11th International Conference on

Vascular Dementia

February 15-16, 2019 Amsterdam| Netherlands

ACCEPTED ABSTRACTS

J Alzheimers Dis Parkinsonism 2019, Volume 09
DOI: 10.4172/2161-0460-C1-061

Decoding dementia: At the intersection of vascular dementia and young stroke

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There is urgency among adults who live at the intersection of vascular dementia and young stroke. More than merely a medical diagnosis, this intersection threatens every aspect of the social and professional roles they previously assumed. Further, too few social supports are available for these premature stroke survivors and their untrained caregivers. Collectively, the voice of this emerging population has largely been muted by lack of awareness and lack of interest in this research area. But discourse is rising, and the opportunity abounds to explore this intersection on multiple dimensions to deliver quality patient-centered healthcare to facilitate effective community reintegration.

Gait analysis under dual-task conditions: a biomarker for gait instability, falls, MCI and dementia

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Background: The dual-task test is unique as it reflects the motor cognitive interface, which is of great interest to detect deficits of motor-gait control and fall risk, but also may precede cognitive decline linked to MCI and dementia. Very few studies have focused on the relevance of gait analysis under dual-task conditions in elderly people on the basis of clinical approach.

Methods: An observational study including 103 patients (mean age 76.3±7.2, women 56%) suffering from gait disorders, falls or memory impairment was conducted. Gait analysis under dual-task conditions was carried out for all patients. Three main Gait variables were measured: walking speed, stride frequency, and stride regularity. For each gait variable, the dual task cost was computed, and a quartile analysis was obtained. Nonparametric tests were used for all the comparisons (Wilcoxon, Kruskal-Wallis, Fisher or Chi² tests).

Results: Four clinical subgroups were identified: gait instability (45%), recurrent falls (29%), memory impairment (18%), and cautious gait (8%). The biomechanical severity of these subgroups was ordered according to walking speed and stride regularity under both conditions (single and dual-task conditions), from least to most serious as follows: memory impairment, gait instability, recurrent falls, cautious gait ($p<0.01$ for walking speed, $p=0.05$ for stride regularity). In a multivariate analysis of variance model for dual-task cost, there is a strong variable effect ($p<0.01$), but no clinical subgroup effect was noted. According to the established diagnoses of gait disorders, six main pathological subgroups were identified (musculoskeletal diseases (n=11), vestibular diseases (n=6), mild cognitive impairment (n=24), dementia (n=27), other central nervous system pathologies (n=24), and without diagnosis (n=8)). The subgroups mild cognitive impairment and dementia both showed a higher dual task cost for each variable compared to the osteoarthrosis and vestibular diseases combined ($p=0.01$), other CNS pathologies represent an intermediate subgroup with a potential cognitive impairment. According to the quartile analysis, we hypothesize that the fourth quartile value for each DTC may represent an interesting cut off value in clinical setting (DTC walking speed: 20%; DTC stride frequency: 15%; DTC stride regularity: 30%).

Conclusion: In clinical setting, gait analysis under dual-task conditions in elderly people suffering from gait disorders or memory impairment is of great value to assess the severity of gait disorders, to differentiate between peripheral pathologies and central nervous system pathologies (mainly MCI and dementia), to understand unexplained falls, to highlight the prediction of MCI syndrome, to inform about dementia progression. Change in gait performance while dual tasking may be used as a biomarker of pathologies with cognition disorders.

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D-AAAP – Development of android assistive toolkit for Alzheimer's patients and caregivers

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Alzheimer's disease, a common form of dementia causes deterioration of cognitive abilities of an individual which results in difficulty in carrying out their routine activities. Research suggests that there is no cure for this deadly disease. However, the progression of the disease can be slowed down by improving the patient's quality of life, providing a solution for enhancing the cognitive abilities of the patient. One of the possible solutions is to motivate the use of smartphone by the patient. Smartphones play a crucial role for the family members of the Alzheimer's patients as it helps the patients in carrying out their routine activities by providing time to time notifications about them. Furthermore, the smartphone also helps in assisting the caregiver to take proper care of the patient, such as retrieving the GPS locations of the patient, using Geotagging. Photographs can be used as a source of the medium in helping patients remember their family members. They are susceptible to music; therefore, the patient brain can be stimulated by playing their beloved tones. Smartphones tend to be a one-stop shop for providing all these facilities to the patients. This motivates the need to build relatively simple cross-platform mobile applications with interactive GUIs, so as to enhance their cognitive abilities. We are developing an android based mobile application comprising the features such as learning, caregiving, pillbox, schedule, doctor dairy, news, family, music, Mapigate, social media, remember to work games safe zone. Finally, this application shall be tested based on the current software testing trends and technologies following its testing for real time scenarios by asking Alzheimer's patients to use this application, thereby verifying and examining its efficiency and ease.

