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Ageing and dementia 1

PP1001
The medial temporal-lobe atrophy index relates to memory impairment in early Alzheimer's disease
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Introduction: Memory impairment is not only the earliest clinical symptom but a central and prominent feature throughout the course of Alzheimer’s disease. AD-related pathological alterations in the medial temporal structures may account for the memory impairments in these patients. The Medial Temporal lobe Atrophy index (MTAi) as a simple method for assessing atrophy of the medial temporal lobe using clinically available neuroimaging. Herein we report a retrospective analysis correlating the MTAi and memory function in a subgroup of patients with MCI who converted to AD.

Methods: We took the results of the neuropsychological assessment performed to a cohort of nine patients now diagnosed with AD when they were at the MCI stage and related their scores with the MTAi at the MCI stage. We assessed the executive functioning (Stroop Test; Letter Fluency), verbal memory (California Verbal Learning Test), visual memory (Benton Visual Retention Test), visuospatial cognition (Judgement of Line Orientation), and visuoconstruction (Pentagon Copy).

Results: The MTAi correlated significantly with scores on the verbal and visual memory tests, while the MTAi did not correlate with the executive, visuospatial and visuoconstruction tests. The strongest correlations were found for the left-MTAi with scores on the CVLT and for the right-MTAi with scores on the BVRT.

Conclusions: MTAi relates to memory function in early AD. More specifically, MTAi on the left side correlates with verbal memory, while MTAi on the right side correlates with visual memory. Larger prospective studies are needed to verify our results.

Disclosure: Nothing to disclose

PP1002
Fatal familial insomnia in one patient with both D178N and E200K prion protein gene mutations
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Introduction: Hereditary prion diseases are fatal autosomal dominant disorders linked with mutations in prion protein gene (PRNP). E200K mutation have been found in patients with familial Creutzfeldt-Jakob disease (fCJD) whereas D178N mutation has been associated with both fatal familial insomnia (FFI) and fCJD phenotypes depending upon the non-pathogenic polymorphism at codon 129, respectively cis-methionine or cis-valine. However, several genotype-phenotype correlation studies have shown large intra- and inter-familial clinicopathological heterogeneity and overlap.

Case report: A 42-year-old Portuguese man started to complain of insomnia and rapidly developed global dementia, gait freezing, multifocal myoclonus and dysautonomia. The clinical situation evolved to akinetic mutism and death, five months after the onset of symptoms. The patient’s mother had died aged 62 from a similar disease. Brain MRI showed hyperintensity in the left basal ganglia on T2/FLAIR and DWI, and the 99mTc-ECD SPECT detected generalized hypoperfusion. The polysomnography disclosed disorganized sleep patterns. There was hyperproteinorraquia and absence of 14-3-3 protein in cerebrospinal fluid. Genetic sequencing of PRNP identified both D178N and E200K mutations and homozygoty for methionine in codon 129. Brain pathology revealed severe neuronal loss and gliosis in thalamic and inferior olivary nuclei and no prion protein deposition by immunohistochemistry.

Discussion: This unique case of compound heterozygosity for prion disease adds further complexity to the genotype-phenotype correlation studies. Our patient evidenced predominant FFI phenotype over the few findings resembling fCJD. We hypothesize a genetically determined earlier expression of the D178N mutation or a dominant expression of the D178N mutation over the E200K mutation.

Disclosure: Nothing to disclose
PP1003
Relationship between cardiovascular risk factors and all cause mortality in patients with Alzheimer’s disease
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Aim: To evaluate the relationship between selected cardiovascular risk factors and the all cause mortality in patients with Alzheimer’s Disease (AD).

Methods: We evaluated 1083 patients with AD (390M, 693F, mean age 76.6±7.0 range 50-94 ys) referred to the Department of Neurology in Warsaw through years 2000-2006. The AD was diagnosed according to NINCDS-ADRDA and DSM-IV criteria for AD. Cardiovascular risk factors, antihypertensive treatment and the results of laboratory tests were also evaluated. All cause mortality was estimated on the basis of data on deaths from the Central Statistical Office.

Results: After the mean follow-up of 4.86 ys (range 0 - 13 ys) all cause mortality was 66.1% (714 patients of mean age 77.3 ys (range 50-96ys)). The patients who have died were characterized by older age (77.3 vs 74,1ys, p<0.01) and more severe cognitive impairment (median MMSE score 17 vs 20, p<0.01) as compared to the patients who stayed alive during follow-up. There was no difference in the gender distribution between presented groups. Multivariate Cox model showed that male gender (Exp(B) = 0.796, ps<0.05), smoking (Exp(B) =1.363, ps<0.05), older age (Exp(B) =1.055, ps<0.0r) , and lower score in MMSE ((Exp(B) =0.950, ps<0.01) increased the risk of death in one year.

