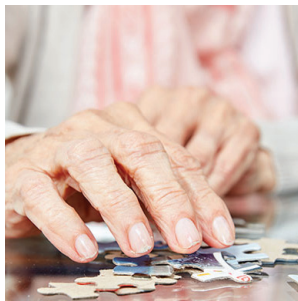# Scientific Tracks & Sessions
# November 25, 2019

# *Alzheimers 2019*

13th International Conference on

## Alzheimers Disease and Dementia

November 25-26, 2019 | Frankfurt, Germany

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## Aortic stiffness and older age predict sharper cognitive performance decline in the Elsa-Brasil Cohort

**Sandhi Maria Barreto**

Universidade Federal de Minas Gerais, Brazil

**Background and Purpose**: Aortic stiffness has been associated with cognitive decline and dementia, but the results are inconsistent. This study investigated the longitudinal association of aortic stiffness and age with decreased cognitive performance in three cognitive tests.

**Methods**: We included 6,927 participants (mean age 58.8 years) without cerebrovascular disease or cognitive impairment at baseline (2008-2010) who participated at the 2nd wave (2012-2014) of the ELSA-Brasil (interval between visits ranging from 2-6 years). Cognitive performance was evaluated by memory, phonemic and semantic verbal fluency, and trail-B tests, applied at both cohort visits. Associations with the carotid femoral pulse wave velocity (cf-PWV) and age at baseline were investigated using linear models with mixed effects after adjusting for confounders.

**Results**: After all the adjustments, including for systolic blood pressure, the interaction term cf-PWV*time was statistically significant for memory and verbal fluency tests, indicating that the higher the cf-PWV at baseline the faster the decline in cognitive performance in these tests in the 2nd wave. The interaction term age*time was statistically significant for all cognitive tests, suggesting that increasing age at baseline was also associated with a faster decline in cognitive performance between waves.

**Conclusion**: In this relatively young cohort, and after a relatively short interval, an increased aortic stiffness at baseline was associated with a sharper decline in cognitive performances in memory and verbal fluency, independently of systolic blood pressure levels. We also showed that the decline in cognitive performance was faster among older individuals than younger ones at baseline.

### Biography

Sandhi Maria Barreto is currently working in Universidade Federal de Minas Gerais, Brazil. She has studied her masters in Brazil. She did many researches in neuroscience field.

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## An analysis of driving behavior of mild Cognitive Impairment or Primary Dementia Drivers

**Mio Suzuki**

Tokai University, Japan

The population aging rate has been very high, and the rate of older adults' fatalities during driving has increased in Japan. In 2017, the Traffic Act was revised, and older adult drivers who occurred accidents have to take a simple cognitive function test. After that, they have to return their driver license if they were diagnosed dementia. I found some situations occur the dangerous driving of dementia or MCI drivers, but it doesn't reveal what is the trigger for dangerous driving of dementia or MCI drivers. So in this study, I conducted a driving experiment for dementia (n=1), MCI (n=20), and normal (n=61) drivers over 65 years old, and compared their driving skills. As the results, driving behavior of intersections or parking was not different significantly, and the almost all older adult drivers couldn't behave safely. Most of them didn't stop and confirm environment at intersections. On the other hand, contents of conversations pulse rate of MCI drivers changed more dramatically during driving than the one of non-MCI drivers. After changing their mental load, their driving behavior on lane change or obstacle avoidance was different between MCI and normal drivers significantly.

### Biography

Mio Suzuki has been an associate professor in Tokai University since 2018. Her research topics are accident analysis and road design for mixed traffic (during driving, cycling on roadways), bicycle facilities, and development of a cycling simulator. Moreover, she has interest in traffic safety of elderly car drivers including those who have mild cognitive impairment and policies for traffic congestion moderation programs on highway network. She had worked at Institute for Transport Policy Studies (ITPS) during 2009 and 2010, Tokyo Institute of Technology during 2010 and 2017, the University of Tokyo during 2017-2018. She holds a Doctor of Engineering from Tokyo Institute of Technology.

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## Study of outcome and Apolipoproteins in Dementia (STOP-Dementia)

**Ryo Ohtania**
National Hospital Organization Kyoto Medical Center, Japan

**Background**: Amyloid-β clearance is important for damage prevention in Alzheimer's disease. High-density lipoprotein (HDL) containing apolipoprotein A-I is associated with the pathogenesis of Alzheimer's disease (AD). HDL particle size is modified in the presence of pathological conditions, while the significance of the HDL particle size remains controversial.

