

Selected Abstracts from the World Congress on Brain, Behavior and Emotions, 2017

In the last edition of the congress, over 1,000 abstracts were submitted.

The scientific committee has selected the best for publication here.

1. NEUROPROTECTIVE EFFECT OF CHRONIC TREATMENT WITH DIMETHYL FUMARATE ON OXIDATIVE DAMAGE IN AN ANIMAL MODEL OF AUTISM INDUCED BY MATERNAL IMMUNE ACTIVATION

Lidiane Pinto Borges^{1,2}, Tamires Mateus Gomes¹, Naiana da Rosa^{1,2}, Ana Olívia Martins Laurentino¹, Drielly Florentino^{1,2}, Marina Goulart da Silva¹, Evandro Cittadin Soares^{1,2}, Lucinéia Gainski Danielski^{1,2}, Fabrícia Petronilho^{1,2}, Jucélia Jeremias Fortunato^{1,2}

¹Laboratory of Neurobiology of Inflammatory and Metabolic Processes. University of Southern Santa Catarina, Tubarão campus. ²Program of Post-Graduation in Health Sciences. Instituição: South University of Santa Catarina, Tubarão campus.

Introduction: Autistic Spectrum Disorder (ASD) is characterized by a set of heterogeneous neurodevelopmental conditions. The pathophysiological hypothesis of ASD still not fully understood, but neuroimmune alterations in brain systems has been related to the different autistic clinical manifestations. Dimethyl Fumarate (DMF) has a neuroprotective, immunomodulating and anti-inflammatory effect, capable of reducing oxidative stress, inflammation in nerve tissue and microglial activation, thus contributing to the improvement of development and possibly attenuating the symptoms of ASD.

Objective: To evaluate the effects of chronic treatment with DMF on the antioxidant enzymes activity in the prefrontal cortex, cerebellum and hippocampus in an experimental model of autism. **Methods:** Twelve pregnant females Wistar rats were exposed to LPS (ip) on gestational day (GD) 9.5 or 0.9% NaCl solution (control group). In post-natal day (PND) 30, the animals were divided into six experimental groups according to prenatal exposure and received dose (5 and 15 mg/kg). The treatment with DMF or saline solution lasted 14 consecutive days and the administration (ip) was made 2 times daily. In PND45, the animals were euthanized and encephalic structures were dissected for biochemical analysis. **Results:** There was a significant decrease in the levels of TBARS in the hippocampus [(P=0.014)] of the LPS × DMF 15 mg/kg group when compared to the LPS × Sal group. However, the cerebellum [P=0.049] and hippocampus [(P=0.036)] of the animals exposed

to LPS in the prenatal period had increased TBARS values after 5 mg/kg DMF treatment when compared to animals receiving saline and the same treatment. Prenatal exposure to LPS was able to significantly decrease SOD activity in the cerebellum [(P=0.003)] and hippocampus [(P=0.004)] and this condition was reversed by chronic treatment with DMF 15 mg/kg [(P=0.026)]. **Conclusions:** DMF treatment, especially the dose of 15 mg/kg, was able to exert neuroprotective activity in prenatally LPS-exposed animals. Further studies are needed to explore the effects of DMF and to identify its contributions as a potential therapeutic alternative for ASD treatment. **Key words:** dimethyl fumarate, autism neuroinflammation.

2. NEW METHOD FOR MEASURING INBREEDING IN THE GENOM

Taís Luise Denicol

Medicine School, University of Southern Santa Catarina, Tubarão Campus.

Introduction: This study focuses on providing a new way of detecting long runs of homozygous in patient microarrays and controls microarrays accompanied by gene count. It is scientifically known that the Human Genome has an enormous amount of genes that are not distributed homogeneously, so this method search sought to find a medium that not only measured runs of homozygous but also genes in each them. **Objective:** The aim of the work is to demonstrate the advantages of evaluating the genome by counting genes within runs of homozygous. It is vital to be aware of this in order to predict the risks and possible genetic diseases in an individual with consanguinity. **Methods:** Illumina Microarray samples are used to visualize the genome in the optical microscope and to record the homozygous areas in Microsoft Excel. Thus, long runs of homozygosity (LoH) are measured before by population-based binding analysis (PLINK). All LoH >4,000,000 base pairs are considered Identical by Descent (IDB). The total length of LoH is calculated for each part of the genome displayed. The task is to identify the genes within the LoH

regions of each individual and calculate the number of genes for each. In this way, data were collected from the genome of patients with a certain disease that may have an unknown genetic cause and controls. For final analysis the correlation of Spermans (ρ) is chosen. **Results:** The results tend to prove that runs of homozygosity of patients with a certain disease, that may have an unknown genetic cause, probably have more genes in their runs of homozygosity than controls. **Conclusions:** This method is more specific to measure the relation of genetics to certain diseases of blood traits. In this way, it will be able to demonstrate a hypothesis about why certain diseases have higher occurrence in certain individuals, especially in those with relative parents, than in others. **Key words:** inbreeding, genom, consanguinity. Gratitude to Caspar Grond-Ginsbach that was the mind behind this idea: Neurologische Klinik Heidelberg.

3. INTERFACES BETWEEN USE OF PSYCHOACTIVE SUBSTANCES, DEPRESSIVE AND ANXIOUS SYMPTOMS AND RISKY SEXUAL BEHAVIOUR BETWEEN GENDERS

Claudia Chaves Dallelucci¹, Emi Carneiro Bragiato², Dartiu Xavier da Silveira³, Thiago Marques Fidalgo⁴

¹Psychiatrist, MSc in Psychiatry at the Universidade Federal de São Paulo, São Paulo, SP, Brazil. ²Psychiatrist, MSc in Psychiatry at the Universidade Federal de São Paulo, São Paulo, SP, Brazil. ³Psychiatrist, MD, PhD, Professor in Psychiatry at the Universidade Federal de São Paulo, São Paulo, SP, Brazil. ⁴Psychiatrist, MD, PhD in Psychiatry at the Universidade Federal de São Paulo, São Paulo, SP, Brazil.

Introduction: Data indicate that the difference between genders for drug use has been decreasing and that women have a higher prevalence of depressive and anxious symptoms; drug use may complicate these disorders. Studies show an association between drug use and risky sexual behavior. In addition, there is correlation of depressive symptoms and risky sexual practice, regardless of gender. **Objective:** Identify, in a population under treatment for addiction, differences between genders concerning substance use, psychiatric symptoms and sexual risky behavior. **Methods:** The sample comprised 711 medical records. Patients who sought treatment for exclusive use of other drugs besides alcohol, cocaine, marijuana and crack were excluded. Patients who did not answered to the sexual behavior questionnaire or who had no intercourse in the past six months were also excluded. This resulted in a sample of 547. Subjects. Data concerning sexual behavior, substance use pattern and psychiatric symptoms were stratified by gender. **Results:** Among men, 96% used alcohol, 53%

marijuana, 64% cocaine and 25% crack. Among women, 98% used alcohol, 54% cocaine, 50% marijuana and 23% crack. Concerning about symptoms, 40% of men and 15% of women have no/light symptoms at SRQ-20. In contrast, women show 85% and men 60% for moderate/severe symptoms. About sexual behavior in the past six months, 48% of men and 63% of women did not use condoms in any sexual intercourse. On the other hand, 22% of men and 10% of women used condoms in all intercourses. 69% of men and 72% of women had ever had sexual intercourse under the effect of alcohol or drugs. **Conclusions:** The most commonly used substance is alcohol, followed by marijuana among men and cocaine among women. These data on drug use are similar to another found in Brazil. A correlation of the study already seen in the literature is that women have more psychiatric illness. There is few literature on the use of condoms among the population of psychoactive addicts and in this sample the use of condoms is quite limited. High rates of sexual intercourse under the influence of drugs can impair the decision-making for safe sex. Knowing about the complexity of these factors, the treatment of dependence and psychiatric diseases allied to programs for sex education can produce positive impacts in this population. **Key words:** substance abuse, psychoactive substances, gender, sexual behaviour, sexual risk, depression, anxiety.

4. MALTREATMENT IMPACT IN FACES AND EMOTIONS RECOGNITION

Guilherme Rodrigues Marta¹, Eriton Barros dos Santos², Sandra Scivoletto³

¹Graduating in Medicine School of University of São Paulo (FMUSP) under scientific research scholarship funded by the São Paulo Research Foundation (FAPESP), grant # 2016/18945-0. ²Post-Graduating in Statistics in the Mathematics and Statistics Institute of the University of São Paulo (IME-USP). ³Assistant Professor of Childhood and Adolescence Psychiatry, Department of Psychiatry, FMUSP.

Introduction: The experience of maltreatment can impair child development, including changes in the process of emotions recognition. Excessive exposure to aggression or even lack of stimulation in cases of neglect can lead to failure in the recognition of facial expressions, resulting in impairment in social interactions and behaviour disabilities, which may perpetuate the violence and exclusion cycle to which they are usually exposed. **Objective:** To study the association between maltreatment and changes in the process of emotion recognition. **Methods:** 50 victims of maltreatment (average age of 13.3 years; 60% male) underwent clinical assessments. The K-SADS

was applied to evaluate psychiatric disorders and the Childhood Trauma Questionnaire (CTQ), to evaluate the occurrence, intensity and types of maltreatment. All of them underwent the Emotion Recognition Task, which had been used only once before in Brazil. Correlation and association analyses were performed between intensity of abuse, types of abuse and emotions recognition. **Results:** 42% had psychiatric disorders. Non-existent or mild maltreatment occur in 44% of the sample; 30% moderate; 26% severe; 54% had suffered more than one type of maltreatment. Physical and emotional neglect were the most prevalent (48%), followed by emotional abuse (46%), physical abuse (38%) and sexual abuse (8%). Living in group shelter was present in 60% of the sample and associated with physical and emotional neglect and emotional abuse. Mean IQ was 101.54. The analyses showed that the lower the IQ, the greater the occurrence of physical neglect. Controlling these variables, it was verified that the higher the CTQ score, the greater the occurrence of false recognition of Anger ($p=0.04$) and Happy ($p=0.038$) faces. Emotional abuse and neglect were associated with false recognition of Neutral emotions, Anger, and Happy. Physical abuse was associated with less recognition of Happy; physical neglect has been associated with false recognition of Neutral emotions, Anger and Sadness, and deficits in the Fear recognition. **Conclusions:** Both intensity and types of maltreatment impact on the emotion recognition, either by increasing emotional response (false recognition) or by a decreasing correct identification of emotions. Therefore, in the treatment of this population, specific interventions are necessary to improve the emotion recognition and thus minimize future social damages. **Key words:** facial emotions, facial recognition, child maltreatment, child neglect, child abuse. **Note:** this Project is funded by São Paulo Research Foundation (FAPESP), grant number 2016/18945-0, valid between 02/01/2017 and 01/31/2018.

