11th International Conference on

Alzheimers Disease & Dementia

May 24-25, 2018 | Vienna, Austria

Posters

Francesco Amenta et al., J Alzheimers Dis Parkinsonism 2018, Volume 8
DOI:10.4172/2161-0460-C3-043

A computer aided diagnosis system for white matter volume extraction in Alzheimer's disease

Francesco Amenta, Vania Karami, Giulio Nittari and **Enea Traini**
Università di Camerino, Italy

Computer method development for early diagnosis of Alzheimer's disease (AD) is one of the helpful ways in its prevention. Computer aided diagnosis system (CADS) based on magnetic resonance (MR) image processing can improve medical analysis and interpretation. Mental status in AD can be recognized by related biomarkers such as involvement of white matter (WM) and gray matter (GM) atrophy. WM volume in AD changes more than controls and it can show the reduction of GM also. An automatic system to measure WM atrophy from MR images can support the neuropsychological tests and be helpful in treatment. We developed a CADS that allows segmentation of WM by a novel method in a reliable way to extract the features of the extracted volume. We assume that all datasets were analyzed including a preprocessing. The method consists of a series of morphological operations on the binary images to extract WM volume, feature extraction from images using single level discrete wavelet transform, feature reduction using principle component analysis (PCA). The extracted features are used to identify the characteristics of segmented WM. This system has the possibility to classify these features with a support vector machine (SVM). This classification is helpful to categorize specifications of WM in different types of AD. This method was applied to a reference public dataset (OASIS). The accuracy of our system to extract WM was 85%. Therefore, with this system, WM volume segmentation, assessment of its features and classifying them were feasible and trustable in MR images of AD. This result is a marked improvement on the state-of-the-art in the prognostic precision of AD.

Recent Publications:

1. Colucci L, Molino I, Amenta F and Gaeta G L (2018) Desire to institutionalize in Alzheimer's caregivers: An empirical analysis on Italian data. Arch Gerontol Geriatr. 75:165–170.
2. Rea R, Carotenuto A, Traini E, Fasanaro A M, Manzo V, et al. (2015) Apathy treatment in Alzheimer's Disease: Interim results of the ASCOMALVA trial. J Alzheimers Dis. 48(2):377–83.
3. Colucci L, Bosco M, Fasanaro A M, Gaeta G L, Ricci G, et al. (2014) Alzheimer's disease costs: what we know and what we should take into account. J Alzheimers Dis. 42(4):1311–24.

Biography

Francesco Amenta graduated from the University of Rome as a Doctor of Medicine and Surgery in 1977. He received his Specialist Degree in Neurology in 1981. Since 1978, he has been teaching and working on research projects. In November 1992, he assumed his present position at the University of Camerino, Italy. He has more than 500 research articles and around 7780 citations.

Francesco.Amenta@unicam.it

Magdalena Temmel et al., J Alzheimers Dis Parkinsonism 2018, Volume 8
DOI:10.4172/2161-0460-C3-043

Distribution pattern of amyloid beta peptides and aquaporin 4 proteins in Alzheimer's disease and associated transgenic mouse models

Magdalena Temmel[1, 2], **Karin Lanegger**[3], **Johannes Attems**[4], **Jörg Neddens**[2], **Heinz Hutter**[5] and **Birgit Hutter-Paier**[2]
[1]Karl-Franzens-Universität Graz, Austria
[2]QPS Austria GmbH, Austria
[3]FH Joanneum Graz, Austria
[4]Newcastle University, UK
[5]Medical University of Graz, Austria

The amyloid cascade hypothesis postulates that accumulation of Aβ is an initial event in the pathology of Alzheimer's disease (AD) and represents overall one of the two main histopathological features. This study aimed at investigating the distribution and clearance of amyloid beta peptides in AD brain tissue as well as in two associated mouse models — APPSL and 5xFAD. We histologically quantified various parameters: first, we evaluated the absolute distribution pattern of amyloid beta peptides; second, we investigated the occurrence of cerebral amyloid angiopathy (CAA) and third, we examined the localization of aquaporin 4 (AQP4) water channels. We immunofluorescently labelled sections from human AD patients at different Braak stages (I/II, III/IV and V/VI) and brain sections from the two transgenic mouse lines across different time points. Quantifications of labelled tissues revealed that overall amyloid-beta intensity, significantly increased in humans at advanced Braak stages and both transgenic mice during aging. Evaluation of CAA, which is defined as amyloid-β deposition in vascular walls, was technically challenging in human tissue. However, APPSL and 5xFAD transgenic mice developed severe CAA with increasing age. Finally, studying AQP4 protein distribution as a major participant of the glymphatic system involved in the clearance of amyloid beta revealed that in AD, parenchymal AQP4 increased with disease progression, while perivascular AQP4 was decreased at early AD stages and returned back to baseline levels at late stages. Furthermore, AQP4 protein was accumulated in close proximity to amyloid beta plaques. A similar result was observed in APPSL and 5xFAD mouse brain tissue. Together, these data show that these two mouse models are valuable to study amyloid-beta related pathways in AD.