**Objective**: The aim of this study was to investigate the HDL lipoprotein subclasses in mild cognitive impairment (MCI) and AD.

**Methods**: This cross-sectional study included 20 AD patients, 17 MCI patients, and 17 age-matched controls without cognitive impairment, selected from the database of the Study of Outcome and Apolipoproteins in Dementia (STOP-Dementia) registry. The diagnoses of AD and MCI were performed by expert neurologists according to the Diagnostic and Statistical Manual of Mental Disorders-Fifth Edition criteria. Serum HDL subclasses were measured by electrophoretic separation of lipoproteins using the Lipoprint System. The neutrophil-lymphocyte ratio (NLR),

a marker of inflammation, was calculated by dividing the neutrophil count by the lymphocyte count.

**Results**: Small-sized HDL particle levels in the MCI group were significantly higher than in the control group, although there was no difference in serum HDL-cholesterol levels between MCI and control groups. NLR in the MCI group was higher than in the control group, but this difference was non-significant (P = 0.09). There was no difference in HDL subclasses or NLR between the AD and control groups.

**Conclusion**: These findings suggest that HDL subclasses might be associated with the development of MCI. This trial was registered with UMIN as 000019992.

### Biography

Ryo Ohtani has completed his PhD at the age of 38 years from Kyoto University, Japan. He is the director of National Hospital Organization Kyoto Medical Center, Japan. Currently, he is working as Neurologist in National Hospital Organization Kyoto Medical Center, JAPAN. He has 28 publications that have been cited.

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## Impacto económico-social de la enfermedad de Alzheimer

**Mónica Aranda**
Universidad Argentina de la Empresa, Argentina

Although dementia is the leading cause of disability and the main factor of dependence in the elderly, economic burden and psychological stress in the caregiver, it has not yet been prioritized in the same degree as other noncommunicable chronic diseases, such as cardiovascular disease and cancer. Some aspects related to the prevalence and the rise of number of people with dementia are discussed in this paper. The impact of dementia as well as the knowledge and control of its risk factors using the course of life perspective with a multifactorial approach could lead to a reduction in the number of patients with dementia. International initiatives for the treatment of dementias are considered, particularly in Latin America.

### Biography

Mónica Aranda has worked as administrative director of public and private hospitals in the last twenty years. She has completed a master's in Health Management at Favaloro University, and in Tax Law. Currently, she works in the career team of Health Administration of the Argentine University of the Enterprise and is part of the research team in economics and social related to human health.

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## Role of HIF-1α/lncRNA BACE1-AS axis in HIV-1 Tat-mediated astrocytic amyloidogenesis: Implications of Alzheimer's like pathology in HIV

**Shilpa Buch**

University of Nebraska Medical Center, USA

Increased life expectancy of HIV+ patients in the current era of effective treatment is unfortunately accompanied with the continued prevalence of HIV-associated neurological disorders & risk of age-associated comorbidities such as Alzheimer's Disease (AD). In the current study we sought to assess the contribution of non-neuronal cells such as the astrocytes in HIV-Tat-mediated amyloidogenesis. Findings in SIV-infected macaques/ HIV+ subjects with differential cognitive status demonstrated brain region specific upregulation of the amyloid precursor protein (APP), Aβ1-42 & Aβ 1-40, in astrocytes. Along these lines, in the in vitro studies involving human primary astrocytes (HPA) exposed to HIV protein That there was increased expression of AD markers such as β-site cleaving enzyme (BACE1) enzyme, APP, Aβ 1-42 & Aβ 1-40. These findings were also validated by increased expression of cellular BACE-1 activity & Aβ-42 in the supernatant fluids of Tat-exposed astrocytes. Molecular mechanism(s) involved upregulation of the hypoxia inducible factor (HIF-1α), its translocation & binding to the lncRNA BACE-1AS in the nucleus, resulting in the formation of the BACE-1AS/BACE1 RNA complex, which increased the expression of BACE-1 involving transcriptional, post transcriptional & translational mechanisms, as well as increased activity, leading, in turn, to generation of Aβ-42 protein via cleavage of APP. Gene silencing approaches confirmed the regulatory role of HIF-1α in BACE-1AS/BACE-1 in Tat-mediated amyloidogenesis. This is the first report implicating the role of HIF-1α-lncRNA BACE1-AS in Tat-mediated induction of astrocytic amyloidogenesis. Strategies aimed at targeting the HIF-1α-lncRNA BACE1-AS complex could be developed as adjunctive therapies for HAND-associated comorbidity of AD.