5. ANXIETY AND USE OF ALCOHOL AS SELF-MEDICATION: A META-ANALYSIS

Erinete da Silva Leite¹, Luiz Fabrizio Stoppiglia²

¹Graduanda de Psicologia da Universidade Federal de Mato Grosso – Campus Cuiabá. ²Professor Doutor do curso de Psicologia da Universidade Federal de Mato Grosso.

Introduction: Anxiety is a vague and unpleasant feeling of fear, apprehension, characterized by tension or discomfort derived from a danger anticipation, from something unknown or strange. It is recognized as pathological when it is exaggerated, disproportionate to the stimulus, affecting 33% of the world population

(WHO). At the same time, 62% of adults consume alcohol, a CNS depressant and GABA-A agonist, when a low production of inhibitory neurotransmitters – among them GABA – is a dominant psychoneurobiologic characteristic of anxiety. The literature suggests that alcohol is used as a self-medication for anxiety in both clinical and non-clinical anxious populations, but with conflicting results in Brazil and the USA. **Objective:** To gather data from the main Brazilian and US studies for comparing alcohol consumption and anxiety in order to find out if there is greater alcohol use in people with anxiety symptoms. **Methods:** We constructed a meta-analysis (quantitative approach) gathering articles since 1990 and evaluating the number of participants, age, alcohol consumption, anxiety and relationship between alcohol consumption and anxiety. We searched for articles featuring both alcohol consumption and anxiety on Google Scholar (~36,000 articles). After excluding those without proper quantitative data or seldom cited, we had 23 articles (11 US + 12 Brazil). Each one resulted an Odds Ratio (OR) relative to the chance of abusive alcohol consumption between non-anxious and anxious people. Demographic data were correlated with OR to find confounding variables. **Results:** In the US populations we estimated $OR=1.00\pm 0.74$ (30,046 persons) and in Brazil $OR=1.78\pm 0.73$ (8,510 persons), $p<0.0001$ among these results. Confounding variables were age and anxiety, but only in the USA. **Conclusions:** In Brazil, alcohol is more commonly used as self-medication for anxiety than in the United States, but in the USA there are significant differences between results from young (~19y) and middle-aged (30-40y) persons, as well as between low anxiety (15-20 points BDI) and high anxiety (~30 points) persons. The Brazilian result suggests that anxiety increases alcohol consumption, especially among populations with higher anxiety levels, arguing that the screening of anxious people who consume alcohol may be a preventive measure to find out people that can become alcoholics. **Key words:** psychoneurobiology, alcohol and anxiety, self-medication.

6. ANTI-NMDAR ENCEPHALITIS TRIGGERED BY VIRAL ENCEPHALITIS

Bianca Zanette de Albuquerque¹, Rafael Canani Sommer², Bruna Klein da Costa³, Douglas Kazutoshi Sato⁴

¹Albuquerque, BZ – Brain Institute (BraIns), Pontifical Catholic University of Rio Grande do Sul (PUCRS). ²Sommer, RC – Brain Institute (BraIns), Pontifical Catholic University of Rio Grande do Sul (PUCRS). ³Costa, BK- Brain Institute (BraIns), Pontifical Catholic University of Rio Grande do Sul (PUCRS). ⁴Sato, DK- Brain Institute (BraIns), Pontifical Catholic University of Rio Grande do Sul (PUCRS).

Introduction: Anti-NMDAR encephalitis is the most common autoimmune encephalitis (AE). Pediatric patients may present movement disorders and seizures rather than the psychiatric symptoms seen in adults. It is unclear if viral encephalitis could trigger AE. We report a 5 years-old boy diagnosed with anti-NMDAR encephalitis triggered by a viral central nervous system infection and discuss the diagnostic and therapeutic challenges. **Case report:** A previously healthy 5-year-old boy presented with tonic-clonic seizures evolving in 2 weeks with somnolence, involuntary limb movements and tachypnea. Brain MRI revealed bilateral T2 hyperintense lesions in the temporal lobes without gadolinium enhancement or DWI restriction. Cerebrospinal fluid (CSF) showed 121 cells/mm³, 467 mg/dl proteins and normal glucose. He was empirically treated for viral meningoencephalitis with IV acyclovir for 10 days, but all cultures and viral PCR were negative. Then, he received a high dose of intravenous methylprednisolone (IVMP) with a partial clinical recovery. After few weeks, he presented with a subacute clinical worsening. The patient was tested for anti-NMDAR antibody and resulted positive in the CSF and serum. He received 2 courses of IVMP alternated with 2 courses of intravenous immunoglobulin and 375 mg/m² of rituximab. The temporal lobe lesions improved on the follow-up MRI. He was symptomatically treated with valproate and risperidone. At 3-month follow-up visit, the patient was seizure-free, with no abnormal movements, without sleep-wake disturbance, fully ambulatory without assistance and with some interaction but still without verbalization. **Conclusions:** This case illustrates the development of AE after infectious encephalitis. These conditions may share some features that might challenge the diagnosis. Recently, it has been suggested that viral CNS infections might trigger an autoimmune response that could promote the development of AE. Infectious etiologies must be excluded before initiating any immunosuppressive treatments for AE. The early diagnosis and treatment of AE may reduce the risk of irreversible and severe sequelae. **Key words:** anti-NMDAR, autoimmune encephalitis.

7. EFFECTS ON MATERNAL BEHAVIOR, OLFACTORY LEARNING, HIPPOCAMPUS CELL PROLIFERATION AND OLFACTORY BULB IN WISTAR RAT PUPS SUBMITTED TO DEPRIVATION OF NEONATAL MATERNAL CARE.

Débora Czarnabay^{1,2}, Jeferson Dalmago², Arthur Sardi Martins², Laura-Elena Sperling³, Karina Pires Reis^{1,3}, Patrícia Pranke^{1,3}, Fernando Benetti^{1,2,3}

¹Programa de Pós Graduação em Ciências Biológicas: Fisiologia, Departamento de Fisiologia, Instituto de Ciências Básicas da

Saúde, Universidade Federal do Rio Grande do Sul – UFRGS – Porto Alegre, RS, Brasil. ²Laboratório de Neurofisiologia da Cognição e Desenvolvimento, Departamento de Fisiologia – Instituto de Ciências Básicas da Saúde, Universidade Federal do Rio Grande do Sul, Porto Alegre, RS, Brasil. ³Hematology and Stem Cell Laboratory, Instituto de Pesquisas com Células-Tronco – IPCT, Universidade Federal do Rio Grande do Sul, Porto Alegre, RS, Brasil.

Olfactory memory is pivotal to the development of the mother-infant bond and attachment, as well to the detection of predators and social recognition. Neonatal maternal deprivation (MD) is a stressful event capable of triggering not only structural and but neurobiological changes in the Central Nervous System (CNS) during proliferative and migratory cell differentiation in the developmental period of CNS. This deleterious effects on behavior, neurotransmission, number of neurons and size of brain structural areas and synaptic contact are widely described such abnormalities that persist throughout life. In this study, we investigated the maternal behavior of lactating rats submitted to protocol of Maternal Deprivation (MD). Additionally, we analyzed the effects of the mother infant intervention (MD) in the olfactory memory and cellular parameters regarding the MD protocol and CNS development in *Wistar* rat pups at 7, 11 and 21 days postpartum. Pregnant female *Wistar* rats were housed individually at the sectorial laboratory of UFRGS. On the 1st day after delivery (PND1), the offspring was separated from the dam for a period of a 3h/day (Deprived Group – DP), during 10 consecutive days (PND10). Non-deprived rats remained undisturbed in the home cage with their mothers (Control Group – ND). In the course of the MD protocol, maternal behavior, such as licking and arched back nursing position, were observed three times per day. The olfactory memory test was performed with or in the five different trials, in which the latency period of the pups was measured based in a two-choice odor preference procedure, nest bedding or fresh bedding. The expression of β 3-tubulin, active in neurons and cellular differentiation, nestin, neural precursor, and Ki-67 for cellular proliferation, were marked and evaluated by flow cytometry in tissue samples of hippocampi and olfactory bulb. The data is shown as mean \pm SEM and the significance level as set at $p < 0.05$. These results demonstrate a higher maternal behavior immediately after the return of the litter to the home cage in MD group when compared to the non-deprived group ($F(5.84) = 22.92$; $p < 0.0001$). The MD animals spent more time (higher latency) to identify the nest odor in comparison to the non-deprived pups. Furthermore, no imbalance it was observed regarding the littermates body weight at 11 and 21 days

old. A classical developmental neural parameter used to observe the age-time of “open eye” the MD group (15.50 ± 0.3416 N=10) presented a slower eye opening age when compared to the control rats (12.78 ± 0.3643 N=9; $p < 0.0001$). Our main findings related to the neuronal cellular level demonstrated that the DM protocol induced a significant delay in the neural differentiation in both the hippocampus ($F(5.18) = 5.101$; $p < 0.01$) and olfactory bulb ($F(5.18) = 7.457$; $p < 0.01$). In addition, an increased cellular proliferation was observed in the hippocampus at 11 days in the MD group, which decreased abruptly at 21 days, and was undetectable in the ND group ($F(3.8) = 7.407$; $p < 0.05$). These results suggest that disruptions in the mother-infant binding by the MD protocol alters the pattern of maternal behavior, interaction with pups and littermates leading to delayed CNS development and significant impairment in offspring’s olfactory learning. **Key words:** maternal deprivation, olfactory memory, maternal behavior, hippocampus, olfactory bulb.

8. D1 AND D5 DOPAMINE RECEPTORS PARTICIPATE ON THE CONSOLIDATION OF TWO DIFFERENT MEMORIES

Rafael Canani Sommer¹, Jociane de C. Myskiw², Bianca E. Schmidt³, Lucas A. Marcondes⁴, Ivan Antônio Izquierdo⁵, Cristiane R.G. Furini⁶

¹Memory Center, Brain Institute, Pontifical Catholic University of Rio Grande do Sul. ²Memory Center, Brain Institute, Pontifical Catholic University of Rio Grande do Sul. ³Memory Center, Brain Institute, Pontifical Catholic University of Rio Grande do Sul. ⁴Memory Center, Brain Institute, Pontifical Catholic University of Rio Grande do Sul. ⁵Memory Center, Brain Institute, Pontifical Catholic University of Rio Grande do Sul. ⁶Memory Center, Brain Institute, Pontifical Catholic University of Rio Grande do Sul.