Biography

Magdalena Temmel is currently a PhD student of Natural Sciences at the Karl-Franzens University of Graz, Austria. In her PhD thesis, she focuses on investigating high-fat diet induced changes in the A53T-mutated alpha-synuclein expressing mouse model of Parkinson's disease. She is performing all her project-associated works at QPS Austria Neuropharmacology, which is a leading CRO focusing on central nervous system, orphan and mental disorders. The research presented here was part of her Master's thesis that was performed as a cooperation project between several universities.

magdalena.temmel@edu.uni-graz.at

Notes:

Roland Rabl et al., J Alzheimers Dis Parkinsonism 2018, Volume 8
DOI:10.4172/2161-0460-C3-043

A dry land behavioral test to analyze Alzheimer's disease mouse models for spatial learning deficits

Roland Rabl, Stephan Kurat, Iera Hernandez, Estibaliz Santiago Stefanie Flunkert and **Birgit Hutter-Paier**
QPS Austria GmbH, Austria

Alzheimer's disease (AD) is a progressive neurodegenerative disease that manifests as memory loss, cognitive dysfunction and dementia. Spatial learning and memory of AD rodent models is often assessed via navigational cues in mazes, most popular are the Morris water maze and the dry-land Barnes maze. Improved performance over sessions or trials is thought to reflect learning and memory. The Barnes maze is considered less stressful compared to water mazes and also useful for rodent models with minor motor deficits. The Barnes maze is a circular platform top with several holes equally spaced around the perimeter edge. Symptomatic animals of two transgenic AD mouse models were analyzed in the Barnes maze test using a hippocampal learning protocol. Barnes maze results were analyzed for escape latency, speed, distance traversed, number of target entries, and the abidance in the target quadrant during the probe trial. Data of different models were compared. Our data show that the dry-land behavioural test apparatus of the Barnes maze is a valuable tool to analyse learning and memory deficits of different rodent AD models. This method might be an effective alternative to the Morris water maze while causing less stress to the animals.

Recent Publications:

1. Kutzsche J, Schemmert S, Tusche M, Neddens J, Rabl R, et al. (2017) Large-scale oral treatment study with the four most promising D3-derivatives for the treatment of Alzheimer's disease. Molecules 22(10).
2. Rabl R, Breitschaedel C, Flunkert S, Duller S, Amschl D, et al. (2017) Early start of progressive motor deficits in line 61 α-synuclein transgenic mice. BMC Neurosci. 18(1):22.
3. Rabl R, Horvath A, Breitschaedel C, Flunkert S, Roemer H, et al. (2016) Quantitative evaluation of orofacial motor function in mice: The pasta gnawing test, a voluntary and stress-free behavior test. J Neurosci Methods. 274:125–130.
4. Amschl D, Neddens J, Havas D, Flunkert S, Rabl R, et al. (2013) Time course and progression of wild type α-synuclein accumulation in a transgenic mouse model. BMC Neurosci. 14:6.
5. Flunkert S, Hierzer M, Löffler T, Rabl R, Neddens J, et al. (2013) Elevated levels of soluble total and hyperphosphorylated tau result in early behavioral deficits and distinct changes in brain pathology in a new tau transgenic mouse model. Neurodegener Dis. 11(4):194–205.

Biography

Roland Rabl is a student of Biology at the University of Graz, Austria. In parallel, he pursued a career as Behavioral Test Expert, Preclinical Research Associate and Deputy Researcher of the in vivo Research Team at QPS Austria since 2007. He is the First Author of two and Co-author of three publications in reputed journals. He has participated in several international conferences by presenting his research in oral (ADPD 2013, Florence, Italy) and poster presentations.

roland.rabl@qps.com

Notes:

Cinar Nilgun et al., J Alzheimers Dis Parkinsonism 2018, Volume 8
DOI:10.4172/2161-0460-C3-043

An Overview of caregiver burden in dementia care

Cinar Nilgun, Sahin Sevki, Ates Florentina Miruna, Karsidag Sibel
Maltepe University, Faculty of Medicine, Department of Neurology, Istanbul.

Background: We aimed to investigate the effects of behavioral disorders on the quality of life, care burden, anxiety and depression of Alzheimer's Disease caregivers.

Method: A hundred and seven caregivers of Alzheimer's Disease (AD) patients were enrolled to the study. Among AD patients, 37 were home care (group 1), 33 were using day care home (group II) part time and 37 were staying in the nursing home (group III) full time. Patients were classified, according to dementia severity based on the clinical dementia rating scale (CDR). CDR score of group I and II patients were 1-2 and 3 for group III patients. For anxiety and depression "Beck anxiety" and "Beck depression scales"; for life quality "World Health Organization Quality of Life Assessment short version (WHOQOL-Bref)"; for behavior disorders "Cohen-Mansfield Agitation Inventory (CMAI)" and for caregiver burden "Zarit Caregiver Burden Interview (ZCBI)" were applied to all caregivers. Turkish validations of all tests were used.