Conclusions: Our results show that in patients with AD, among analyzed cardiovascular risk factors, only age, gender and smoking, but not the presence of hypertension and dyslipidemia status was associated with higher all cause mortality.

Disclosure: Nothing to disclose

PP1004
Semantic associative abilities in mild cognitive impairment: gender asymmetries?
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Introduction: Semantic impairment is well recognized as a cognitive deficit in patients with Alzheimer’s disease, but it is under-investigated in the early stage. Aim of this study was to explore the ability to access to semantic associative relations and the loss of these relations during the time in mild cognitive impairment patients, amnestic type (aMCI).

Methods: We conducted a longitudinal study on 32 subjects, aged between 60 and 80 years old (17 male and 15 female; Mage =75.15±5.04). The patients were subjected to a neuropsychological evaluation and to a verbal semantic experimental battery, composed by a naming task and a semantic associative task. They were tested at baseline and were followed at 11 months to identify, in those who remained stable over time, which associative relation was deteriorated. Five associative relations were analysed: Superordinate, Contiguity, Attribute, Function and Part/All.

Results: Our results suggest a progressive impairment in the associative ability, but not in the naming task, in which there were no variance between test and retest conditions. The most interesting difference is between the performance of male and female: analysing the five associative relations separately we found in post-hoc analysis a significant decrease in Function and Contiguity relations only in male (p<0.001). Female performance was stable during the year.

Conclusions: Our data seem to suggest that semantic linkage in a-MCI may be early indicator of possible transition to dementia. The findings seem also to suggest gender asymmetries in the management of semantic associative relations.

Disclosure: Nothing to disclose
Association study of interferon-γ and interleukin 10 gene polymorphisms in Alzheimer's disease

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Introduction: An inflammatory response has been hypothesised to be involved in the pathogenesis of Alzheimer’s disease (AD) and, likely, also of other types of primary dementias. This study was undertaken to evaluate the possible role of interferon-γ (IFN-γ) +874T/A, and Interleukin 10 (IL-10) 1082G/A polymorphisms in AD.

Methods: The study included 93 probable patients with AD who met the diagnostic criteria of National Institute of Neurological and Communicative Disorders and Stroke-AD and Related Disorders Association, and 150 control subjects (C).

Results: No significant difference in mean age or in the distribution of genders between AD and C groups was found. Moreover, we reported a positive association between the -1082 G/A genotype and AD (OR=1.76 (1.15-2.69, p=0.0061). Similarly, a significant association was found between +874T/A genotype and AD (OR=1.94 (1.09-3.47, p=0.0016).

Conclusions: Our findings indicate that the IL-10 A/G and IFNG A/A genotypes are associated with AD and support the involvement of these cytokines in AD etiology. Key Words: interferon-γ, Interleukin 10, Alzheimer’s disease, single nucleotide polymorphism.

Disclosure: Nothing to disclose

Clock drawing test in mild cognitive impairment: correlation with cerebral perfusion in SPECT

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Introduction: The Clock Drawing Test (CDT) was originally proposed as a measure of visuospatial abilities related with the parietal lobes; its most recent interpretation indicates a multi tasking processing, involving symbolic and graphomotor representation, language, hemiattention, semantic memory, conceptual abilities and executive functions. There is a recent interest in the study of the relation between the performance on CDT and several cerebral areas/regions of interest, especially in Alzheimer’s disease (AD). The same research with Mild Cognitive Impairment (MCI) is sparse.

Methods: We studied 94 patients with amnestic MCI and correlated their performance on the CDT, according to three scoring systems (Rouleau et al., 1992, Cahn et al., 1996, and Babins et al., 2008), and regional cerebral perfusion (rCBF) on SPECT.

Results: There was no relation between CDT total scores and rCBF in any of the scoring systems used. We found significant correlations between the several clock elements and underlying subjective errors (stimulus-bound response and conceptual deficit) and rCBF, namely in the entorhinal cortex, posterior cingulated cortex, associative visual cortex and angular gyrus.

Conclusions: Performance of MCI patients on the CDT appears to correlate with functioning of cortical and subcortical areas typically affected in AD. This study shows that, more than a quantitative score, a qualitative assessment of the clock drawing (e.g., error analysis) corresponds to dysfunction in AD key areas, supporting the utility of the CDT in the early diagnosis of AD.

