and DEP- patients were defined as having baseline Geriatric Depression Scale (GDS) scores of 5 or above and 0, respectively. 

**Results:** DEP+ converters showed earlier ages of conversion to dementia (p = 0.009) and greater left hippocampal volume loss than both DEP- converters and DEP+ non-converters over the 2-year period (p = 0.003, p = 0.001, respectively). Changes in total brain volume, differences in their clinical symptoms of dementia, daily functioning and apolipoprotein E4 protein genotypes could not explain these findings. There was no difference in conversion rate to dementia or progressive hippocampal volume change between DEP+ patients and DEP-patients, suggesting that depressive symptoms themselves may not lead to progression of dementia from MCI.

**Conclusion:** We conclude that there is a synergistic effect of depressive symptoms and smaller left hippocampal volume in MCI patients that accelerates conversion to dementia.

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**PT569**

Association between cerebral amyloid deposition and cognitive function in geriatric depression: pilot study using amyloid PET

Hye-Geum Kim, Eun-Jin Cheon, Bon-Hoon Koo, Dong-yeob Lee, Wan-Seok Seo

Yeungman University College of Medicine, Republic of Korea

**Abstract**

**Objective:** Brain β-amyloid(Alβ) burden is one of the most important pathophysiological markers of Alzheimer diseases(AD). It is also important to note geriatric depression(GD) is associated with developing AD. But, there are few studies that have examined cortical Alβ levels in GD. The purpose of this study is exploring relationship between brain amyloid deposition and cognitive function in GD

**Methods:** Participants included elderly patients over 60-year-old with major depressive disorder who had subjective cognitive complaints, not been diagnosed with dementia yet. Thirteen participants received cognitive assessments by Repeatable Battery for the Assessment of Neuropsychological Status(RBANS), and were checked 18F-labeled amyloid PET. We quantified the standard uptake value ratio(SUVR) as the degree of amyloid deposition. And correlation analysis between amyloid deposition of each brain region and cognitive function performed.

**Results:** Ten subjects were judged as β-amyloid-negative(Alβ−), and 3 subjects as β-amyloid-positive(Alβ+). In both group, mean Alβ deposition was most in frontal region, followed by occipital, temporal, parietal lobe, and when the brain further subdivided, globus pallium(GP) was the most deposition region, followed by posterior cingulum, putamen. Differences of the mean Alβ deposition between Alβ+ and Alβ- group was found in right orbitob frontal region most, followed by precuneus, posterior cingulum. In result of correlation analysis, immediate memory abilities are correlated negatively with amyloid deposition in following brain regions, left caudate, anterior cingulum, left calcarine, left putamen, respectively. Delayed memory abilities are correlated negatively with amyloid deposition in left calcarine. And such correlations also are observed in between visuospatial function and right caudate, between attention and left middle frontal region, negatively.

**Conclusion:** In patients with GD, Alβ deposition was most in GP in which typically Alzheimer’s disease have a little Alβ. Memory, attention, and visuospatial function were negatively correlated with amyloid deposition in certain brain region respectively.

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**PT570**

Apathy and Intrinsic Connectivity Networks in the Amnestic Mild Cognitive Impairment

Chang Uk Lee, MD, PhD, Soo Hyun Joo, MD and Hyun Kook Lim, M.D., Ph.D.

(1) Seoul St. Mary’s hospital, Medical College, the Catholic University of Korea, Seoul, South Korea, (2) Medical College, the Catholic University of Korea, Seoul, South Korea

**Abstract**

**Background:** Although there has been several studies reporting that apathy is associated with faster cognitive impairment and earlier conversions to Alzheimer’s disease in the amnestic mild cognitive impairment, effects of apathy in the functional large-scale intrinsic connectivity networks (ICN) are not yet clear. The aim of this study is to investigate the distinctive association pattern of apathy on the 3 large-scale ICNs (the DMN, the salience network (SN) and the central executive network (CEN)) in amnestic mild cognitive impairment(aMCI)

**Methods:** Fifty subjects with amnestic mild cognitive impairments and fifty control subjects underwent resting state functional magnetic resonance imaging. We investigated the association pattern between apathy and intra-functional connectivity (FC) and inter-FC of the DMN, SN and CEN in the aMCI group.

**Results:** We found that the FCs of the DMN, the SN and the CEN were lower in the aMCI group, compared with the control group. Apathy was positively correlated with posterior cingulate FC and negatively correlated with mid frontal FC in the aMCI group. In addition, anterior cingulate FC in the SN were positively correlated with apathy in the aMCI group. The anti-correlation strength between the DMN and the CEN was negatively correlated with apathy in the aMCI group.

**Conclusions:** Our results of aberrant DMN and SN FC and distinctive correlation patterns between the apathy and FCs in the several ICNs in the amnestic MCI group might reflect very detrimental effect of apathy on functional changes in the course of AD progression.

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**PT571**

Quantification of perivascular drainage in mouse cerebral cortex for the study of its role in Alzheimer’s disease

ShinHeun Kim, Yong Jeong, Peter Lee

KAIST, Republic of Korea

**Abstract**

Recently lymphatic vessels in the central nervous system have revealed. The newly-found lymph system begins at subarachnoid space, however, the removal mechanism from the brain parenchyma is still unknown. Perivascular drainage (PVD) is the phenomenon that interstitial fluid and solutes in parenchyma are drained along vessel walls into subarachnoid space. PVD is one of the plausible clearance processes within cortex. Small molecules such as amyloid beta are cleared through this pathway while the contribution of PVD on Alzheimer disease (AD) is not well investigated. This is mainly because there is no standard way to quantify the PVD. Here we propose a novel method and two parameters, uniformity index and delta area above curve (ΔAAC), to quantify the PVD and investigate the role of PVD in AD.