Results: The average age of the groups were 52±11years, 64±12 years and 53±15 years respectively. There was no statistically significant difference between the groups in terms of the duration of care of the patients. Beck depression scale was significantly higher in group 3 (group I, II and III 13±9, 11±7 and 27±16 respectively; $p<0,0001$). WHOQOL-Bref test scores were significantly lower in group III ($p<0,0001$) and CMAI score was significantly higher in group III patients (group I, II and III; 50±3, 43±16, 71±42 respectively, $p=0,01$). There was no statistically significant difference between the groups in terms of ZCBI.

Conclusion: The depression scales, quality of life and caregiver burden of the caregivers are effected due to the fact that the patients staying in the nursing home are more aggressive. The caregiver burden may be reduced if behavioral disturbances and environmental factors in the nursing home are corrected

cinarnilgun@gmail.com

Notes:

11th International Conference on

Alzheimers Disease & Dementia

May 24-25, 2018 | Vienna, Austria

Accepted Abstracts

Euro Dementia 2018

J Alzheimers Dis Parkinsonism 2018, Volume 8
DOI:10.4172/2161-0460-C3-043

Clinical pharmacokinetics and pharmacodynamics demonstrate once-weekly CorplexTM donepezil transdermal system as a therapeutic alternative to daily oral Aricept

Bobby Singh
Cadi Ayyad University Marrakech-Morocco

Aricept® (donepezil hydrochloride) is the most commonly used therapy worldwide in the treatment of Alzheimer's disease as a daily tablet. Patient adherence to therapy is poor due to the required daily administration, and gastro-intestinal (GI) adverse effects that may be associated with the oral route of administration. The once-weekly delivery with the donepezil transdermal system (TDS) using the CorplexTM technology platform is expected to improve adherence by providing a convenient once-weekly patch, and potentially improve the GI tolerability profile by bypassing the GI tract. A phase 1, multiple-dose, randomized crossover study in healthy subjects was conducted, with the primary objective of comparing the steady-state pharmacokinetics (PK) and pharmacodynamics (PD) of CorplexTM Donepezil TDS, targeted to deliver 10 mg/day of donepezil, and the oral Aricept® 10 mg after several weeks of treatment. The secondary objectives were assessment of safety and tolerability (including skin tolerability). Based on the results of our earlier single-dose phase 1 PK study, we projected that at steady state, the maximum plasma concentration and the area under the curve of plasma concentration of donepezil with the CorplexTM Donepezil TDS would be similar to the same measurements of oral Aricept®. The steady state PKPD data from the current clinical study is consistent with our projections, and demonstrated bioequivalence between once-weekly CorplexTM Donepezil TDS and oral Aricept®. Sustained and controlled delivery of donepezil was observed in the plasma concentrations of all subjects treated with once-weekly CorplexTM Donepezil for four consecutive weeks. Subjects treated with once-weekly CorplexTM Donepezil, experienced acceptable skin tolerability and no systemic adverse events unique to transdermal delivery. The gastrointestinal tolerability was much improved with CorplexTM Donepezil TDS to oral Aricept®. The PKPD results from this phase 1 multiple dose study support the feasibility of a convenient, safe and effective once-weekly dosing regimen as compared to daily oral administration. A registration pivotal pharmacokinetic is underway to demonstrate bioequivalence between the once-weekly CorplexTM Donepezil TDS and oral Aricept® at steady-state. Bioequivalence studies are designed to assess the biological equivalence of pharmaceutical products based on their PK profiles. They are relatively short in duration of treatment, and provide a development path that is substantially less costly and more streamlined compared to standard clinical development programs.

bobby@coriumtech.com

J Alzheimers Dis Parkinsonism 2018, Volume 8
DOI:10.4172/2161-0460-C3-043

Development and progression of Alzheimer's disease in Sprague-Dawley rats administered with streptozotocin intrahippocampally

Gurmeet Kaur Surindar Singh[1, 2], **Mazzura Wan Chik**[1] and **Nurul Aqmar Mohd Nor Hazalin**[2]
[1]Universiti Teknologi MARA (UiTM)—Puncak Alam Campus, Malaysia
[2]Universiti Teknologi MARA (UiTM)—Shah Alam Campus, Malaysia

Alzheimer's disease (AD) rat model can be reproduced via intrahippocampal (IH) administration of streptozotocin (STZ) in the rat's brain. The hippocampus holds a large amount of insulin receptors (IRs) which are very sensitive to STZ. IRs' exposure to STZ prompted memory impairment and production of amyloid-beta plaques related to AD pathogenesis. The present study is conducted to investigate the effects of IH-STZ administration on the progression of memory impairment and formation of amyloid β (Aβ) at 3, 6 and 12 weeks of STZ-treatment. Sixty male Sprague-Dawley rats (350–450 g) were divided into groups of control (no treatment), sham-operated (received PBS) and IH-STZ treated (G3w, G6w and G12w). STZ (3 mg/kg; 5 µl) was administered bilaterally as a single injection into the dorsal hippocampus of the rats. The memory impairment was studied a week before decapitation using Morris water maze test. The rats were sacrificed at week 3, 6 and 12 after STZ administration and presence of Aβ plaques were studied using the immunohistochemistry. All IH-STZ rats showed significant results in escape latency, total distance travelled and swimming speed ($p<0.05$) when compared to sham indicating memory impairment. In conclusion, STZ when injected intrahippocampally, developed memory impairment as early as two weeks after STZ treatment in the rats.