Disclosure: Nothing to disclose
PP1007
Is high-fat high-carbohydrate diet (HFCD) neuroprotective? A magnetic resonance imaging study in Wistar rats
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Introduction: Obesity was associated with accelerated aging and elevated risk of neurodegenerative diseases. In animal models, high-fat high-carbohydrate diet (HFCD) is commonly used to induce obesity. We hypothesized that HFCD will lead to poorer memory, smaller hippocampi and lower concentrations of brain metabolites in hippocampi, which are predictors of neurodegenerative diseases both in humans and in laboratory animals.

Methods: Twenty five male Wistar rats were put on HFCD (~35% fat, ~35% carbohydrates) on their 55th day of life, while 25 control male rats (CON) remained on chow. Both groups underwent memory tests in 8-arm radial maze at 3rd, 6th, and 9th month. At one year, all animals underwent MRI to evaluate hippocampal volumes and 1H magnetic resonance spectroscopy at 7T.

Results: HFCD rats consumed slightly more calories than CON, but less proteins. However, their protein intake was within recommended amounts. Levels of sugar and ketone bodies were within healthy norms in both groups; however, numerically they were higher in the HFCD group.

Contrary to our hypotheses, HFCD rats had better scores of memory than CON throughout the experiment. At one year, their hippocampi were by 3% larger than in CON (p=0.05), whereas concentration of N-acetylo-aspartate (NAA, marker of neuronal viability) was 8% higher.

Conclusions: The results do not support the thesis that HFCD per se leads to degeneration of the nervous system. On the contrary, they consistently suggest that HFCD enhances memory and slows aging. More research is needed to pinpoint the mediating factors.

Disclosure: Nothing to disclose

PP1008
Dementia syndrome and mild cognitive impairment (MCI) in Armenia: the rate of conversion
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Introduction: Dementia Syndrome is one of most wide spread cognitive disorders in Armenia. The aim of this study to investigate the risk of conversion to dementia for different mild cognitive impairment (MCI) subtypes and identify the risk factors of conversion.

Methods: We recruited 268 patients, >66 years, who met the criteria for MCI and evaluated their global cognitive performances at baseline and annual for the next three years. The diagnosis of dementia and MCI was established using MMSE and Modified Wechsler Scale.

Results: There were 268 cases of incident MCI, 147 patients (=55%) of amnestic MCI and 121 patients (=45%) of non amnestic MCI. The rate of conversion in the first year was 11.4%, in the second year 18.2%, and the third year 25.3%. The mean rate of conversion during the follow-up period was 19.2% for Alzheimer's disease (AD), 12.5% for vascular dementia (VD) and 14.1% for Alzheimer's disease with cerebrovascular disease (AD with CVD). The rate of conversion for specific MCI subtype was 18.3%/year for patients with amnestic MCI and 12.6%/year for non-amnestic MCI. During the follow-up period 49 patients converted to AD, 31 patients converted to VD; 45.6% were patients with amnestic MCI and 38 patients converted to AD with CVD; 69.7% were patients with amnestic MCI. The AD converters have high serum cholesterol levels, high density lipoprotein, the debut of hypertension before 66 year.

Conclusion: The combination of amnestic MCI subtype with the clinical risk factors increased the risk of conversion to dementia.

Disclosure: Nothing to disclose

PP1009
Abstract withdrawn
**PP1010**

**Disturbed default mode network connectivity patterns in Alzheimer’s disease associated with visual processing (an fMRI study)**

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**Introduction:** The default mode network (DMN) is characterized by decreasing activity (deactivation) during a goal-directed task. The objective of our study was to detect specific alterations in DMN connectivity when switching from baseline to task condition (here the visual task) in 15 patients with Alzheimer’s disease (AD) as compared to 16 healthy controls (HC) using psychophysiological interactions (PPI) analysis.

**Methods:** The fMRI imaging was performed using a 1.5 T Siemens Symphony scanner. The experiment comprised 2 parts: a complex visual scene-encoding task and anatomical T1 images. To determine the brain regions that showed significantly greater activation or deactivation with respect to active periods, a General Linear Model as implemented in SPM5 was used. PPI were used to assess the effect of the task on connectivity with posterior DMN node. Age, gender, education and measure of atrophy were used as covariates.

**Results:** HC showed decreased correlation during the task than during the baseline with middle temporal /middle occipital gyrus (MTG/MOG) and posterior cingulate/precuneus bilaterally, and increased correlation during the task with the right inferior parietal lobule. In contrast to HC, AD showed decreased correlation during the task with the small area of the right MTG and the right superior temporal gyrus.

**Conclusions:** We have found specific disturbances in the DMN connectivity in AD during visual processing that probably reflect changes in network plasticity representing either malfunction or insufficient compensation.

**Disclosure:** This work was supported by the project “CEITEC – Central European Institute of Technology” (CZ.1.05/1.1.00/2.0068) from the European Regional Development Fund.