Memory consolidation is a process by which acquired information becomes stable over a period of time after learning. It is modulated by different neurotransmitters depending on the type of memory being processed. The dopamine system plays a major role regulating synaptic plasticity and memory formation in the CA1 region of the hippocampus and it is associated with disorders such as Parkinson’s disease and schizophrenia. The aim of the present study is to investigate the participation of dopamine receptors D1 and D5 of the CA1 region of hippocampus on the consolidation of two different tasks, object recognition (OR) and inhibitory avoidance (IA). For this, male Wistar rats (3 months old, 330 g) with infusion cannulae stereotaxically implanted in the CA1 region of hippocampus were trained in two

different behavioral tasks, OR (involving exposure to two objects) or one-trial step-down IA (0.5 mA, 2 sec). D1-family receptor antagonist SCH-23390 was infused, intra-CA1, immediately, 60 min or 180 min after training. Since D1- and D5-subtypes engage different pathways, by protein kinase A and protein kinase C, respectively, the PKA inhibitor, Rp-cAMP, or the PKC inhibitor, Gö6976, were infused immediately after OR or IA training in order to investigate whether they could differently affect the consolidation process. To evaluate D1- and D5-subtypes signaling pathways on consolidation we infused SCH-23390 with PKA or PKC activators 8Br-cAMP and PMA, respectively, immediately after training sessions. The results demonstrate that infusion of SCH-23390 immediately or 60 min, but not 180 min after training, impaired memory consolidation in the OR task. Moreover, animals that received Rp-cAMP or Gö6976 immediately after training also presented memory impairment in OR task. To find out whether these effects occurred on general consolidation or just on OR we tested the same treatments on IA task and the administration of SCH-23390 immediately after training impaired memory consolidation as well. To investigate whether both D1- and D5-subtypes pathways are activated on consolidation we infused SCH-23390 with 8Br-cAMP or PMA immediately after IA or OR training and both activators reversed the amnesic effect of SCH-23390 on both tasks. These results demonstrate that both D1 and D5 dopamine receptors are required in the CA1 region of the hippocampus for consolidation of two different memories, supporting the notion of a commonality of consolidation mechanisms across tasks. **Key words:** dopamine, memory consolidation, D1/D5.

9. EXECUTIVE FUNCTIONING AND IMPULSIVITY IN BRAZILIAN MALTREATED ADOLESCENTS

Paula Approbato de Oliveira¹, Paulo Jannuzzi Cunha², Bernardo dos Santos³, Sandra Scivoletto¹

¹Programa Equilíbrio – Departamento e Instituto de Psiquiatria do Hospital das Clínicas da Faculdade de Medicina da Universidade de São Paulo (IPQ-FMUSP). ²LIM 21-IPQ-FMUSP. ³Escola de Enfermagem-USP. ³LR-IPQ-FMUSP.

Introduction: Child maltreatment has been associated with cognitive deficits, including those affecting executive cognitive functions (ECF) and impulse control. Some studies have focused on the relationship between impaired ECF and increased impulsivity, but, none of them have investigated those relations in an integrated manner using a brief neurocognitive tool which could be widely used in the clinical practice. **Objective:** To investi-

gate the relation among ECF, impulsivity symptoms and maltreatment among adolescents in Brazil, a relevant source of information on the problems of adolescents in social vulnerability situations in a middle income country. **Methods:** 108 adolescents went through neuropsychology and psychiatric evaluation. The Brazilian version of Childhood Trauma Questionnaire (CTQ), the Barratt Impulsivity Scale (BIS-11) and 3rd. edition – WISC III were applied, as well as the Frontal Assessment Battery (FAB), composed by brief neurocognitive tasks assessing ECF. The Kiddie-Sads-Present and Lifetime Version was used to exclude adolescents with the following diagnoses: substance abuse and/or dependence; intellectual disability; pervasive developmental disorders; acute and transient psychotic disorders; and severe depressive episode. **Results:** The sample was composed by 50% of boys, mean of 13 years (SD=1.27), 71 (65.7%) with history of maltreatment. The mean IQ was 102.67 (SD=65). We found positive and moderate association between CTQ and BIS scores ($\rho=0.42$, $p<0.01$) and negative and mild association between CTQ and FAB scores ($\rho= -0.29$, $p<0.01$). Impulsivity scores were also correlated with ECF measures, ($\rho= -0.26$, $p<0.01$), which indicates that even at low intensity, symptoms of impulsivity were associated with worse executive functioning. **Conclusions:** Our data are the first to demonstrate the clinical validity of a brief battery of evaluation of ECF confirming that symptoms of impulsivity are associated with worse executive functioning and greater severity of maltreatment in adolescents. Future studies in this line of research must be conducted, once difficulties related to ECF and impulsivity are related to greater severity of disorders in adulthood and intra family violence, which leads to next generation victimization and the perpetuation of maltreatment. Finally, our data indicate the need of further studies on cognitive stimulation as a strategy to ameliorate ECF and to reduce impulsive symptoms. **Key words:** neuropsychology, impulsivity, executive functions, maltreatment, adolescents.

10. STUDY OF THE NEUROPROTECTIVE EFFECT OF OMEGA-3 FATTY ACIDS AND CLOZAPINE IN VIRUS-INFECTED HIPPOCAMPAL PRIMARY CULTURE.

Bruna Mara Machado Ribeiro¹, Adriano José Maia Chaves Filho¹, Deiziane Viana da Silva Costa², Antonio Teles de Menezes⁶, Mariana Lima Vale⁴, David Freitas de Lucena¹, Edenildo Lopes Fonteles⁷, Vivaldo Moura Neto³, Danielle Macêdo^{1,6*}

¹Neuropsychopharmacology Laboratory, Drug Research and Development Center, Faculty of Medicine, Federal University of Ceará, Brazil. ²Department of Morphology, Faculty of Medicine, Federal University of Ceará, Brazil. ³State Institute of the Brain

Paulo Niemeyer, Rio de Janeiro. ⁴Laboratory of Inflammation and Cancer Pharmacology, Drug Research and Development Center, Faculty of Medicine, Federal University of Ceará, Brazil. ⁵National Science and Technology Institute for Translational Medicine (INCT-TM), Brazil. ⁶Department of Pharmacology, Faculty of Medicine, Federal University of Ceará, Brazil.

The viral mimetic polyinosinic:polycytidylic acid (poly I:C) is an important tool to study the consequences of viral infection to the development of neuropsychiatric disorders. The mechanisms underlying the immune challenge by poly I: C in newborn animals are not fully understood, which are of great importance to the development of strategies for preventing neurodevelopmental disorders. The present study aimed to investigate the potential protective effects of Omega-3 polyunsaturated fatty acids (n3 PUFAs) and clozapine in primary hippocampal neurons challenged with the TLR-3 immunostimulant poly I:C. The hippocampal cells were obtained from animals on the first day of birth and subjected to poly I: C alone and simultaneously treated with n3 PUFAs (1:50, 1:100 or 1:200) or clozapine (1.5 or 3 μ M) and incubated for 72 hours. Cell viability was determined by MTT test. The following parameters were evaluated according to the techniques in parentheses: NFkBp50 and inducible nitric oxide synthase -iNOS (immunofluorescence), NFkBp65 (immunoblot), nitrite (Griess method), interleukin-6 and Brain-Derived Neurotrophic Factor – BDNF (ELISA). The results showed that neural cells treated with poly I: C had a significant increase NFkBp65, NFkBp50, iNOS, IL-6 and nitrite. Here we investigated the involvement of NFkB pathway in the effects of n3 PUFAs or the atypical antipsychotic clozapine in hippocampal poly I:C-challenged neurons. Primary hippocampal neuronal cultures were exposed to n3 PUFAs (1:50, 1:100 or 1:200) or clozapine (1.5 or 3 μ M) in the presence or absence of poly I:C. MTT assay revealed that poly I:C-induced reduction in cell viability was prevented by n3 PUFAs or clozapine. N3 PUFAs (1:100) or clozapine (3 μ M) significantly reduced poly I:C-induced increasing in iNOS, NFkB (p50/p65), IL-6 and nitrite when compared to non-treated cells. Only n3 PUFAs prevented poly I:C-induced deficits in BDNF. Thus, n3 PUFAs and clozapine exert in vitro neuroprotective effects against poly I:C immune challenge in hippocampal neurons, by mechanisms involving inhibition of canonical NFkB pathway. The present study adds further evidences to the mechanisms underlying n3 PUFAs and clozapine neuroprotective effects against viral immune challenges. **Key words:** neuroprotection, neuroinflammation, infection viral, primary culture, hippocampus, n3 PUFAs, poly I:C, clozapine.

11. MNSOD ALA16VAL SNP IN LATE PHASE STROKE PATIENTS: A RELATION WITH BDNF AND IL-1 β SERUM LEVELS AND SPASTICITY

Ariane Ethur Flores, Eduardo Tanuri Pascotini, Ana Lúcia Cervi Prado, Ivana Beatrice Manica da Cruz, Marta F. Duarte, Michele Rechia Figuera.

Laboratório de Neuropsiquiatria, HUSM – Universidade Federal de Santa Maria – Brazil.

Objective: The MnSOD Ala16Val single nucleotide polymorphism (SNP) has shown to be associated to risk factors of several metabolic and vascular diseases. However, little is known about interaction between MnSOD Ala16Val SNP on stroke, a frequent neurologic disease that involves various interacting pathways. In this sense, we decided to investigate the relationship between MnSOD Ala16Val SNP with BDNF levels on stroke and also its influence on IL-1 β levels and spasticity in the patients with chronic stroke (CS). **Methods:** Cross-sectional study with 42 subjects without the disease (control group) and CS group (n=42) that regularly accompanying on the Neurologic Clinic of the Hospital of Federal University of Santa Maria (HUSM). A questionnaire was applied to baseline characteristics and clinical. After, blood sample were collected for interleukin 1 β (IL-1 β), Brain-Derived Neurotrophic Factor (BDNF) and spasticity. All analyses were carried out using the SPSS statistical software, version 18.0 (SPSS Inc., Chicago, IL). MnSOD Ala16Val and spasticity results were presented at qui-square. To compare stroke and control subjects with different genotypes with IL-1 β and BDNF were used the analysis of variance followed by the Bonferroni post hoc test. The level of significance was <0.05. **Results:** Statistical analysis showed that the potential influence of Ala16Val MnSOD SNP show a higher proportion of patients VV genotype among individuals who have suffered stroke as compared to healthy subjects. Results showed that IL-1 β [F(2.74)=6.56; P<0.001] were higher in CS. *Post hoc* test showed that CS VV genotype presented higher IL-1 β levels (t=27.66 and t=8.3; P<0.01) as compared to AA of CG and CS. BDNF levels were lower [F(2.74)=37.4; P<0.0001] in CS. *Post hoc* test showed that CS VV genotype presented lower BDNF (t=28.69 and t=16.30; P<0.01) levels in comparison to CG and A allele carriers of CS. Furthermore, the spasticity was higher in the CS with VV genotype when compared to healthy subjects and AA and AV stroke group (P=0.038). Interestingly, we found a correlation between IL-1 β and spasticity (R=0.53; P<0.01). **Conclusions:** Taken together, our results indicate a possible influence of the MnSOD Ala16Val SNP in stroke risk, suggesting a important role of genetic factors as well as an association of higher IL-1 β and lower BDNF levels in the pathophysiology of stroke.