gurmeet9952@puncakalam.uitm.edu.my

Notes:

J Alzheimers Dis Parkinsonism 2018, Volume 8
DOI:10.4172/2161-0460-C3-043

The role of brain FDG-PET in the diagnosis of Creutzfeldt-Jakob disease (CJD): A case report

L Valzolgher[1], **F Ebner**[1], **F Lubian**[1], **E Aspmair**[1], **M Farsad**[2] and **A March**[1]
[1]Memory Clinic, Geriatric Department
[2]Nuclear Medicine Hospital of Bolzano

Objective: Creutzfeldt-Jakob disease (CJD) is a rare and fatal neurodegenerative disease, whose main clinical features are rapidly progressive mental deterioration, myoclonus, ataxia, and visual disturbances. Its clinical diagnosis can be challenging, and definitive confirmation is obtained by brain biopsy. However, its role has been established by positive 14-3-3 (CSF) cerebrospinal fluid essay, supportive electroencephalogram (EEG) findings and magnetic resonance imaging (MRI). Besides, brain FDG-PET shows high specificity and even higher sensitivity than MRI in improving diagnostic accuracy, especially in the early stages of the disease.

Materials & Methods: JM, male patient, 79 years old, was first evaluated in October 2017 because of subjective gait impairment, initial word finding difficulties, sleep disturbances, emotional liability and anxiety. He had no previous pathological history and was not on medication. The neurological examination was normal. At that time we began treatment with benzodiazepines (BDZ) and selective serotonin reuptake inhibitor (SSRI). After a month he presented again with progressive aphasia, ataxia and myoclonus in the left hemisoma. He was then admitted in our department to undergo the investigations for prion disease.

Results: MRI in our case was not conclusive, failing to show the typical signal abnormalities in caudate nucleus and/or putamen on diffusion-weighted imaging (DWI). The electroencephalogram (EEG) showed only diffuse electrical brain abnormalities. Therefore, we performed a brain FDG-PET scan, which showed a clear hypo-metabolic pattern in the left caudate and in the left parietal-temporal-occipital cortex; a mild hypo-metabolism in the left frontal and right occipital regions. These findings, when present, are suggestive of CJD. In the next two months, the patient progressively developed an akinetic mutism which inexorably worsened until he expired four months after the initial onset of the symptoms. The CSF results came after his death showing positive 14-3-3 results, high total tau levels (2131 pg/ml) and positive RT-QuIC which confirmed the diagnosis of CDJ.

Conclusions: While brain biopsy remains the only confirmatory diagnosis of CJD, a role has been established for CSF examination, and MRI findings. Brain FDG-PET is another non-invasive, easy performing and rapid investigation which has proven to be of great diagnostic support when other investigations are not available or inconclusive.

Lauravalzolgher@hotmail.com

Notes:

J Alzheimers Dis Parkinsonism 2018, Volume 8
DOI:10.4172/2161-0460-C3-043

Caregiver burden of informal caregivers of patients referring to the memory clinic of Bolzano

L Valzolgher[1], **F Ebner**[1], **F Lubian**[1], **E Aspmair**[1], **M Farsad**[2] and **A March**[1]
[1]Memory Clinic, Geriatric Department, Hospital of Bolzano
[2]Nuclear Medicine Department, Hospital of Bolzano

Objectives: To measure the caregiver burden and the risk for psychosomatic problems among family caregivers of patients referring to the Memory Clinic at the Hospital of Bolzano for the diagnosis of neurocognitive disorders. We also analyze the factors related to the burden in the subgroup with higher burden.

Method: From June 2015 to September 2017, 913 patients came with their caregivers to undergo diagnostic procedures for neurocognitive disorders, including clinical and neuropsychological evaluation, blood samples, and neuroimaging. To measure the burden, we used the BSFG (Burden Scale for Family Caregivers) a 28-item questionnaire validated for both Italian and German, since it is a bilingual community. The level of the burden measured by the total score, can be divided into 3 levels: 0–35 no or minimal burden; from 36–45: minimal to moderate burden and score above 46 high burden. 903 caregivers who complete the self-administered BSFG were included. For this analysis a subgruop of 104 patients were considered (evaluated for three consecutive months from 20/2 untill 20/4/2017). Disability was measured by BADL/IADL, comorbidity by the CIRS-index.

Results: The age of the patients ranged between 65–95 years (average age 79.81±6.27). 65% of the patients were women and 35% were men. The majority of the caregivers were female (60.6%), male were 35.6%, and in 3.8 % of the cases more caregivers were involved. 60% caregivers were children (including children-in-law); 27% were spouses (wives/husbands); 13% had other relations (sisters/brothers, cousins, grandchildren, nephews, nieces). The score obtained in the BCSF ranged between 0–77; the average score was 26. 13.5% caregivers showed high burden, 15.4% caregivers had minimal to moderate burden while and the majority of caregivers 71.1% showed no or minimal burden. In the comparison between the two groups (minimal vs. moderate-high burden), in the subgroup with high-moderate burden, significant factors were high level of disability, high comorbidity and the presence of neuropsychological symptoms.