**PP1011**

**A study on the association of dementia and multilingualism among patients at the Jose R. Reyes Memorial Medical Center**

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**Introduction:** Dementia is a common disabling and distressing neurological disorder that is not considered a feature of normal aging. The diagnosis of dementia based on the standardized criteria from DSM-IV required substantial cognitive decline from a previous level of performance in one or more domains. The recognition of dementia in the Philippines is still in its infancy. This study determined the correlation of multilingualism on delaying the onset of dementia in the elderly and maintaining the cognitive reserve among diagnosed patients in Jose R. Reyes Memorial Medical Center.

**Methods:** A sample of 34 patients from February to June 2013 with cognitive complaints were initially selected, 11 of whom were excluded. Patients who were diagnosed with probable dementia who had scores of <21 in MoCA-P were included. The criterion for multilingualism was that patients had spent most of their lives regularly using two or more languages in the Philippines, including English.

**Results:** These group showed delay of symptom onset of 10.6 years as compared to the unilingual group. The multilingual also scored higher in the MoCA-P. This delay in onset translates into a reduction of prevalence rate of dementia in the Philippines.

**Conclusions:** This strengthens the fact that multilingualism keeps the brain in shape and reinforces mental function, rather than the earlier thought that it creates conflict and confusion. In the Philippines with 8 languages and 175+ dialects, this would aid in having a low prevalence rate of the disease.

**Disclosure:** Nothing to disclose
**PP1012**

**Functional characteristics across milder end of cognitive spectrum**

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**Introduction:** We sought to characterize the functional aspects of no cognitive impairment (NCI), subjective cognitive impairment (SCI), non-amnestic and amnestic mild cognitive impairment (NA-MCI, A-MCI) as a cognitive continuum, and to identify the possible role of specific functional tasks as a diagnostic utility.

**Methods:** A total of 702 participants sampled from the residents aged 65 years or older living in Seongnam, Korea. The participants were defined as NCI, SCI, NA-MCI, and A-MCI according to original Peterson criteria with standardized interview and neurological examination by physicians and neuropsychological assessments by neuropsychologists. Functional status was measured using the K-ADL and K-IADL.

**Results:** There was a significant difference between discrete cognitive status groups on three items (washing, bathing, eating), and total scores of K-ADL. In terms of K-IADL, the differences were significant for six items (outgoing for a short distance, using transportation, shopping, handling money, using telephone, taking medication, and total score. ANCOVA with Bonferroni post hoc adjusting age, gender, educational level, and geriatric depression score showed that A-MCI performed poor at bathing, shopping, handling money, and using telephone compared to others, and the sum of the items which were significantly different among groups (three items of K-ADL plus six items of K-IADL) was higher in A-MCI than others.

**Conclusions:** These findings demonstrate the declining feature of functional characteristics according to the progress of cognitive impairment in mild end of cognitive continuum, which is definite between A-MCI and others. In addition, specific tasks, which could be discriminative between discrete cognitive statuses, were identified.

**Disclosure:** Nothing to disclose

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**PP1013**

**House-design test in vascular cognitive impairment**

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**PP1014**

**A 12-week, multi-center, open-label evaluation of caregiver preference, safety and tolerability of Exelon® Patch in patients with Alzheimer’s disease**

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**PP1015**

**Verbal fluency tests as short and effective instruments to detect early cognitive deficits in mild cognitive impairment and mild Alzheimer’s disease**

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**PP1016**

**Memory evaluation in early Alzheimer’s patients using the 7-minute-screen: useless cueing**

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**PP1017**

**Relationship of age with the size of the interventricular foramina and aqueductus sylvii: a morphometric evaluation**

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PP1018
Preliminary results of a program for Alzheimer's disease (AD) family caregivers in Limousin, France: effect on AD psychosocial burden
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PP1019
Ma2 encephalitis presenting with psychiatric manifestations in a 62-year-old female: a case report
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PP1020
Predictors of response to 13.3mg/24h rivastigmine patch in patients with severe Alzheimer's disease
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PP1021
Efficacy of 13.3mg/24h versus 4.6mg/24h rivastigmine patch on activities of daily living in severe Alzheimer's disease: a factor analysis
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PP1022
Cognitive efficacy of 13.3 mg/24 h versus 4.6 mg/24 h rivastigmine patch in severe Alzheimer's disease: severe impairment battery factor analysis
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PP1023
Early onset Alzheimer's disease in Armenia
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PP1024
Abstract withdrawn

PP1025
Post-stroke dementia: diagnosis and treatment
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PP1026
Abstract withdrawn

PP1027
Abstract withdrawn

PP1028
Human amniotic membrane- and adipose tissue-derived stem cells extend healthspan and lifespan in F344 rats
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