### Biography

Shilpa Buch, Phd is currently a Professor & Vice Chair for Research and the Director of the Nebraska Center for Substance Abuse research at the University of Nebraska. She received my PhD in 1982 in Microbiology from Maharaja Sayajirao University in Baroda, India and moved to Canada for postdoctoral training. She began her independent research career as an Assistant Professor at the Hospital for Sick Kids, Toronto, following which, she moved to Kansas University and embarked on a research area focused on understanding how addictive drugs co-operate with HIV-1 to exacerbate neurological complications. she rose through the ranks at Kansas and in 2007, made a move as a full Professor to University of Nebraska in Omaha. Research approaches used in my lab involve a multipronged approach comprising of a variety of complementary model systems ranging from cell cultures to rodent models to the higher more relevant macaque model of SIV pathogenesis. More recently, her research interest is centered on exploring how exosomes act as conduits to transport key signaling mediators (small noncoding RNAs/microRNAs) to distant recipient cells as a means to regulate gene expression and cellular cross talk. She lead an active research program involving collaborations both nationally and internationally, with over 160 peer-reviewed publications. She have consistently held NIH funding throughout my career and continue to serve on NIH study sections.

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## Parkinson's disease Dementia and the role of patients' association

**Vuletic Vladimira**
University of Rijeka, Croatia

Dementia is a frequent but often unrecognized problem in advanced stages of Parkinson disease (PD). Usually, PD is consider as mostly a motor disease, but non-motor symptoms are influencing the quality of life the most of the patients and caregivers and they are the most important reason for institutionalization of PD patients. A modern approach to PD is holistic and include individual treatment of motor and non-motor symptoms especially dementia. The point prevalence of Parkinson's disease dementia (PDD) in PD patients is around 30% and around 10% of a PD population will develop dementia per year. Risk factors studied so far are: higher age, more severe parkinsonism, in particular rigidity, postural instability and gait disturbance, and mild cognitive impairment at baseline; and also male gender, education, depression, visual hallucinations can influence on that. There are a lot of different biomarker studies trying to predict pre-dementia stages of cognitive impairment in PD, when we can try with researching of some neuroprotective treatments. We know now a lot of neurobiological, neuropathological, genetics and laboratories values in predicting dementia. But what is important is how to deal in every-day life. The importance of education, recognition, prevention, early intervention, counseling, supporting, and networking are well-known. In the health systems that are not so well organized considering pre-demented and demented patients, the roll of association of PD patients, family members and caregivers is even bigger than you will expected. In this lecture, the role of PD patients association in Croatia in pre-demented and demented PD patients will be discussed.

### Biography

Vuletic Vladimira has completed her PhD at the age of 39 years from Osijek University, Croatia. She is the director and Associate professor of Clinical Department of Neurology, University Hospital Rijeka, Croatia and head of Neurology Department on Medical faculty University of Rijeka, Croatia. She has lot of publication with a lot of citation is an editorial board member of reputed Journals.

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## A new Dementia treatment with quieting focus, subtle sound vibration and intentional shared silence: Introducing Resonant Silence Technique

**Miriam Fein**

Resonant Silence Technique Creator, USA

Silence has been shown to be the most relaxing factor in a recent study and has also been shown to allow for the growth of new neurons. The following article introduces Resonant Silence Technique (RST), a new therapeutic approach in the treatment of dementia using a quieting environment, subtle sound and intentional silence. RST has been reported to provide positive behavioral change with those with dementia. This paper describes the development of RST, it's practical application and suggests avenues of further research to bring RST to the larger medical dementia treatment community.

### Biography

Miriam Fein is the creator of Resonant Silence Technique (RST). Being a singer and drawn to silence for personal rest and renewal, she experienced how restorative group silence can be. Then, using gentle tones leading into periods of silence, she created Resonant Silence Technique for her group work with individuals with dementia and other neurological and cognitive disorders. She continues to see significant positive behavioral change with the individuals she works with. She holds a Bachelor of Comparative Religion from New York University (1972), a Bachelor of Sacred Music (BSM) from The Jewish Theological Seminary (1979) and is certified as a Cantor/Minister/Educator.

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## Determination of the role of HA, HYAL and HA- Receptor Expression in a rat model of Middle Cerebral Artery Occlusion

**Ahmed Al Qteishat**

Al-Ahliyya Amman University, Jordan

Hyaluronan (HA), a component of the extracellular matrix, has been implicated in regulating angiogenesis and cell proliferation, migration, and signaling. We used the rat MCAO to show hyaluronan accumulation in stroke-affected areas. Using RT-PCR and Western blotting we showed up-regulation of hyaluronidase-1 and 2 between 1h and 21 days after stroke. Hyaluronidase-1 was up regulated earlier than hyaluronidase-2. RHAMM and CD44 receptors were also increased after stroke. Immunohistochemistry results, showed an association of hyaluronidases1/2 and hyaladherins with neurons in the infarcted and peri-infarcted regions and hyaluronidase-1 with microvessels. HA synthesis and degradation in the stroke hemisphere might have an impact on neuronal survival, angiogenesis and general tissue remodeling after stroke.

### Biography

Ahmed Al Qteishat is currently working as an associate professor in Al-Ahliyya Amman University, Amman, Jordan. He studied his Bachelor degree in the Applied Science University. He completed his Ph.D in Manchester Metropolitan University.

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## Dementia situation and clinical trials in China

**Jianping Jia**

Capital Medical University, China

China has the largest population with dementia in the world, imposing a heavy burden on the public. The number of dementia patients in China accounts for approximately 25% of the entire dementia population worldwide,[1] creating a huge challenge for policy makers, healthcare professionals and family members.

Over the last decade, many studies have focused on the prevalence of dementia in the Chinese population Two large-sample multi-region studies across China were conducted in 2014[2] and 2019[3] and revealed that the prevalence rates of dementia were 5•14% (4•71-5•57%) and 5•60% (3•50-7•60%), respectively, for individuals ≥65 years of age. The latest Global Burden of Disease study in 2019 showed that the age-standardised dementia prevalence increased by 5•6% in China from 1990 to 2016, while the global prevalence increased by 1•7%.[1] The increasing trend may be partly due to extended lifespan and progress in the diagnostic criteria, which have resulted in an increased number of elderly people and a higher diagnostic rate for dementia patients, respectively.

Currently, the number of dementia patients in China is estimated to be 10-11 million or 9-10 million among individuals aged ≥60 or ≥65 years, respectively;[4,5] more than 60% of these patients have AD, and approximately 70%-80% of these AD patients have not received treatment.[6] Although VaD patients constitute the second largest dementia population in China (2.49 million people ≥65 years), no treatment data for this population are available. China has approximately 11•8 million stroke patients, 9•5 million of whom have experienced post-stroke cognitive impairments.[7,8] Overall, China is estimated to have approximately 31 million MCI patients, with MCI-A accounting for more than 9 million.[9] Taken together, China currently has approximately 50 million individuals suffering from dementia and MCI. This enormous patient population has a large negative impact on society, which should be reiterated.

In the past 10 years, the number of clinical trials has increased in China. Twenty-eight clinical trials (≥150 subjects) have been conducted in China, including four phase IV, phase III, four phase II/III, and six phase II studies. Since 2003, no FDA approved drugs that halt or even slow the progression of AD have been introduced.[10,11] Most likely, the reason is the single-target mechanisms of these drugs and the fact that AD is a complex disease that involves a variety of pathophysiological changes.[12,13] Chinese medicines may have the potential to overcome this issue due to the incorporation of multiple anti-AD components that have multiple physiological targets.[14] In addition to AD, several studies have investigated the abilities of Chinese medicine to treat vascular-related cognitive impairments. In a clinical trial in 2016, a modern Chinese medicine compound called DL-3-n-butylphthalide (NBP) was shown to be safe and effective in improving cognitive and global functioning in patients with subcortical vascular cognitive impairment with no dementia.[15] Another Chinese medicine compound known as SLT was shown to improve memory, orientation, language and executive functions and daily activities for patients with VaD in clinical trials.[16] Taken together, these studies provide evidence that Chinese medicines may be effective in treating vascular cognitive impairments and may inspire further clinical trials of Chinese medicines for the treatment of AD.

### Biography

Jianping Jia is working in the Department of Neurology, at Xuan Wu Hospital, Capital Medical University, in Beijing, China. He is also working in the Beijing Key Laboratory of Geriatric Cognitive Disorders, Beijing, China. He is one of the researcher in the Center of Alzheimer's Disease, Beijing Institute for Brain Disorders, Beijing, China.

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