Conclusion: Caregivers of family members with dementia are exposed to depressive symptoms and physical problems. The burden of the caregiver can impact the quality of life of both patients and family members, and it is known to be associated with negative outcomes such as risk for institutionalisation, worse prognosis, higher social and health costs.

Lauravalzolgher@hotmail.com

Notes:

J Alzheimers Dis Parkinsonism 2018, Volume 8
DOI:10.4172/2161-0460-C3-043

Protective effects of phycobiliprotein on streptozotocin induced behaviour and biochemical deficits in experimental model of Alzheimer's disease

Madhunika Agrawal[1], **Yamini P**[1], **Seema Bansal**[2] and **Kanwaljit Chopra**[1]
[1]Panjab University, India
[2]Postgraduate Institute of Medical Education and Research, India

The present study was designed to explore the neuroprotective efficacy of a promising antioxidant and anti-inflammatory phycobiliprotein (PB) against intracerebroventricular (ICV)-streptozotocin (STZ) induced cognitive impairment in rats. STZ (3 mg/kg) was introduced in rats' brains on the 1st and 3rd day, bilaterally followed by treatment with PB or rivastigmine for 28 days. Estimation of alteration in the behaviour of treated and untreated groups of rats were done by Morris water maze (MWM), elevated plus maze and open field test. Afterwards, the rats were sacrificed and brains were harvested for the evaluation of various biochemical parameters in post mitochondrial supernatant fractions of cerebral cortex and hippocampus. The levels of several oxidative stress (superoxide dismutase-SOD, catalase-CAT, lipid peroxidation-LPO) and inflammatory (TNF-α, NF-κB) biomarkers were analyzed and the activity towards acetylcholinesterase was also investigated by choline acetyltransferase (ChAT) assay. The amelioration of ICV-STZ induced spatial learning and memory impairment by PB could be associated, partially, to the downregulation of NF-κB activity and the mitigation of expression of neuroinflammatory cytokines, along with modulation of cholinesterase, suggesting that PB may be explored further as a potent candidate for Alzheimer's disease therapy.

madhunika21@gmail.com

Notes:

J Alzheimers Dis Parkinsonism 2018, Volume 8
DOI:10.4172/2161-0460-C3-043

Serum levels of high molecular weight adiponectin and leptin in elderly patients with dementia

Samer G Hanna, Marwa A Saad, Mohamed A Mehanna and **Dalia A Alneily**
[1]Alexandria University, Egypt
[2]Postgraduate Institute of Medical Education and Research, India

Dementia is a progressive impairment of cognitive function, sufficient to cause functional decline. It may affect up to 28 million individuals worldwide; 30% of those older than 85 years. Adiponectin is a cytokine released by the adipose tissue, present in the cerebrospinal fluid of human. It has important functions in the central nervous system. Leptin is another cytokine that has implications in cognitive decline and dementia processes. The aim of the present study was to determine the serum levels of adiponectin and leptin in elderly patients with dementia. 60 subjects aged 65 years and older were involved and divided into two groups; Group (I): 40 demented patients, and Group (II): 20 age and sex matched healthy subjects as a control group. Participants with dyslipidemia, hypertension, diabetes mellitus, chronic liver diseases, chronic kidney diseases, thyroid disorders, or morbid obesity were excluded from the study. All participants were subjected to Mini-Mental State Exam (MMSE) and Montreal Cognitive Assessment (MoCA) tests; serum adiponectin and leptin levels were measured. Serum adiponectin was higher, while leptin levels were lower in demented patients. A significant negative correlation between serum levels of adiponectin and both MMSE and MoCA scores, while a high positive correlation was noted between serum levels of leptin and both MMSE and MoCA scores. We concluded that serum adiponectin and leptin were strongly associated with dementia in elderly patients, which may help in understanding of its pathogenesis and emergence of new drugs for better outcome of this devastating disease.

drmarwasaad74@gamil.com

Notes:

J Alzheimers Dis Parkinsonism 2018, Volume 8
DOI:10.4172/2161-0460-C3-043

The enigma of Eroom's law and the Wall Street math stifling Alzheimer's drug discovery

Max Tokarsky
InvestAcure, USA

As the prevalence of Alzheimer's disease (AD) grows, so does the costs it imposes on the society. Yet, despite a significant number of drugs showing promise in animal models, progress is being stifled by a breakdown in the return on investment (ROI) model at the clinical stage of drug discovery. For complex diseases like Alzheimer's, research progress depends on the trial and error of real-world phase 1 & 2 clinical trials. Due to the high cost of clinical research, this stage of drug discovery depends on industry-led investment. The average cost of developing a new drug, per billion US dollars spent on R&D, has doubled roughly every nine years since 1950. That means, adjusted for inflation, it costs 80 times more to develop a new drug today than it did in 1950. The observation of this trend was coined Eroom's law by industry analyst Jack Scannell in 2012, writing in Nature Reviews Drug Discovery. The current ROI from internal R&D in the pharmaceutical industry as a whole is an average 3.7%. For Alzheimer's, this model has broken down altogether and has led most major pharmaceuticals to downsize or close their Alzheimer's research divisions. A structural solution to the current financial model is needed if we are to make progress to a cure. InvestAcure's Public Benefit Corporation model offers one such solution, by transitioning investment leadership from the current venture capital model to micro-investment by those impacted by the disease.