Multitarget therapies in the context of the aged associated oxidative stress induced cellular and subcellular and vascular hypoperfusion and mitochondrial DNA deletion during the development and maturation of Alzheimer disease: past, present and future

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Stroke and arteriosclerosis with neurological consequences such as Alzheimer disease (AD) are two leading causes of age-associated disability, dementia, and death. AD is now the sixth-leading cause of death in the United States. In the US, AD is estimated to affect 4 million people (rising steeply from <1% of the population aged 65 to 40% of those aged 90) and costs $600 billion per year, which is equivalent to the total cost of stroke, heart disease, and cancer combined. Overall, there are no effective strategies for determining and controlling this devastating disease. Because AD is a multifactorial pathology and the development of new multitarget neuroprotective drugs is promising and attractive.

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Affective and behavioral alterations in major neurocognitive disorders of vascular type

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The major neurocognitive disorders of vascular type are the second cause of dementias in Latin American countries. This is due to the cultural influences that permeate life in our countries: Stress, the amount of work hours, sedentary lifestyle, and poor diet, generally unbalanced and rich in salts, fats and fried foods. Diseases of high prevalence in our environment such as diabetes and hypertension contribute to the high rate of cerebrovascular events that manifest acutely or chronically to attack the brain in areas essential for the development of social cognition, and also the constructions affective. In this way, we can observe in this type of patient's apathy, poor affective performance in terms of expression of emotions, alterations in chronobiological rhythms (with symptomatic manifestations such as insomnia and changes in mood) and also slowing down in decision-making at the expense of the decrease in the action of the superior cerebral functions, and also pictures of disinhibition characteristic of frontotemporal dementias. In this lecture, we propose to present in a detailed manner the aforementioned clinical expressions that have their origin in vascular alterations in the brain, and that decrease the time and quality of life of the affected people.

Dementia to raise from 13 to 35 percent in Africa if nothing is done today

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Dementia is an umbrella term describing problems people with various brain disorders that affect their ability to conduct activities of daily living independently. With the number of people aged 60 and above set to increase by 56 percent from 901 million to 1.4 billion worldwide by 2030, the number of dementia cases is also set to increase more in Africa, if the policy makers don't set up policies to address the key factors that lead to this disorder. Habits like substance abuse e.g. (alcohol), trauma, depression, nutritional deficiencies (vitamin b-12) and infections like HIV/AIDS are responsible for the rampant dementia in developing countries. By we advocate for 1, Active ageing 2, productive ageing 3, successful ageing 4, healthy ageing, We can have more active ageing groups making them more wealthy which will lead to a happy, healthy, lively and wealthy older adults years to come. It should be noted that the poverty in developing countries makes people more vulnerable to dementia and other terminal illnesses. Our research has shown that in most of the African countries 20 percent of the older adult patients admitted in hospitals, had dementia followed by depression as the most common psychiatric disease affecting that age group.

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Reversible dementias- A clinical update

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The term dementia is of Latin origin and means "devoid of the mind." It is used to describe a persistent state of serious cognitive, functional and emotional deterioration from a previously higher level of functioning. The essential feature of dementia is the acquired and persistent compromise in multiple cognitive domains that is severe enough to interfere with everyday functioning. Memory is the most common cognitive ability lost with dementia; 10% of persons >70 years and 20–40% of individuals >85 years have clinically identifiable memory loss. The main cause of dementia is neurodegenerative diseases. Alzheimer's disease (AD) became the most common neurodegenerative disorder and one of the most common diseases of the aging population. Dementia is irreversible when caused by degenerative disease or major trauma, but might be reversible in some cases. The reported frequency of dementia due to potentially reversible causes varies from 0 to 23% and careful evaluation of persons referred for dementia evaluation can identify these treatable cases. Commonest among these causes are alcohol and drug related dementia, brain lesions such as normal pressure hydrocephalus , tumors and chronic subdural hematomas, metabolic disorders such as hypothyroidism, hypoparathyroidism, vitamin B12 deficiency and central nervous system (CNS) infections such as neurosyphilis and HIV. Patients with a reversible or potentially reversible disorder should be evaluated properly and should not be falsely diagnosed as untreatable, irreversible dementia disorder. Most reversible conditions are easily identified by a proper history taking, physical examination, psychiatric evaluation, brain imaging, and routine laboratory tests. Early detection and treatment of them can improve the quality of life of patients.

Evaluation of serum hepcidin concentrations in patients with obstructive sleep apnea