12. GENETIC VARIATION IN CRHR1 GENE PREDICTS RESPONSE TO BRIEF THERAPIES IN MAJOR DEPRESSIVE PATIENTS.

Karoline Souza¹, Letícia Müller Dallmann¹, Mariane Lopes Molina¹, Bertha Bock¹, Aline Venzke¹, Clarissa Ribeiro Bastos¹, Ricardo Azevedo da Silva¹, Luciano Dias de Matos Souza¹, Gabriele Ghisleni^{1*}

¹Laboratório de Neurociências Clínicas, Programa de Pós-Graduação em Saúde e Comportamento, Universidade Católica de Pelotas (UCPel), Pelotas, Rio Grande do Sul, Brasil.

Background: Brief psychotherapies have been considered an effective alternative of treatment for major depression disorder (MDD). Genetic variations in the hypothalamic-pituitary-adrenocortical (HPA) axis has been associated with mood and anxiety disorders. We investigate the association of polymorphism rs110402 in the CRHR1 gene in the severity of depressive and anxious symptoms as well as in the response to therapy treatment. **Methods:** The sample consisted of 120 MDD individuals, who completed the psychotherapeutic treatment in a randomized clinical trial conducted in a Mental Health Ambulatory (Pelotas/Brazil). Patients were randomized between two intervention models and were analyzed by the Beck Depression Scale (BDI-II) and Beck Anxiety Inventory (BAI). Genetic analysis of rs110402 polymorphism in the CRHR1 gene was performed in the real time PCR. **Results:** Of 120 subjects, 92 (76.7%) were female, the majority Caucasian 101 (84.2%), with a mean age of 36 \pm 11.4 years and education of 11.6 \pm 3.61 years. The depressive (BDI) and anxiety (BAI) scores in our sample in the pre-treatment had a mean value of 31.9 \pm 11.12 and 22.14 \pm 12.84, respectively. Our study showed that rs110402 polymorphism in the CRHR1 gene are not associated with the severity of depressive and anxiety symptoms in patients with MDD. However, patients carrying the AA genotype of rs110402 polymorphism presented lower response rate of depressive symptoms related to those carrying the G allele (7.14 \pm 13.19 and 14.88 \pm 13.01, respectively; p \leq 0.002). The same effect was observed in the anxiety response rate according to genotypes (1.14 \pm 11.95 for AA and 10.10 \pm 11.13 for G allele; p \leq 0.0001). Linear regression analysis showed that AA genotype is as independent risk factor for psychotherapy treatment response for both depressive (β = -7.408; p=0.035) and anxiety symptoms (β = -10.472; p=0.001). **Conclusions:** We can conclude that genetic variation in HPA axis are an important point to be considered as a predictor of treatment response. Further studies should be conducted to verify this association and further analysis in others genes of HPA axis could clarify our hypothesis. **Key words:** major depression disorder, brief psychotherapies, HPA axis, CRHR1.

13. PREVALENCE OF BODY IMAGE SATISFACTION AND ITS RELATIONSHIP WITH SOCIODEMOGRAPHIC, FUNCTIONAL AND HEALTH ASPECTS IN OLDER ADULTS FROM PORTO ALEGRE'S PRIMARY HEALTH CARE

Raquel Rousselet Farias¹, Renata Breda Martins², Vivian Ulrich¹, João Henrique Correa Kanan³, Irenio Gomes da Silva Filho², Thais de Lima Resende¹

¹Nursing, Nutrition and Physiotherapy Faculty, Pontifical Catholic University of Rio Grande do Sul – PUCRS. ²Geriatrics and Gerontology Institute, PUCRS. ³Microbiology, Immunology and Parasitology Department/Federal University of Rio Grande do Sul.

Introduction: Body image gathers body self-perception and attitudes, not only physical appearance. It can have consequences on people's health and quality of life, as found in younger population. However, there are still few studies on body image satisfaction (BIS) in older adults. Therefore, it is important to develop research that seeks to understand this perception in this age group, as well as the impact it generates in their lives and the factors associated with it. **Objective:** To determine the prevalence of BIS and its relationship with sociodemographic characteristics, polypharmacy, cognition, functionality, falls, physical activity and urinary loss in older adults from Porto Alegre's public Primary Health Care units (PHC). **Methods:** This cross-sectional, analytical study was prospectively developed in a random sample of the eight health districts, totaling 30 units. In individual interviews conducted by a multiprofessional team, sociodemographic and health data were collected, functional tests and instruments were applied to characterize the sample regarding body image satisfaction (Stunkard Silhouettes Scale), cognition (Mini Mental State Examination) and the average weekly time spent on performing household chores, active sports, physical exercise, and leisure activities (Minnesota Physical and Leisure Activity Questionnaire). The functional tests performed were: 30-second Sit/Stand test (lower limb strength), handgrip strength (upper limb strength) and time to walk 10m. **Results:** 532 older adults participated (68.1±6.5 years; women=64.85%), of which 31% reported BIS (men=50.3%). After Multivariate Binary Logistic Regression (6 steps) for the prediction of BIS, among the 19 variables investigated the factors associated with it were: greater handgrip strength (ORa: 1.062; p<0.0001), higher score in the Sit/Stand test (ORa: 1.123; p=0.013), and an average of 2,519 minutes spent weekly in the various activities of daily living, including physical and leisure activities (ORa: 0.766; p=0.004). **Conclusions:** With relatively low prevalence, the BIS of the PHC older adults is associated with having higher upper and lower limb muscle strength and spending an average of six hours per day in

different activities. **Key words:** aged, body image, aging, primary health care

14. EFFECTS OF TRANSCRANIAL DIRECT CURRENT STIMULATION ON NEGATIVE SYMPTOMS IN PATIENTS WITH SCHIZOPHRENIA

July Silveira Gomes¹, Daniella Valverde Ducos, Ary Gadelha¹, Bruno Ortiz¹, Ana Olívia Fonseca¹, Henrique Akiba¹, Luciano S.P. Guimaraes³, Pedro Shiozawa², Quirino Cordeiro¹, Alisson Paulino Trevizol¹, Acioly Lacerda¹, Alvaro Machado Dias¹

¹Clinical Neuroscience Interdisciplinary Laboratory, Federal University of Sao Paulo Medical School, Department of Psychiatry, Sao Paulo, Brazil. ²Santa Casa School of Medicine. ³Epidemiology and Biostatistics Unit, Clinical Hospital of Porto Alegre, Federal University of Rio Grande do Sul.

Introduction: Schizophrenia is a chronic mental disorder that affects 4.6 per 1000 persons, with symptoms relatively distinguished in at least 3 domains: positive or psychotic symptoms, including hallucinations and delusions; negative symptoms, as lack of interest and motivation, reduction of emotional expression and responsiveness and social withdrawn; and cognitive impairments. Negative symptoms play an important role in the functional recovery and have no specific treatment. **Objective:** To investigate the effects of dorsolateral prefrontal cortex tDCS on negative symptoms in schizophrenia. **Methods:** Here we report preliminary results from a randomized controlled trial on negative symptoms in 22 patients with schizophrenia, randomized to active or sham transcranial direct current stimulation (tDCS) groups. Anodal tDCS were applied for 20 minutes over left dorsolateral prefrontal cortex (LDPFC) and cathodal at the right contralateral area, once a day for 10 days (no sessions during the weekends), with current of 2.0 mA. Clinical outcomes were assessed by the Positive and Negative Syndrome Scale (PANSS), Calgary Depression Scale for Schizophrenia, and Global Assessment of Functioning (GAF). Generalized estimated equations were used for statistical analysis. **Results:** We found interaction effects for PANSS negative scale, PANSS general scale and for PANSS total score. PANSS negative scale reduced 3.83 points to tDCS group and 0.02 for the sham group (p<0.001), general scale reduced 6 points to active tDCS and 0.07 for sham (p=0.007) and PANSS total score reduced 10.75 points in tDCS group against 1 point for the sham group (p<0.001). No interaction effect were revealed for PANSS positive scale (p=0.444), GAF (p=0.320) and Calgary (p=0.866). **Conclusions:** Left anodal tDCS, with cathode at the right contralateral area, had significant effects on negative symptoms and psychopathology. **Key words:** schizophrenia, non-

invasive brain stimulation, transcranial direct current stimulation, tDCS, psychosis.

15. SUPERIOR MEMORY CAPACITY OF SUPERAGERS IS CORRELATED WITH HIGHER [18F]FDG UPTAKE IN THE HIPPOCAMPUS

Wyllians Vendramini Borelli^a, Paula Kopschina Feltes^{a,b}, Michele Alberton Andrade^a, Cristina Maria Moriguchi Jeckel^a, Eduardo R Zimmer^a, Lucas Porcello Schilling^a, Mirna Wetters Portuguese^a, Jaderson Costa da Costa^a

^aBrain Institute of Rio Grande do Sul (BraIns), Pontifícia Universidade Católica do Rio Grande do Sul, Porto Alegre, Brasil. ^bNuclear Medicine and Molecular Imaging Department – University of Groningen, The Netherlands.