mtokarsky@investacure.com

Notes:

J Alzheimers Dis Parkinsonism 2018, Volume 8
DOI:10.4172/2161-0460-C3-043

In *silico* identification of novel ApoE4 inhibitor for Alzheimer's disease therapy

Muhammad Asif Rasheed
COMSATS Institute of Information Technology–Sahiwal, Pakistan

ApoE4 is a major genetic risk factor due to its role in the increased incidence of developing Alzheimer's disease. The study was designed to predict such compounds that may be helpful in designing drugs to suppress the over activity of ApoE4 protein. 22 natural compounds (marine, microorganism and plant derivative) were used as inhibitors and docked with ApoE4 (PDB id: 1B68). Six synthetic compounds (in clinical trials) were docked with target protein to compare and analyze the docking results with natural compounds. Compounds, S-allyl-l-cysteine, epicatechin gallate and fulvic acid show high binding affinity i.e. -7.1, - 7 and -7, respectively. Epicatechin gallate shows hydrogen bond with Gln156 and Asp35; fulvic acid shows hydrogen bonding with Glu27. In case of synthetic compounds, tideglusib did not show hydrogen bonding with any amino acid residue of ApoE4 but showed high binding affinity of -7.2, same as that of the natural compound s-allyl-l-cysteine, which showed high binding affinity of -7.1 but did not show hydrogen bonding with any amino acid residue. Protein-protein interactions of ApoE4 show physical and functional interaction with related proteins. Our study predicts a compound epicatechin gallate on the basis of binding affinity and hydrogen bonding with amino acid residue as a potential lead compound which may be used as an inhibitor.

asif.rasheed@ciitsahiwal.edu.pk

Notes:

J Alzheimers Dis Parkinsonism 2018, Volume 8
DOI:10.4172/2161-0460-C3-043

Dementia and the cycle of role reversal

Lilly Naomi
Duke University, USA

My grandmother is an 88-year-old African American woman with dementia. My project seeks to explore the role dementia has played within my family, specifically, how the cycle of role reversal has shaped the matriarch position my grandmother once held within my family. Discussion of the topic will be facilitated by my grandmother, her children, and grandchildren. Literary works include publications that focus on dementia as a symptom and dementia as it pertains to the role of caretakers. These works were used to demonstrate differences between written text and what it means to face dementia outside of text. The final project will take the form of a documentary that seeks to capture the emotions and realities my family has had to face as a result of my grandmother's condition. The documentary is different from a paper because in many ways, it serves as a case study that helps to build personality and impact. This personality and impact will ultimately help viewers paint an image of what life looks like for a person with dementia and how the conditions that are attributed to dementia, impact surrounding individuals (i.e., family). The documentary will be guided by the recognition of a role reversal and reflections on memories before and after my grandma's condition began and continued to worsen. These memories help to allow individuals to recognize the changes dementia can have on what may be considered a person's everyday routine. These memories will also help viewers connect to the content due to the raw nature of the responses given by interviewees and the unfortunate realities dementia presents. The analysis of the interviews I have conducted has portrayed general disdain for my grandma's health status, but a fondness and admiration that can be attributed to the way she has helped to unite and lead my family throughout the years. This admiration was reflected heavily amongst my family members and their acceptance of the role reversal, due to the nurturing my grandmother has provided us throughout the years. Evidence for this claim can be greatly attributed to the heartfelt answers provided by family members. These answers help to paint the image of a matriarch and a change in the hierarchal roles within the family at large.

naomi.lilly@duke.edu

Notes:

J Alzheimers Dis Parkinsonism 2018, Volume 8
DOI:10.4172/2161-0460-C3-043

Dementia! A new approach to a difficult condition

Purnima Sreenivasan
Health Aim Inc, USA

Dementia is a leading topic not just for researchers but also for families and caregivers involved in the care of patients suffering from them. It is not a sign or symptom of "Healthy Aging", but a loss of memory as a function of the brain. Dementia is not Alzheimer's and vice versa. Despite the advances in dementia, the research and the medications available to slow the progress of dementia, the understanding goes far and beyond the common man. To some it is a dreadful thing to happen in later age and to some it is a burden for the rest of the patient's life, while to others it is sense of disconnection to the society or community and family. What have we learned about dementia? What have we unlearned about dementia? What have we not thought or even considered in dementia research? What have we missed in our focus on dementia? Pharmaceuticals, nutraceuticals, nutrition, physical activity, mental activity and more have been considered. We still cannot figure why some suffer from dementia and some do not. In my own career of more than 15 years caring for persons and their caregivers in the world of dementia, I have learned a few salient points. One size does not fit all and nor should it? Don't you agree? If so, come join me in unmasking dementia as a health care futurist, dementia and aging life care specialist/consultant and healthtech entrepreneur!