We hypothesized that small molecules movement is mainly dependent both on PVD and diffusion. The PVD would give additional force to move them further toward the draining path. This force can be quantified by observing the amount of movement
and path of small molecule. FITC-dextran (4kDa) was injected into cortices of young, aged, and AD mice. Centering the injection site, circle mask was divided into eight pieces, which were classified into artery or vein-dominant based on vessel distribution. We compare the intensity and decline rates of FITC signal at each piece of the mask. The discrepancy transforms into the uniformity index (UI) and ΔAAC.

The UI was higher in cortex than simple diffusion. The ΔAAC was higher in the artery-dominant piece. FITC-dextran moves into artery pieces faster than vein pieces and the difference is assumed to reflect the amount of PVD. In aged and AD mice, the UIs are relatively steady and the ΔAAC is significantly decreased compared with normal mouse. These results indicate that PVD is impaired in AD.

PT572
Advances in the Development of Tau PET Radiotracers and Their Clinical Applications
Kazuhiro Yanai1, Hejun Li1, Xizheng Shan2, Qin Sun2, Fan Wu1
1Department of Pharmacology, Tohoku University School of Medicine, Sendai, Japan
2Department of Pharmacology, Tohoku Medical and Pharmaceutical University, Sendai, Japan

Abstract
Objective: Recent progress in the development of tau-selective PET tracers enabled non-invasive visualization of neurofibrillary pathology in the human brain. The amount and spatial distribution of tau tracer binding in the brain is closely associated with neurodegeneration and cognitive symptom of dementia. Therefore, tau PET imaging is expected to be useful for tracking disease progression, assessing disease severity, and accurately predicting dementia prognosis. The purpose of this study was to assess the clinical usefulness of THK tau PET tracers.

Methods: Subjects with Alzheimer’s disease, mild cognitive impairment and healthy controls (Number of each group is more than 10) underwent [18F]THK-5351 and [11C]PiB PET scans. Standard uptake value ratios between 50–60 minutes post injection for THK-5351 was calculated using the cerebellar cortex as a reference region.

Results: Subjects with mild cognitive impairment showed higher THK retention in the fusiform gyrus, inferior temporal and parietal cortices than healthy control subjects. Patients with Alzheimer’s disease showed higher and more extensive neocortical THK retention than subjects with mild cognitive impairment. In some cognitively normal individuals, THK retention was mildly elevated in the inferior temporal area. THK retention in the parahippocampal and fusiform gyrus, inferior temporal and parietal cortices was correlated with clinical severity of dementia.

Conclusion: THK-5351 enables sensitive and selective detection of neurofibrillary pathology in Alzheimer’s disease. Tau PET imaging with this tracer could be employed to study longitudinal tau deposition in normal aging and pathological process of Alzheimer’s disease.

PT574
The increased serum lipopolysaccharides was associated with the TNFa and formation of β amyloid protein in Alzheimer’s disease patients of Chinese
Bai Han1, Hejun Li2, Xizheng Shan2, Qin Sun2, Fan Wu1 Kezhan Liu1, Hongxin Wang4
1Shanxi Medical University, China, 2The General Hospital of The Chinese Armed Police Forces (CAPF) China, 3The Shanxi Provincial Children’s Hospital, China, 4Peking An Ding Hospital, China

Abstract
Objective: Early our animal experiments study showed that AD rats occurs intestinal endotoxemia (IETM), and with the increasing of endotoxin, the APP, PS1, BACE mRNA increased and promote the generation of Aβ. The aim of this study was to observe the occurrence of IETM in AD patients and to investigate the effect of intestinal endotoxemia in AD, provide evidence for the prevention and treatment of AD.

Methods According to the inclusion and the exclusion criteria, choose AD patients and healthy elderly, evaluate cognition by the Mini mental state examination (MMSE) and Alzheimer’s disease assessment scale cognitive subscale (ADAS-cog), detect the serum LPS, TNF-α and Aβ level by ELISA, detect APP, PS1 and BACE mRNA expression by real-time PCR. All the data were analyzed by SPSS 17.0.

Results
1. The AD group and the control group showed no significant differences in sex (χ²=0.312, P=0.576), age (t=0.243, P=0.809) and education level (u=735.000, P=0.682).
2. The MMSE score of AD group was significantly lower than the control group (u=0.000, P<0.001), the ADAS-cog score was significantly higher than that in control group (u=0.000, P<0.001), the differences were statistically significant.
3. The LPS (u=0.000, P<0.001), TNF-α (u=6.175, P<0.001), Aβ (u=13.000, P<0.001) levels were significantly higher than the control group, the differences were statistically significant.
4. The APP (u=16.000, P<0.001), PS1 (u=24.000, P<0.001) and BACE (u=60.000, P<0.001) mRNA expression levels in AD group were significantly higher than the control group, the differences were statistically significant.
5. The LPS level was highly related to the Aβ level (r=0.894), LPS level was moderately related to the APP (r=0.563), BACE (r=0.486) mRNA expression. The correlation between LPS level and PS1 mRNA expression was not significant.

Conclusion: This study preliminary confirmed that AD patients occurs IETM, and IETM could upregulate the expression of APP, the key enzyme BACE by induce inflammatory cytokines, and then promote Aβ generation, lead to the development of AD.

Key Words Alzheimer’s disease ; Intestinal endotoxemia ; endotoxin ; β amyloid protein ; presenilin