Introduction: Coined Superagers, some older adults exhibit exceptional memory capacity. It has been hypothesized that the brain's cortical metabolism in this group is associated with memory preservation. [18F]fluorodeoxyglucose ([18F]FDG) is a glucose analogue used to evaluate brain's metabolic activity in vivo through positron emission tomography with computed tomography (PET/CT) in a non-invasive manner. **Objective:** The aim of the present study was to identify differences in brain metabolic activity of Superagers in comparison to age-matched controls using [18F]FDG-PET/CT scans. **Methods:** Five superagers and three elderly controls (mean age of 80.4±0.8 and 82.33±6.01, respectively) were evaluated through neuropsychological evaluation, including the Rey Auditory-Verbal Learning Test (RAVLT). Superagers were defined as individuals with 80 or more years of age, with a delayed-recall memory test (RAVLT, A7 list) similar to normative data of 50-60 years old. The control group was composed by cognitively average individuals with 80 or more years old. Patients then underwent a 60-min dynamic brain [18F]FDG-PET/CT scan, 4 hours after fast and glucose levels were measured. The average of the interval 46-60 minutes was used for volume of interest (VOI) analysis. The brain's radioactivity concentration was calculated from the VOIs and expressed as standardized uptake values (SUVs), corrected for the mean uptake of the whole brain. Differences in the mean SUV±standard deviation between groups were analysed through an independent-samples t-tests and considered significant when p-value ≤0.05. The Pearson's correlation method was applied to investigate if tracer uptake in certain brain areas was related to memory performance. **Results:** Superagers performed better than the control group in the RAVLT-A7 test, with a mean score of 12.4±2.51, whereas controls scored 8.00±1.00 (p=0.015). The [18F]FDG brain PET results revealed a significantly higher uptake in the

hippocampus of Superagers in comparison to controls (0.83±0.06 vs. 0.73±0.02, p=0.03). The hippocampus SUV and the RAVLT-A7 score showed significant correlation in both groups, with moderate and very strong correlation respectively for Superagers (r²=0.558) and Controls (r²=0.935), p=0.004. **Conclusions:** The preliminary results of this study demonstrated that the superior memory capacity of Superagers could be related to a higher metabolic activity in the hippocampus. **Key words:** superagers, PET, FDG, memory, older adults.

16. AÇAÍ (*Euterpe oleracea* MART.) HAS ANTI-INFLAMMATORY EFFECT ON OLANZAPINE-ACTIVATED RAW 264.7 MACROPHAGES

Larissa Schmidt Copa¹, Marcelo Soares Fernandes^{1,3}, Alencar Kolinski Machado², Fernanda Barbisan¹, Verônica Farina Azzolin¹, Charles Elias Assmann¹, Francine Carla Cadoná¹, Euler Esteves Ribeiro⁴, Rogério Tomasi Riffel³, Ivana Beatrice Mânica da Cruz¹

¹Department of Morphology, Federal University of Santa Maria (UFSM). ²Franciscan University (UNIFRA). ³Federal University of South Frontier (UFFS). ⁴Open University of the Elderly, University of Amazon State (UnATI/UEA).

Introduction: Olanzapine is an antipsychotic of second generation used for the treatment of subjects with neuropsychiatric illness, as schizophrenia, for example. However, this drug has been associated with inflammatory activation events. In this sense, studies of natural products with anti-inflammatory potential have high significance looking for adjuvant therapy. In this field, açai, a popular native fruit from Amazon rainforest, is in highlight. It is because this fruit has several bioactive molecules composing part of its chemical matrix. **Objective:** Evaluate the *in vitro* potential anti-inflammatory effect of freeze-dried hydroalcoholic açai extract on olanzapine-activated RAW 264.7 macrophages. **Methods:** RAW 264.7 cells were cultivated and exposed to different concentrations of olanzapine during 72 h of incubation. These cells were evaluated while cellular proliferation to determine the most effective concentration of this drug to activate inflammatory response. Olanzapine-activated macrophages under the most effective concentration of olanzapine treatment were exposed to different concentrations of açai extract, being tested for cell proliferation to determine the most capable concentration of açai to reduce the inflammatory activation. We have measured the levels of pro-inflammatory cytokines, including interleukin (IL) 1β, IL-6, tumor necrosis factor-α (TNF-α), and interferon-γ (IFN-γ), as well as the anti-inflammatory cytokine IL-10 at olanzapine-activated macrophages treated with açai extract concomi-

tantly. **Results:** The olanzapine most effective concentration to activate RAW 264.7 macrophages inflammation, through increased cellular proliferation, was 30 ng/mL. On the other hand, the most effective concentration of freeze-dried hydroalcoholic açai extract to reduce inflammatory response was 1µg/mL, since this specific concentration decreased significantly the cellular proliferation when compared to olanzapine positive control. Also, while cells exposed to only to olanzapine presented increased levelsof all pro-inflammatory cytokines and decreased levels of anti-inflammatory cytokine, macrophages exposed to açai extract showed recovered levels of these cytokines, in order to reduce pro-inflammatory cytokines and increase IL-10 levels. **Conclusions:** The obtained results demonstrated that olanzapine has pro-inflammatory effect. On the other hand, results are also uggestive that açai extract is a potential anti-inflammatory candidate, as well as it could be possibly used as an adjuvant therapy under olanzapine treatment. **Key words:** Olanzapine, açai, anti-inflammatory

17. ANALYSIS OF CEREBELLAR MICRORNA EXPRESSION IN ANIMAL MODEL OF AUTISM INDUCED BY PRE-NATAL EXPOSURE TO VALPROIC ACID

Giovanna Carello Collar^{1,2}, Gabriela Staevie^{1,2}, Mauro Mozael Hirsch^{1,2}, Victorio Bambini-Junior^{2,3}, Rogerio Margis⁴, Carmem Gottfried^{1,2}

¹Department of Biochemistry, Institute of Health's Basic Science, Federal University of Rio Grande do Sul, Porto Alegre, RS, Brazil. ²Translational Research Group in Autism Spectrum Disorder (GETTEA). ³School of Pharmacy and Biomedical Sciences, Faculty of Clinical and Biomedical Sciences, University of Central Lancashire, Fylde Rd, PR1 2HE, Preston, Lancashire, England. ⁴Centre of Biotechnology, Building 43431, Federal University of Rio Grande do Sul – UFRGS, P.O. Box 15005, 91501-970 Porto Alegre, RS, Brazil.

Autism Spectrum Disorder (ASD) is a neurodevelopmental disorder characterized by impairments in sociability and communication, as well as restricted and repetitive behaviors. An established environmental risk factor for ASD is the prenatal exposure to valproic acid (VPA). Based on this observation, VPA is commonly used to generate autistic-like behavior in rodents. Previous studies shown that cerebellum also plays a role in language, emotions and affective processing, skills involved in social interaction. Cerebellar aberrations found in patients with ASD may be modulated by microRNA (miRNA), a small non-coding group of RNA that act as post-transcriptional regulators. The present study aimed to evaluate the relative expression of 16 miRNA related to structural and functional syn-

aptic plasticity in both VPA model and Control group, correlating its target messenger RNA (mRNA) with findings in ASD. The project was approved by ethics committee (CEUA-UFRGS, 14-0679). Pregnant females received a single intraperitoneal injection of VPA (600 mg/kg) or physiological saline at embryonic day 12.5. Cerebellum from male offspring was collected at post-natal day 30 and miRNA expression was evaluated by reverse transcriptase followed by quantitative polymerase chain reaction (RT-qPCR). Data analysis was performed using geNorm and LinRegPCR algorithms and statistical analysis was made in GraphPad (T-Student's Test, $p < 0.05$). miRTarBase was employed to the identification of validated mRNA targets and TargetScan and MiRDB to predict targets. VPA group presented increased levels of miR-132 (Control: 1.012 ± 0.08841 ; VPA: 1.398 ± 0.08828 , $p = 0.0149$) and miR-181a (Control: 1.027 ± 0.09548 VPA: 1.416 ± 0.1260 , $p = 0.0417$). Based on these results, an important set of potential mRNA targets were identified (e.g. MECP2 and BCL2 – both already described altered in ASD). To the best of our knowledge, it was the first time that cerebellar miRNA relative expression was analyzed in an animal model of ASD. Further analyses are required to validate the possible alterations in those targets, however, the present data is instrumental to clarify aspects of ASD's pathophysiology and to contribute to the search for potential clinical markers in autism. **Acknowledgements:** CAPES, CNPq, PROPESQ-UFRGS, FIPE-HCPA, INCT-NIM. Key words: autism, cerebellum, miRNA, VPA.

18. ANALISYS OF INTER-HEMISPHERIC COHERENCE OF FRONTAL CORTEX IN ELDERLY POPULATION DURING A VIRTUAL REALITY BALANCE TASK.

Kim Mansur Yano, Thaiana Barbosa Ferreira Pacheco, Rebecca Veras Brito de Almeida, Candice Simões Pimenta de Medeiros, Isabelle Ananda Oliveira Rego, Nathalia Priscilla Oliveira Silva Bessa, Fernanda Gabrielle Mendonça Silva, Fabrícia Azevedo da Costa Cavalcanti
Physical Therapy Department, Federal University of Rio Grande do Norte, Natal, Brazil.

Introduction: During aging process, the Central Nervous System (CNS) undergoes changes that lead to a decrease in brain processing speed. However, in view of the inter-neuronal connections network that allows functional integration of the brain, the CNS presents compensatory mechanisms that help reducing age-related deficits. In order to stimulate such mechanisms, several physical therapy approaches have emerged within the scope of neurogerontology, among them, Virtual Reality (VR). Thus, it is necessary to know the influence of VR on

brain activity of elderly, and for this, a study of coherence between pairs of electroencephalography electrodes (EEG) seems to be a viable tool to analyze relations of different areas of the brain throughout senile process.

Objective: To investigate the behavior of inter-hemispheric coherence of beta frequency (13Hz-30Hz) in the frontal lobe of elderly during one session of balance training in VR. **Methods:** An analytical transverse study, in which 10 elderly people, with a mean age of 65.1 ± 4.82 years, underwent a cognitive evaluation (Mini-Mental State Examination). Then, seniors performed during 4 minutes, the VR game called Penguin Slide from Nintendo Wii®. During the practice, cortical activity was recorded by using the Emotiv EPOC – a portable and non-invasive EEG device that presents 8 frontal channels. MATLAB was used to treat and extract EEG signal. The EEG coherence data were presented in graphs considering the Beta power. **Results:** Elderly patients presented satisfactory cognitive performance ($MMSE=27 \pm 2.36$) and all of them were in contact with VR for the first time. Regarding inter-hemispheric coherence, although subtle variations were observed, the AF3-AF4 pair presented a higher index of inter-hemispheric coherence (55%), followed by the F3-F4 (42%), F7-F8 (30%) and FC5-FC6 (27%). In addition, it was observed that, with the exception of the FC5-FC6 pair, the coherence pattern tends to decrease from 25Hz. **Conclusions:** The characterization of the inter-hemispheric coherence pattern of elderly during VR exposure may vary considering specific areas of frontal region. Such fact may be associated with the fact that VR demands varied cognitive stimulus associated with a specific simple motor task. **Key words:** Virtual Reality, EEG, Physiotherapy.