purnimars@yahoo.com

Notes:

J Alzheimers Dis Parkinsonism 2018, Volume 8
DOI:10.4172/2161-0460-C3-043

Drug interactions: A crucial issue in treatment of patients with Alzheimer's disease

Sara Ataei[1], **Maryam Noroozian**[2] and **Alireza Kargar**[3]
[1]Hamedan University of Medical Sciences, Iran
[2]Tehran University of Medical Sciences, Iran
[3]Drug and Poison Information Center—Ministry of Health, Iran

Introduction: One of the crucial consequences of aging population is the higher prevalence of age related disorders. Hence, polypharmacy and its negative impact is an inevitable phenomenon of this change in the health condition of the elderly in general and Alzheimer's disease (AD) specifically. Considering the importance of drug interactions in these frail patients, it seems that the professionals who work in this field should pay more attention into this issue, especially in the developing countries with limited resources in their health system.

Aim: Our goal has been to provide a practical and available brief study about important drug interactions with Alzheimer's medications for professionals who work in the field of dementia.

Method: The PubMed and Elsevier databases were searched for surveys published over the recent five years. Other applicable resources like UpToDate subscription based resource database and American Geriatric Society Updated Beers Criteria were used. The interaction between acetylcholinesterase inhibitors (AChEIs) and memantine with the current medications which are prescribed for the treatment of common chronic disorders in the elderly patients with AD have been studied. We have selected medications which are allowed to be used in aged patients with AD. Therefore, the medications which are contraindicated or should be avoided (like clidinium-C and and cimetidine) have not been included in this review.

Results: We have listed the drug interactions between AChEIs and memantine with medications used for common chronic disorders in patients with AD. Several tables have been designed to show these interactions in the diverse classes of medications.

Conclusion: An interdisciplinary "geriatric assessment" is essential for a comprehensive evaluation of the prescriptions in the patients with AD who receive AChEIs and memantine. Moreover, raising awareness of the professionals and families about careful drug regimen review is essential to identify potentially inappropriate or hazardous medications to modify the treatment protocol. This assessment might reduce the length of hospital admissions, related costs and patient mortality and morbidity.

s.ataei@umsha.ac.ir

Notes:

J Alzheimers Dis Parkinsonism 2018, Volume 8
DOI:10.4172/2161-0460-C3-043

Perinatal asphyxia may influence the level of β-amyloid (1–42) in CSF

Torkil Benterud
Drammen Hospital, Norway

Importance: This is the first study indicating a possible correlation between perinatal asphyxia and Alzheimer´s disease, later in life.

Objective: Total tau (t-tau), phosphorylated tau (p-tau) and β-amyloid (1–42) (Aβ42) in CSF are useful biomarkers in neurodegenerative diseases. The aim was to study the role of these and other CSF biomarkers (t-tau, p-tau, Aβ42, S100B and neuron-specific enolase-NSE), during hypoxia-reoxygenation in a newborn pig model.

Design: 30 newborn pigs were included. One control group (n=6) and two experimental groups (n=24) were exposed to global hypoxia (8% O2) until BE reached -15 mmol/l (moderate hypoxia) or -20 mmol/l (severe hypoxia) or mean BP fell below 20 mmHg. CSF was collected 9.5 hours after the intervention. The study was conducted between October 2012 and January 2013.

Results: The level of Aβ42 in CSF was significantly lower for the pigs exposed to severe hypoxia compared with the control group, 922 (SD+/-445) pg/ml vs. 1290 (SD+/-143) pg/ml, ($p<0.05$) and there was a non-significant tendentious reduction of Aβ42 in the group exposed to moderate hypoxia. Regarding t-tau and p-tau, there were no significant differences between the intervention groups and the control group. A significantly higher level of S100B was observed in the CSF of pigs receiving hypoxia than in the control group. Further on, there was a moderate negative correlation between the levels of Aβ42 and S100B in CSF, as well as a moderate negative correlation between lactate in blood at the end of hypoxia and Aβ42 in CSF

Conclusion & Relevance: The reduced level of Aβ42 in CSF could reflect an effect on neurons after neonatal hypoxia and may indicate that perinatal hypoxia could be a risk factor for Alzheimer´s disease later in life. These findings show that CSF Aβ42 and S100B are significantly changed in neonatal pigs subjected to hypoxia compared to controls, thus they may be valuable biomarkers after perinatal asphyxia.

torkilben@yahoo.no

Notes:

J Alzheimers Dis Parkinsonism 2018, Volume 8
DOI:10.4172/2161-0460-C3-043

Improving patient/caregiver outcomes through enhanced teaching-IE3 as an educational tool

William Jessee
Cleveland Clinic Abu Dhabi, UAE

Some of the most common challenges faced by both patients with dementia and Alzheimer's, and caregivers/families of these patients are the understanding of what they should do. Better care from the medical end is possible if we implement a few small changes into our delivery of care, such that explanations and teachings are better understood, better learned and able to be utilized by the patient and caregiver. IE3 is my acronym for a great teaching method that is easy to implement and highly effective.