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Obstructive sleep apnea syndrome (OSA) is defined as a combination of symptoms as a result of intermittent, recurrent constraint and/or complete airway overhead/ airway overflow (sleep disturbance). In the case of reduced airflow through upper respiratory tract >90%, in the presence of thoracic and/or abdominal movements over a period >10 sec., it is about obstructive apnea. With a ≥30% reduced airflow over the upper respiratory tract over a period of 10 seconds, desaturation ≥3% followed by waking or desaturation >4%. During desaturation episodes, the organism is subjected to chronic stress. This leads to reduced nitric oxide secretion, increased release of interleukin-6, tumor necrosis factor-alpha and other pro-inflammatory cytokines. The described pathological cascades are associated with the development of insulin resistance, arterial hypertension, metabolic syndrome, systemic atherosclerosis and increased cardiovascular risk. Thirty five (35) patients with OSA were included; age 42.9±8.8. The established results were compared to sex and age matched healthy control and with patients with no atherosclerotic changes. Routine blood analyses as CBC, serum iron, ferritin, hsCRP and specific hepcidin, homocysteine and vitamin B12 were measured in the included groups. IMT and FMT were used for atherosclerotic changes evaluation. We found increased serum hepcidin levels in OSA patients with IMT and FMD changes (99.1±14.7 μg/L) compared to healthy controls (19.5±2.1 μg/L); $P<0.001$. A positive correlation was found in OSA patients with atherosclerotic changes between IMT and FMD to serum hepcidin levels ($r=0.809$, $r=0.877$, resp.; $P<0.01$). Serum hepcidin correlates positively to homocysteine in OSA patients with atherosclerotic evidence changes ($r=0.899$, $P<0.005$). Brain-vascular disease risk factors are connected to obstructive sleep apnea syndrome. Dysregulation of iron homeostasis is one of the main risk atherogenesis factors. Early hepcidin quantification might predict an atherosclerosis occurrence in OSA patients, which might be very important for better clinical diagnosis and practice

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Cerebral morphological and cognitive status in long-term period after CABG

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Purpose: The main purpose of this study was to estimate of brain morphological pattern and cognitive status changes and after CABG in long-term postoperative period.

Material & Methods: The study included 75 male patients (62.5±5.5y) with initial Beck scale is not more than 16, MMSE is not less than 24, FAB scale 11 points. Before and five years after, CABG patients were examined in STAI, MMSE, FAB scales and brain MDCT.

Results: Five years after CABG there was significant reduction in STAI (initial - 20.0 [17.0, 23.0], after - 22.0 [19.0, 27.0], $p<0.05$), the preservation of cognitive status on the MMSE (initial - 28 [27, 29], after - 27 [26; 28], $p<0.05$) and FAB (initial - 16 [14, 17], after - 17 [16, 17], $p<0.05$). Only two patients developed dementia. Third (III) ventricle width pre/after - 6.86±1.91 mm/8.45±2.18 mm, $p=0.001$, ventricular cranial index Evans – 29%/31%; the presence of leukoaraiosis was detected in 18 (31.03%) patients/44 (66.67%), $p=0.001$, cysts and gliosis were found in 2 (3.45%) patients/24 (36.36%), $p=0.0001$.

Conclusion: During five years after CABG, the majority of patients revealed the worsening in the cerebral morphological structure in the form of enlargement of its ventricular system, increase in the number of patients with leukoaraiosis, cysts and gliosis areas. These structural changes in the brain on MDCT indicate a progression of chronic cerebral ischemia in the long-term postoperative period, despite the preservation of cognitive status in screening neuropsychological testing.

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Therapeutic implications of integrating validation therapy for the management of Capgras syndrome in patients with vascular dementia

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Patients in each domain of dementia may experience hallucinations, delusions or misidentification syndromes. One form of misidentification syndrome, called Capgras syndrome, also known as Imposter syndrome, occurs when a patient believes that their primary caretaker is duplicated and searches for the "real" person (Sinkman, 2008). This phenomenon occurs when the pathway between the occipital face area of the brain and the amygdala is obstructed. Typically seen in patients with schizophrenia or bipolar disorder, Capgras syndrome is also significantly prevalent in patients with dementia (Cummings, Miller, Hill, & Neshkes, 1987). The patient recognizes the significant person, but the emotional connection from the amygdala does not receive the signal that the recognized face is the actual significant individual; therefore, continues to search for the person who meets the "significant" criteria. The delusion is frightening to the patient and upsetting to the caretaker, who is usually the spouse or close relative. In patients with vascular dementia (VaD), somatic impairments in vision and/or ambulation can exacerbate fear during Capgras episodes. The importance of caretakers to undertake a subjective and supportive perspective within the patient's experience during a Capgras episode cannot be overstated. Validation therapy, which contradicts the natural inclination to reason the objective reality, must be exercised to restore a sense of safety to the patient's reality. Compassionate and creative measures, such as voice, tactile, and natural supports, are what comprise the most effective techniques in validation interventions for VaD patients with Capgras syndrome.

Decoding dementia: a carers perspective in the UK

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Decoding dementia is not just about professionals researching and finding a cure. It is about providing information and support to carers. What I find is once a diagnosis of dementia is given, it is seldom the case that the family is given support from the GP. More often, people are left to their own devices. A common problem I find is people are given a diagnosis of dementia but not any details about the type of dementia. How is the family going to know what support to give if they are not aware of the exact diagnosis? Families and the person diagnosed require information which is easily accessible. Carers do not know what they don't know. I know where to signpost people and do so, there is support available, but you need to know where to look for it. I have known of a carer looking after a loved one with dementia for two years with no professional help. How did they fall through the cracks? Decoding dementia for me is about supporting carers to know, what they can do to support their loved ones. It's about reducing the stigma of dementia. Carers need to be told at diagnosis what the prognosis is and that there are stages. Carers are not told about what kind of symptoms to expect; all they hear about is memory, yet there are other areas affected and behaviours that they should be made aware of. Put yourself in a carer's shoes.

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