19. EXERCISE-BASED PULMONARY REHABILITATION PROGRAM REDUCES DEPRESSION AND MODULATES BDNF LEVELS IN PATIENTS WITH COPD

Cintia Laura Pereira de Araujo¹, Ivy Reichert Vital da Silva², Pâmela Krause Peccin³, Andréia Bard³, Daniela Pochmann², Gustavo Reinaldo¹, Paulo José Zimmermann Teixeira^{1,4}, Pedro Dal Lago¹, Viviane Rostirola Elsner²

¹Programa de Pós-Graduação em Ciências da Saúde, Universidade Federal de Ciências da Saúde de Porto Alegre, RS, Brazil. ²Programa de Pós-Graduação em Biociências e Reabilitação do Centro Universitário Metodista-IPA, Porto Alegre, RS, Brazil. ³Curso de Fisioterapia do Centro Universitário Metodista-IPA, Porto Alegre, RS-Brazil. ⁴Médico responsável pelo Serviço de Reabilitação Pulmonar do Pavilhão Pereira Filho do Hospital Santa Casa de Misericórdia de Porto Alegre, RS, Brazil.

Background: Chronic obstructive pulmonary disease (COPD) is characterized by pulmonary function impair-

ment, dyspnea and peripheral muscle dysfunction, contributing to exercise intolerance and reduced activities of daily living. In consequence, high prevalence of psychiatric disorders such as depression is observed among these patients. Brain-derived neurotrophic factor (BDNF) plays an important role on cognition, emotion and mood and it is related to the etiology and progression of several diseases such as depression. Specifically related to the respiratory system, BDNF seems to enhance the number and function of airway smooth muscle cells and is involved in the airway hyperresponsiveness and cough.

Objective: This study aimed to examine the impact of a pulmonary rehabilitation program (PRP) on BDNF levels and depression of COPD patients and to analyze the time course of PRP effects on BDNF modulation. **Methods:** Patients with COPD were recruited for an exercise-based PRP (24 sessions, thrice a week, 90 min). Subjects must be ≥ 40 years-old, sedentary, GOLD stages 2, 3 and 4 of severity of airflow limitation, clinically stable in the four weeks prior to the study protocol, nonsmoker for at least six months and present history of smoking ≥ 20 pack-years. Depression (Beck Depression Inventory), quality of life (St. George's Respiratory Questionnaire), exercise capacity (six-minute walking test) and dyspnea (Medical Research Council) were assessed at baseline and after the PRP. Plasmatic BDNF levels were assessed at different time-points: baseline, after the 1st session and before and after the 24th session. **Results:** Sixteen patients (10 males; 68.5 ± 6.7 years; $FEV_1/FVC: 0.48 \pm 0.1$; $FEV_1: 39 \pm 14\%$ of predicted value) were included. PRP improved exercise capacity ($p=0.01$) and quality of life ($p=0.07$), reduced dyspnea ($p=0.01$) and depression ($p=0.004$). Post hoc analysis revealed reduction on BDNF levels after the 1st session ($p<0.001$) and an increase between the end of the 1st session and the beginning of the 24th session ($p=0.006$). **Conclusions:** PRP improved exercise capacity, quality of life, dyspnea and depression. Exercise acutely reduced BDNF levels, effect that was nullified by the long-term intervention, suggesting an adaptive response following PRP. **Key words:** Brain-derived neurotrophic factor, depression, exercise.

20. CANDESARTAN PREVENTS BEHAVIORAL AND NEUROCHEMICAL ALTERATIONS INDUCED BY THE CHRONIC ADMINISTRATION OF LISDEXAMPHETAMINE IN HEALTHY INFANT MICE.

de Oliveira DLN, Okamura AMNC, Nobre PHP, Lima CNC, da Silva FER, de Lucena DF, Macêdo DS

Neuropsychopharmacology Laboratory, Drug Research and Development Center, Universidade Federal do Ceará – UFC.

Lisdexamphetamine dimesilate (LDX) is a prodrug

used to treat Attention Deficit Hyperactivity Disorder (ADHD). After biotransformation, LDX is converted into dextroamphetamine (D-AMPH). Based on its enzymatic conversion to D-AMPH, LDX was proposed as an animal model of bipolar mania. Indeed the pathophysiology of bipolar mania is related to dopaminergic hyperactivity. Of note, one important side effect of LDX in children is the occurrence of insomnia. Accordingly, sleep deprivation is associated with the onset of hypomania or mania. Between 2009 and 2011, the consumption of LDX by children from 6 until 16 years old in Brazil was increased by 75%, whereas its sales increased by 85% in the last decade. Candesartan (CDS) is an angiotensin II type 1 receptor (AT1R) blocker that presents brain anti-inflammatory effects. A recent study of our research group showed that CDS presents anti-manic effect. Thus, in the present study we hypothesized that CDS administration (0.3 mg/kg) to LDX-exposed infant rats would present the alterations induced by LDX. To do this, infant rats were exposed to increasing doses of LDX during three weeks (10 mg/kg; 13 mg/kg, and 18 mg/kg). All drugs were orally administered. The animals were divided into the following groups (8 animals/group): LDX+saline (SAL), LDX+CDS, and SAL+SAL (control). At the end of three weeks, the animals were submitted to the novel object recognition test (NOR) to analyze memory alterations. After that, the animals were sacrificed and the hippocampus dissected to estimate the levels of lipid peroxidation by the thiobarbituric acid reactive substance (TBARS) test. For statistical analysis, the one-way ANOVA test was utilized, followed by the Tukey's Multiple Comparisons Test ($\alpha < 0.05$). We observed a decrease in NOR index in the animals administered LDX+SAL in relation to SAL+SAL. This alteration was prevented by the administration of LDX+CDS ($P < 0.01$). In addition, a significant reduction ($P < 0.0001$) of lipid peroxidation levels in the animals treated with LDX+CDS was observed in comparison to those treated with LDX+SAL. In conclusion, we observed that the administration of LDX to infant animals causes deficits in declarative memory that are prevented by the administration of CDS. **Financial support:** Funcap and CNPq.

21. AUTOLOGOUS BONE MARROW MONONUCLEAR CELLS IN TREATMENT OF PATIENTS WITH MESIAL TEMPORAL LOBE EPILEPSY

Fernanda Thays Konat Bruzzo¹, Mirna W. Portuquez¹, Daniel Marinowic¹, Lucas P. Schilling¹, Carolina M. Torres¹, Danielle I. Da Costa¹, Maria Júlia M. Carrion¹, Eduardo F. Raupp¹, Denise C. Machado¹, Ricardo B. Soder¹, Sílvia L. Lardi – Lardi¹, Bernardo Garicochea², Carlos Silvado¹, Fernando Cendes¹, Jaderson Costa Da Costa¹

¹Pontifícia Universidade Católica do Rio Grande do Sul. Hospital Sírío Libanês.

Temporal lobe epilepsy (TLE) is a highly prevalent syndrome among people with epilepsy refractory to drug treatment. Patients with TLE often present hippocampal sclerosis (HS) as structural and physiological changes. The objective of this study is to evaluate the feasibility, safety, therapeutic, adverse effects and inflammatory markers in patients treated with bone marrow mononuclear cells (BMMC). Phase I/II of this project demonstrated the feasibility, safety and possibility of seizure control in patients treated with intra-arterial infusion of BMMC. Twenty patients who had been diagnosed with medically refractory mesial TLE and unilateral hippocampal sclerosis were selected to the clinical trial. They underwent neurological evaluations and neuropsychological tests before and after cell treatment. After the infusion of prepared BMMC, patients were followed for 6 months. Safety of the procedure, seizure frequency, neuropsychological evaluation, EEG variables, routine brain MRI and hippocampal volumetry were considered to measure the outcome of the treatment. The results of phase I/II study support the therapeutic potential of stem cell transplants in MTLE-HS patients. The phase III clinical trial in cellular therapy is a multicentric, randomized and controlled study, including two treatment groups (BMMC and optimized medication). This study takes place in three Centers: PUCRS (São Lucas Hospital/Epilepsy Surgery Program/Brain Institute), UNICAMP (University of Campinas/Neurology Department) and UFPR (Federal University of Parana/Clinical Hospital/Neurology Department). The patients selection process of phase III has already begun. It will be enrolled 36 adult patients with refractory TLE and unilateral HS. For the purpose of entering the study, patients have to meet the inclusion criteria and after selected, they will undergo neurological evaluations, magnetic resonance imaging and neuropsychological tests. This phase purpose is to evaluate if the BMMC transplantation is capable of controlling or reducing the frequency and severity of seizures. It will also elucidate if there is an improvement of neuropsychological scores for life quality, anxiety and depression, proposing the cellular therapy as an alternative for treatment of temporal lobe epilepsy. **Key words:** bone marrow, hippocampal sclerosis, memory deficit, mononuclear cells, refractory epilepsy, stem cells

22. AÇAÍ (*Euterpe oleracea* MART.) EXTRACT HAS NEUROPROTECTIVE EFFECT AT NEURONS WITH OXIDATIVE IMBALANCE

Danieli Monteiro Pillar¹, Alencar Kolinski Machado², Ana

Cristina Andreazza³, Aline Augusti Boligon¹, Francine Carla Cadoná¹, Euler Esteves Ribeiro⁴, Ivana Beatrice Mânica da Cruz¹

¹Department of Morphology, Federal University of Santa Maria (UFSM). ²Franciscan University (UNIFRA). ³Department of Pharmacology and Toxicology, University of Toronto (UofT). ⁴Open University of the Elderly, University of Amazon State (UnATI/UEA).

Introduction: It is already known that subjects with bipolar disorder (BD) oscillate between periods of mania and depression, but this mental illness presents a complex pathophysiology. Several studies have been describing new biomarkers found in these individuals, as oxidative stress in order of a mitochondrial dysfunction, for example. Researches involving natural products have been developed to recover cellular oxidative homeostasis. In this sense, açai, a native fruit from Amazon rainforest, fits as a potential candidate as neuroprotector agent, due to its chemical matrix that is composed by bioactive molecules. **Objective:** Produce and characterize a freeze-dried hydroalcoholic açai extract and evaluate its neuroprotector effect in neuron-like cells with oxidative imbalance induced by rotenone exposition. **Methods:** A freeze-dried hydroalcoholic açai extract was made followed by high performance liquid chromatography analysis. SH-SY5Y cells were treated with different açai extract concentrations and evaluated while cellular viability to determine the effective concentration able to increase cell viability at 50% (EC50) under 24, 48 and 72 h of incubation. Cells were exposed to rotenone (5, 15 and 30 nM) during 24 h and before and after this exposition, these cells were also treated with açai extract EC50. Then, we measured total levels of reactive oxygen species (ROS) and lipid peroxidation. **Results:** We have found twelve different bioactive molecules integrating açai chemical matrix, specially orientin (8.05±0.03 mg/g), *p*-cumaric acid (3.52±0.01 mg/g), and apigenin (3.49±0.01 mg/g). Neuron-like cells exposed to rotenone presented cellular viability reduction. On the other hand, cells treated with different concentrations of açai extract showed increased cellular viability and the açai EC50 was 5 µg/mL. Also, açai extract at its EC50 was able to prevent and to reverse the imbalance induced by rotenone, reducing the levels of ROS and decreasing lipid peroxidation when compared to rotenone positive controls. **Conclusions:** The obtained results are suggestive that açai has neuroprotective activity possibly due to the presence of bioactive molecules, specially with antioxidant effect, that are part of its chemical matrix. In this sense, we believe that açai is a potential candidate to perform complementary studies looking for drug development focusing at neuropsychiatric diseases. **Key**

words: neuropsychiatric diseases, mitochondrial dysfunction, functional foods.

23. AÇAÍ (*Euterpe oleracea* MART.) EXTRACT MODULATE MITOCHONDRIAL COMPLEX I OF NEURONS EXPOSED TO ROTENONE

Moisés Henrique Mastella¹, Alencar Kolinski Machado², Ana Cristina Andreazza³, Tatiane Morgana da Silva⁴, Angela Duong³, Gustavo Scola³, Euler Esteves Ribeiro⁵, Ivana Beatrice Mânica da Cruz¹

¹Postgraduate Program of Gerontology, Federal University of Santa Maria (UFSM). ²Franciscan University (UNIFRA). ³Department of Pharmacology and Toxicology, University of Toronto (UofT). ⁴Federal University of Pelotas (UFPEL). ⁵Open University of the Elderly, University of Amazon State (UnATI/UEA).

Introduction: Bipolar disorder (BD) has a complex pathophysiology. Several studies have been performed intending to elucidate the mechanisms of this mental illness and to detect new biomarkers that could corroborate at novel alternatives of therapy development. In this sense, current researches have been describing that subjects with BD presents cellular oxidative imbalance through mitochondrial dysfunction at complex I. Searching for new drugs having focus on BD therapy, natural products, as *Euterpe oleracea* (açai), for example, are in highlight due to its chemical matrix composition. **Objective:** Evaluate the *in vitro* neuropharmacological effect of freeze-dried hydroalcoholic açai extract at mitochondrial complex I in neurons exposed to rotenone. **Methods:** SH-SY5Y cells were cultivated under perfect cell culture conditions. Then, cells were exposed to different concentrations of freeze-dried hydroalcoholic açai extract (0.001–1,000 µg/mL) during 24, 48, and 72 h to evaluate cell viability and to determine the effective concentration of açai extract able to increase cell viability in 50% (EC50). Cells were also exposed to 5, 15 and 30 nM of rotenone to induce mitochondrial complex I dysfunction. Before and after rotenone exposition, SH-SY5Y cells were treated with açai extract EC50, being analysed while the five electron transport chain protein complexes, complex I enzyme activity, as well as protein and gene expression of NDUFS7, S8, V1, and V2 complex I subunits. **Results:** Through cellular viability evaluation it was found an açai extract EC50 of 5 µg/mL at an ideal period of incubation of 48 h. Rotenone exposition at all tested concentrations was able to decrease mitochondrial complex I amount of proteins while increased levels of complexes II and III protein expression. Also, rotenone was capable to reduce mitochondrial complex I activity and protein and gene expression of its main subunits evaluated. On the other

hand, açai extract was capable to prevent and reverse these alterations, normalizing the amount of complex I, II and III proteins, as well as recovering mitochondrial complex I activity and its protein and gene expression of main subunits. **Conclusions:** The obtained results suggest that açai has a neuropharmacological activity and that it is an important candidate for studies involving drug development or food supplementation looking for psychiatric diseases therapy, specially on BD. **Key words:** neuropsychiatric diseases, oxidative stress, functional foods.

24. HEDONIC TONE AND NUTRITIONAL STATUS IN A NON-CLINICAL SAMPLE OF THE BUSINESS TECHNOLOGY CENTER (BTC) OF THE COLOMBIA CARDIOVASCULAR FOUNDATION (CCF)

Laura Juliana Celis-Rivero¹, Sthephany Xiomara Muñoz-Rodríguez¹, Silvia Botelho-Oliveira¹

¹Facultad de Psicología-Universidad Pontificia Bolivariana Seccional Bucaramanga, Colombia.

Abstracts: Major depression disorder (MDD) usually is associated with anhedonic symptoms (AS), indicators of loss or gain weight as Body Mass Index (BMI) and abdominal circumference (AC) and thus, should be explained by changes of the pleasure/reward system expressed by emotional eater index (EEI). **Objective:** The objective of the present study was to evaluate the correlation between hedonic tone, depression symptoms, emotional eater indicators and nutritional status in a non-clinical sample of the Business Technology Center (BTC) of the *Colombia Cardiovascular Foundation (CCF)*. **Methods:** 98 workers of BTC were assessed, with 31.2±8.4 years old, distributed in all socioeconomic strata, participants of the Health Program CCF. A quantitative research approach, with non-experimental, correlational transactional type design was implemented. Measurement of variables was used for the Structured Clinical Interview for disorders of the DSM-IV (SCIDI) applying the module of affective disorders of the Scale of Pleasure Snaith-Hamilton Pleasure Scale (SHAPS), the Center for Epidemiological Studies Depression Scale (CES-D), and the Emotional Eater Questionnaire (EEQ). In addition, the BMI and the abdominal circumference of the subjects were measured. **Results:** Significant correlations were found between EEI with CES-D ($r^2=0.445$; $p=0.001$) and BMI ($r^2=0.201$; $p=0.04$) but anhedonic symptoms were not correlated with CES-D neither EEI, BMI or AC ($p>0.05$). **Conclusions:** The results suggest that nutritional state could be associated to emotional eating and depressive symptoms and probably it is

necessary to improve hedonic test' tools. **Key words:** hedonic tone, anhedonia, nutritional status, depression, emotional eater.

25. CORRELATION BETWEEN EARLY STRESS AND CRACK CONSUMPTION: A CROSS-CURRENT STUDY

Elton Brás Camargo Júnior¹, Edilaine Cristina da Silva², Gherardi Donato, Tatiane Bombassaro³

¹Universidade de Rio Verde. ²Universidade de São Paulo. ³Instituto Sapiens.

Introduction: The abusive consume of drugs is one of the more relevant public health problems in the world actually. There are factors that may contribute to a patient's more susceptibility to have a problematic drug use. Among these factors, we can highlight those of a social nature, which correspond to a dysfunctional family structure, exclusion and social violence, low level of schooling and a stimulating environment of drug consumption, which are fundamental characteristics of early stress, nomenclature used to define the traumas experienced in the childhood. **Objective:** To identify and correlate the severity of drug dependence and the exposure to early stress in dependent users of the Center for Psychosocial Care Alcohol and Drugs (CAPSad). **Methods:** this is a descriptive study with a quantitative approach. It was carried out at the CAPSad, located in the municipality of Rio Verde – Goiás, in which a sample of 38 crack users was interviewed. The instruments used were the sociodemographic profile such as age, color, sex, schooling, occupation, marital status, time of treatment and previous hospitalizations; The Drug Dependence Severity Scale (SDS) and the Childhood Trauma Questionnaire (QUESI). Spearman's test was used to analyze the correlation between the variables. The present study was approved by the Ethics Committee in Research with n°. 1.310.176 resolution. **Results:** The sample is predominantly male, adults, single, brown-skinned, unemployed, and with a low level of schooling. The users presented a high severity of crack in SDS with an average of 10.13 points in a score that goes up to 15 points. The total average total of QUESI was 67.24 points, the majority of users scored with different numbers according to the subtypes of the traumas. The result of Sperman's correlation between SDS and total QUESI was regular (0.402). **Conclusions:** Through the data analysis, it can be concluded that the traumas experienced during childhood can be a strong predictor for the consumption of psychoactive substances in adulthood, and therefore, there is a need for further studies, mainly in the Brazilian context.

26. BIOACTIVE MOLECULES ALTER INFLAMMATORY RESPONSE OF MACROPHAGES EXPOSED TO FLUOXETINE *IN VITRO*

Fernanda Barbisan¹, Pedro Antônio Schmidt do Prado-Lima², Gustavo Cardenas Monteiro³, Verônica Farina Azzolin¹, Ivo Emílio da Cruz Jung¹, Raquel de Souza Praia⁴, Euler Esteves Ribeiro⁴, Ednea Maia Aguiar Ribeiro⁴, Marta Maria Medeiros Frescura Duarte⁵, Ivana Beatrice Mânica da Cruz¹

¹Pharmacology Post graduation program, Santa Maria's Federal University (UFSM), Santa Maria-RS, Brazil. ²Brain Institute, Pontifícia Universidade Católica do Rio Grande do Sul (PUCRS), Porto Alegre-RS, Brazil. ³Biogenomic Laboratory, Health Sciences Center, Santa Maria's Federal University (UFSM), Santa Maria-RS, Brazil. ⁴Third Age's Open University, Amazona's State University (UnATI-UEA), Manaus-AM, Brazil. ⁵Brazil's Lutheran University (ULBRA), Santa Maria-RS, Brazil.