wlj1@mac.com

Notes:

J Alzheimers Dis Parkinsonism 2018, Volume 8
DOI:10.4172/2161-0460-C3-043

Cis P-tau is induced in clinical and preclinical brain injury and contributes to post-injury sequelae

Xiao Zhen Zhou[1,2,3], **Onder Albayram**[1,2,3], **Asami Kondo**[1,2,3], **Rebekah Mannix**[4], **Colin Smith**[5], **Cheng-Yu Tsai**[1,2,3] and **Chenyu Li**[1,2,3]
[1]Harvard Medical School
[2]Beth Israel Deaconess Medical Center
[3]Center for Life Science

Traumatic brain injury (TBI) is characterized by acute neurological dysfunction and associated with the development of chronic traumatic encephalopathy (CTE) and Alzheimer's disease. We previously showed that cis phosphorylated tau (cis P-tau), but not the trans form, contributes to tau pathology and functional impairment in an animal model of severe TBI. Here we found that in human samples obtained post TBI due to a variety of causes, cis P-tau is induced in cortical axons and cerebrospinal fluid and positively correlates with axonal injury and clinical outcome. Using mouse models of severe or repetitive TBI, we showed that cis P-tau elimination with a specific neutralizing antibody administered immediately or at delayed time points after injury, attenuates the development of neuropathology and brain dysfunction during acute and chronic phases including CTE-like pathology and dysfunction after repetitive TBI. Thus, cis P-tau contributes to short-term and long-term sequelae after TBI, but is effectively neutralized by cis antibody treatment. Our results state showed that axonal injury and cis P-tau induction in clinical severe TBI; CSF cis P-tau correlates well with outcome in TBI patients; cis P-tau found in deeper brain regions in CTE patients; cis mAb improves acute phase outcomes after ssTBI; cis mAb improves chronic phase outcomes after ssTBI; delayed cis mAb administration improves outcomes after ssTBI; - cis mAb prevents CTE pathology and dysfunction after rmTBI and also the efficacy of cis mAb in improving outcomes across studies.

xzhou@bidmc.harvard.edu

Notes:

J Alzheimers Dis Parkinsonism 2018, Volume 8
DOI:10.4172/2161-0460-C3-043

Antibody against early driver of neurodegeneration cis P-tau blocks brain injury and tauopathy

Xiao Zhen Zhou[1,2,3], **Onder Albayram**[1,2,3], **Asami Kondo**[1,2,3], **Rebekah Mannix**[4], **Colin Smith**[5], **Cheng-Yu Tsai**[1,2,3] and **Chenyu Li**[1,2,3]
[1]Harvard Medical School
[2]Beth Israel Deaconess Medical Center
[3]Center for Life Science

Traumatic brain injury (TBI), characterized by acute neurological dysfunction, is one of the best known environmental risk factors for chronic traumatic encephalopathy and Alzheimer's disease, the defining pathologic features of which include tauopathy made of phosphorylated tau protein (P-tau). However, tauopathy has not been detected in the early stages after TBI, and how TBI leads to tauopathy is unknown. Here we find robust cis P-tau pathology after TBI in humans and mice. After TBI in mice and stress in vitro, neurons acutely produce cis P-tau, which disrupts axonal microtubule networks and mitochondrial transport, spreads to other neurons, and leads to apoptosis. This process, which we term 'cistauosis', appears long before other tauopathy. Treating TBI mice with cis antibody blocks cistauosis, prevents tauopathy development and spread, and restores many TBI-related structural and functional sequelae. Thus, cis P-tau is a major early driver of disease after TBI and leads to tauopathy in chronic traumatic encephalopathy and Alzheimer's disease. The cis antibody may be further developed to detect and treat TBI, and prevent progressive neurodegeneration after injury.

Results

Here we used cis P-tau mAbs to demonstrate the presence of, and specifically eliminate, pathogenic cis P-tau in clinically relevant in vitro and in vivo models of sport- and military-related TBI. We detected robust cis P-tau signals after sport- and military-related TBI in humans and mice, and in stressed neurons. Following TBI or neuronal stress, cis P-tau induces cistauosis well before previously identified tauopathy is apparent. Treating TBI mice with cis mAb ablates cis P-tau and eliminates cistauosis, prevents the development of widespread tauopathy and restores histopathological and many functional outcomes of TBI. Cistausosis is an early precursor of previously described tauopathy and an early marker of neurodegeneration that can be blocked by cis mAb. We previously showed that cis P-tau has an early pathological role in Alzheimer's disease27–34,42. Our current data provide a direct link from TBI to CTE and Alzheimer's disease, and suggest that cistauosis is a common early disease mechanism in TBI, CTE and Alzheimer's disease, and that cis P-tau and its mAb may be useful for early diagnosis, prevention and therapy for these devastating diseases. Atlanta (GA): Centers for Disease Control and Prevention.

xzhou@bidmc.harvard.edu

Notes: