied with volumetric structural 1.5 MRI. The MR images were segmented into gray matter and white matter tissue based on high-resolution T1-weighted images. Multivariate analysis of variance, controlling for age and volume of white matter lesions (WML), was performed to investigate group differences in volumes of frontal, temporal, parietal cortex and hippocampus. **Results:** The groups did not differ on Mini-Mental State ($M=28.8$). Patients with executive MCI were significantly younger than amnesic MCI patients (64 vs. 70 years) ($p=0.02$). Compared with amnesic MCI, patients with executive MCI had significantly smaller right frontal lobe volumes (MANOVA, $F=5.28$, $p=0.03$) and a non-significant trend for smaller left frontal volumes ($p=0.16$) when controlling for age and WML. The difference in left ($F=3.8$, $p=0.06$) and right hippocampal volumes ($F=2.7$, $p=0.11$) approached significance, with the amnesic MCI having smaller hippocampal volumes than executive MCI. There were no group differences on parietal or temporal lobe volumes ($p>0.05$). **Conclusions:** Preliminary analyses of brain MRI volumetric

data suggest that the executive subgroup of MCI may have smaller right frontal lobes than amnesic MCI. The smaller right frontal lobes in executive MCI may be related to the dysexecutive symptoms. Brain MRI volumetric measurements may be a helpful tool in distinguishing MCI subgroups.

P2-234 **CEREBRAL BLOOD FLOW VELOCITY CHANGES IN MILD COGNITIVE IMPAIRMENT ASSOCIATED WITH APOLIPOPROTEIN E ϵ 4 ALLELE**

Jiang-Ning Zhou¹, Zhong-Wu Sun², Rong-Yu Liu³, ¹University of Science and Technology, Hefei, China; ²The First Affiliated Hospital of Anhui Medical University, Hefei, China; ³The First Affiliated Hospital of Anhui Medical University, Hefei, China. Contact e-mail: jnzhou@ustc.edu.cn

Background: The aim of this study was to compare resting cerebral blood flow velocity (CBFV) values of mild cognitive impairment (MCI) with those of healthy control subjects, and to explore the correlations between apolipoprotein E (apoE) E4 allele, cognitive impairment and CBFV changes in MCI. **Methods:** Thirty subjects with MCI and 30 controls were assessed using the Mini-Mental State Examination (MMSE) and Cambridge Cognitive Examination Chinese version (CAMCOG-C). MCI and controls were then insonated at rest in the anterior (ACA), the middle (MCA) and the basilar (BA) cerebral arteries using transcranial Doppler ultrasonography (TCD). Meanwhile, we used polymerase chain reaction (PCR) to detect the apoE genotypes of all subjects. **Results:** There were significant differences between MCI and controls regarding MMSE, CAMCOG-C and its subscales (memory, language, attention, praxis and orientation) ($p < 0.05-0.001$). Compared with controls, MCI showed significant decreases in the mean (Vm), systolic (Vs) and diastolic (Vd) CBFV, bilaterally in the MCA and the ACA ($p < 0.05-0.001$), but not in the BA ($p > 0.05$). As the least common allele in Chinese, the E4 genotype frequencies were found in 23.33% of MCI and in 6.67% of controls, which were significantly higher in MCI than in controls ($p < 0.05$). Compared with 17 apoE E4 non-carriers, 13 apoE E4 carriers in MCI showed significant decreases in Vm, Vs and Vd, bilaterally in the MCA ($p < 0.05-0.001$) except for Vs of MCA-L ($p = 0.058$). There were no significant differences of Vm, Vs and Vd in the ACA and BA ($p > 0.05$). MMSE and CAMCOG-C scores in MCI decreased with the decline respectively in CBFVs of ACA-R ($r = 0.410$, $p = 0.037$) and CBFVm of MCA-L ($r = 0.425$, $p = 0.030$). The “memory” on CAMCOG-C correlated positively to CBFVs of MCA-R ($r = 0.600$, $p = 0.001$), while both the item “language” and “orientation” were associated positively with CBFVs of ACA-R ($r = 0.477$, $p = 0.014$; $r = 0.610$, $p = 0.001$; respectively). **Conclusions:** The decreases in CBFV in MCI, which are especially affected by apoE E4 allele, associated with cognitive impairment. If follow-up studies confirm our findings, the TCD techniques could allow an objective assessment of the perfusion state in the early phase of Alzheimer’s disease, and reliably discriminate MCI from healthy control subjects.

P2-235 **COGNITIVE CORRELATES OF FRONTAL LOBE AND HIPPOCAMPAL VOLUMES IN MCI**

Katie M. Freeman¹, Joel H. Kramer¹, Adam Gazzaley¹, Bruce L. Miller¹, Michael W. Weiner², Sky Raptentsetsang², Linda Chao², Julene K. Johnson¹, ¹University of California, San Francisco, San Francisco, CA, USA; ²San Francisco VA Medical Center, San Francisco, CA, USA. Contact e-mail: kfreeman@memory.ucsf.edu

Background: Mild cognitive impairment (MCI) has been proposed as a transitional state between healthy aging and dementia. The correlation

between hippocampal volumes and memory performance is well established in Alzheimer disease. Recent studies have extended this correlation to amnesic MCI as well. However, the relationship between cognition and brain structures in MCI has not yet been explored. **Objective(s):** To better understand the relationship between cognition and frontal lobe and hippocampal volumes in MCI. **Methods:** Subjects were 24 patients diagnosed with MCI of a single domain, affecting either memory (amnesic MCI; $n = 9$) or executive function (executive MCI; $n = 15$). Amnesic MCI patients met Petersen criteria for memory impairment but exhibited intact executive functioning. Executive MCI patients were selected based on either complaints of executive dysfunction (e.g., attention, multi-tasking, behavior) or demonstrated impairment on tests of executive, but not memory, function. All subjects completed a 1.5T structural MRI that was segmented into gray and white matter based on high-resolution T1-weighted images. Regions of interest were hippocampus and frontal cortex. Subjects were also administered cognitive tests measuring memory, executive, visuospatial, and language function. Partial correlations were obtained between frontal cortex and hippocampal volumes and cognitive measures controlling for age and white matter lesions (WML). **Results:** Mean age was 66.7 ($sd = 7.4$) and MMSE was 29.0 ($sd = 1.2$). There were no significant correlations between frontal cortex and hippocampal volumes. Controlling for age and WML, frontal lobe volume was significantly correlated with several measures of executive functioning, including DKEFS Trailmaking Number-Letter ($r = 0.47$, $p = 0.03$), Design Fluency Filled ($r = 0.40$, $p = 0.03$) and Empty ($r = 0.41$, $p = 0.03$) conditions. Smaller frontal lobe volumes predicted lower performance on executive measures. Frontal lobe volumes, however, did not correlate with MMSE, memory, language, or visuospatial scores. In contrast, hippocampal volumes correlated with the List B trial of the California Verbal Learning Test ($r = -0.48$, $p = 0.01$) but not MMSE or any measures of executive, language, or visuospatial function. **Conclusions:** These results indicate that there are discernable patterns of brain-behavior relationships in patients with single-domain MCI, with frontal contributions to executive functioning and hippocampal contributions to episodic memory. They also highlight the importance of identifying different subtypes of MCI.

P2-236 **ODOR IDENTIFICATION TEST AS A PREDICTOR OF MILD COGNITIVE IMPAIRMENT IN LATE-LIFE DEPRESSION**

Elka Stefanova, Institute of Neurology, Belgrade, Serbia and Montenegro. Contact e-mail: es@imi.bg.ac.yu

Background: Mild cognitive impairment (MCI) is present in up to 60% of patients with late-onset depression and constitutes a major diagnostic problem in geriatric psychiatry. Previous studies indicate that cognitive performance in these patients is not or is only marginally improved when they recover from depression. However, recovery from cognitive impairments due to depression may have a longer time course than recovery from affective symptoms. **Objective(s):** To determine whether the odor identification test could help in making the diagnosis of MCI in late-life depression. **Methods:** In a group of 105 elderly depressed patients (mean age: 70.4 years) admitted to a psychiatric day-clinic, severity of depression, cognitive performance and odor identification were assessed before the initiation of treatment and were reassessed 6 months later. **Results:** At admission, 51 of 105 patients (48%) fulfilled the criteria for MCI, with a preponderance of impairments in short-term memory and visuospatial capabilities. At the 6-month follow-up, cognitive performance had not significantly improved for the entire group; 39 of 95 patients (41%) still were fulfilling the criteria for MCI, and were identified at the baseline with odor identification deficit. Three factors from the depressive scale were identified and labelled as anhedonia-pessimism, anxiety-vegetative, and cognitive-inhibition and were more prevalent in MCI patients too. **Conclusions:** It was concluded that MCI is common in both major and minor