Introduction: There are hypothesis that selective serotonin reuptake inhibitors (SSRI), commonly used to treat depressive states, could change humor by altering immunity functions. However, the effects of SSRI on immunity are controversial. A new research performed in rats suggested that fluoxetine leads to a pro-inflammatory state and microglial function changes, when the animals were exposed to a stressful environment. However, could the presence of bioactive molecules acquired through food change it? It's an important question. **Objective:** Evaluate the inflammatory and oxidative markers *in vitro* by the exposition of macrophages to bioactive molecules present in caffeinated drinks. **Methods:** An *in vitro* analysis was performed using the commercial cell lineage of macrophages RAW 264.7. The cells were simultaneously exposed to fluoxetine (200 ng/ml) and catechin (25 ug/ml), caffeine (25 ug/ml) plus theobromin (25 ug/ml), compounds of chemical matrix of Guaraná, an Amazon fruit with anti-inflammatory effects as described in literature. After 72 hours of exposition, the pro-inflammatory (IL-1B, IL-6) and anti-inflammatory (IL-10) cytokines levels were analysed using Elisa immunoassay kit, previous cytokine gene expression by qRT-PCR and nitric oxide, superoxide and reactive oxygen species levels analysis. **Results:** Fluoxetine plus guaraná compounds shown reduction on pro-inflammatories cytokines (IL-1B, IL-6) and reduction on gene expression when compared to fluoxetine treatment. Instead, elevated levels of IL-10 and upregulation of these genes was observed in this treatment. The oxidative-inflammatory markers corroborate the others, with low level markers in fluoxetine plus guaraná compound treated cells. **Conclusions:** All the results corroborate the hypothesis that fluoxetine effects on inflammatory response could be modulated by envi-

ronmental conditions. From these results, food supplementation with anti-inflammatory compounds could be considered as a therapeutic strategy on patients treated with fluoxetine.

27. INCREASED N200 AND P300 LATENCIES IN COGNITIVELY IMPAIRED ELDERLY CARRYING *APOE* ϵ -4 ALLELE

Lage, Ariane Flávia Almeida¹, Cintra, Marco Túlio Gualberto¹, da Silva, Andréa Carla Ribeiro², Simas, Kaique Roger², Freitas, Isabela Macedo de³, Soares, Thayana Oliveira⁴, Bicalho, Maria Aparecida Camargos⁵

¹Geriatric doctor of Clinical Hospital of Universidade Federal de Minas Gerais. ²Medicine's Student of Universidade Federal de Minas Gerais. ³Medicine's Student of UniBH Universidade. ⁴Nutritionist of Universidade Federal de Minas Gerais. ⁵Professor of Department of Medical Clinic of Universidade Federal de Minas Gerais.

Objective: To compare the results of neuropsychological tests, evoked potentials N200 and P300 and *ApoE* and *BDNF* rs6265 polymorphisms between patients with normal cognition and those with Mild Cognitive Impairment (MCI) and Alzheimer's dementia (AD). **Methods:** We conducted a cross-sectional study including 65 elderly individuals (14 controls with normal cognition, 34 with MCI and 17 with AD), who were submitted to evoked potential tests (N200 and P300) by means of hearing stimuli based on the auditory oddball paradigm. Genotyping was obtained by using the real-time PCR technique. **Results:** Sixty-five patients were evaluated as follows: 14 controls, 34 with MCI and 17 with AD. We found no significant changes between the groups regarding ERP results. Next, we have compared the ERP results obtained with the presence of *ApoE* ϵ -4 allele between all patients regardless of their cognitive diagnosis. There were increases in P300 latency at the threshold of statistical significant ($P=0.054$) and in N200 ($P=0.012$) latency among patients with the presence of *ApoE* ϵ -4 allele (*ApoE4+*). In the analysis of rs6265, we have found no significant difference between the groups regarding the ERP results. **Conclusions:** Increased latency of N200 and P300 evoked potentials occurs only in patients with MCI and AD presenting the *ApoE* ϵ -4 allele. **Key words:** Apolipoproteins E; Auditory Evoked potentials; Alzheimer's disease; Mild cognitive impairment; Brain-derived neurotrophic factor. **Acknowledgements:** This work was supported by grants from CNPq (No 474208/2013-3) and Fundação de Amparo à Pesquisa do Estado de Minas Gerais (FAPEMIG) (Nos. APQ-04706-10, APQ-02662-14).

28. RESILIENCE LEVEL AND COGNITIVE ABILITIES IN SUPERAGERS

Laura Zuardi Marques¹, Wyllians Vendramini Borelli¹, Luciana Borges Ferreira¹, Graciane Radaelli², Mirna Wetters Portoguez¹, Jaderson Costa da Costa¹

¹Brain Institute of Rio Grande do Sul (BraIns) – Pontifícia Universidade Católica do Rio Grande do Sul (PUCRS). ²Brain Institute of Rio Grande do Sul (BraIns) – Universidade Federal de São Paulo (UNIFESP).

Introduction: Unlike most individuals, a small group in society seems to resist to age-related cognitive decline. Previously named SuperAgers (SA), these individuals are aged 80 years or more and present exceptional memory performance, similarly to individuals 20-30 years younger. Resilience, defined as the ability to resist and recover from stress more effectively, may contribute to successful aging. **Objective:** To evaluate the level of resilience and cognitive abilities in SuperAgers compared to Controls. **Methods:** Seven SA and seven Controls were included and evaluated with the following tests: Mini-Mental State Examination (MMSE), the Trail Making Test A and B (TMT-A and TMT-B), the Rey Auditory-Verbal Learning Test (RAVLT) and the Resilience Scale (RS), to assess general cognition, attention, executive function, verbal memory and resilience capacity, respectively. The RS consists of 25 items answered using a 7-point Likert-type scale that ranges from 25 to 175 points. SA were defined as individuals who are 80 years of age or more that performed at or above average normative values for individuals between 50 and 65 years old in the delayed-recall score (RAVLT, A7 list). The Control group was defined as elderly aged 80 years or over whose scores were within the average for the age. It was performed independent-samples t-test for group comparison and the Cohen's for effect size, and considered statistically significant when $p < 0.05$. **Results:** Age and education level were similar between groups ($p > 0.05$). SA showed MMSE score (mean \pm SD) 28.7 \pm 0.95, and there was no statistically significant difference compared to controls ($p = 0.36$). The RAVLT score was significantly higher in the SA group in comparison to Control group ($p < 0.005$), as expected. SA showed a significantly higher score in the Resilience Scale when compared to Controls (151.5 \pm 11.2 vs. 127.57 \pm 11.79), $p = 0.002$. Also, SA exhibited large and small effect size for the TMT-A and TMT-B scores (ES=0.97, ES=0.48), respectively. **Conclusions:** SuperAgers' memory score was significantly higher in comparison to Control group. Furthermore, this group showed a significantly higher Resilience capacity in comparison to Controls, which may contribute to preservation of memory through aging. Superagers' scores for attention and executive

function exhibited large and small effect size, respectively. Further studies with a greater number of subjects are necessary to increase statistical power. **Key words:** superagers, resilience, memory, aging.

29. SUDDEN UNEXPLAINED DEATH IN EPILEPSY (SUDEP) IN EARLY INFANTILE EPILEPTIC ENCEPHALOPATHY: A SYSTEMATIC REVIEW

Graciane Radaelli^{1,3}, Gutierre Neves de Oliveira¹, Wyllians Vendramini Borelli^{1,2}, Fulvio Alexandre Scorza^{3,4}, Jaderson Costa da Costa^{1,2}

¹Brain Institute of Rio Grande do Sul (BraIns), Pontifical Catholic University of Rio Grande do Sul, Porto Alegre, RS, Brazil. ²Postgraduate Program in Medicine and Health Sciences, Pontifical Catholic University of Rio Grande do Sul, Porto Alegre, RS, Brazil. ³Postgraduate Program in Neurology and Neuroscience, Paulista School of Medicine, Federal University of São Paulo, São Paulo, SP, Brazil. ⁴Laboratory of Neuroscience, Department of Neurology and Neurosurgery, Federal University of São Paulo, São Paulo, SP, Brazil.

Introduction: Epileptic disorders in infancy have a varied potential risk of sudden death involving status epilepticus, secondary traumas, underlying diseases and other complications. The death may raise medico-legal issues including child neglect and medical negligence and also those relating to the sudden infant death syndrome (SIDS). **Objective:** Identify and summarize all relevant literature on sudden infant death syndrome mortality. **Methods:** In this systematic review, we used provided the PRISMA statement from the Cochrane Group. We performed a computerised literature search in the MEDLINE, EMBASE, and Web of Science, for data from inception until February 2017. We did not apply any restrictions regarding language of publication or publication date. The search strategy included the use of the following terms and medical subject headings [MeSH term]: "epileptic encephalopathy [MeSH Terms]", "death sudden", "sudep", "unexplained death", "mortality[MeSH Terms]", "death[MeSH Terms]", "sudden infant death syndrome[MeSH Terms]", "lethal", "fatal", "Human[MeSH Terms]". Bibliography of included articles were manually searched. SIDS cases or cohorts studies reporting mortality were included. **Results:** From 1360 potentially relevant citations recovered from the electronic databases. Duplicate titles were removed, leaving 1337 articles. After screening titles and abstracts, 1328 articles did not meet inclusion criteria. Full texts of 9 articles were obtained. After reading full texts, 4 articles were excluded, yielding 5 articles that met our inclusion criteria. After checking the references of all included articles: we found 32 clinical case

reports (1982-2001) of Ohtahara Syndrome, age of seizure onset between 1 and 87 days, death outcome to 11 cases (cause of death not mentioned=7) and 6 cases of early-infantile epileptic encephalopathy with suppression-burst (EIEE) evolved into the West syndrome at two to six months of age, and two cases showed further transition to the Lennox syndrome at one year one month and three years one month of age. **Conclusions:** The Ohtahara syndrome, West syndrome and Lennox-Gastaut syndrome have common characteristics such as age preference. The causes of death include pulmonary infection and advanced encephalopathy. The etiology is unknown in most cases and when identifiable, consists major brain malformations, asphyxia and metabolic disorders. **Key words:** Sudden death in epilepsy, death in epilepsy, epileptic encephalopathy, early infantile epileptic encephalopathy, systematic review.

30. DIABETES MELLITUS WAS NOT ASSOCIATED WITH ALZHEIMER DISEASE AND VASCULAR DEMENTIA: EVIDENCE FROM A CLINICOPATHOLOGIC STUDY

Maria Niures P. S. Matioli, Cláudia K. Suemoto, José Marcelo Farfel, Daniela Souza Farias, Ricardo Caires Neves, Renata E P Leite, Carlos A. Pasqualucci, Wilson Jacob Filho, Lea T. Grinberg, Ricardo Nitrini

Brain Bank of the Brazilian Aging Brain Study Group, University of São Paulo Medical School, São Paulo, SP, Brazil.

Background: The literature has been debating the existence of an association between diabetes mellitus (DM) and dementia. DM is a known risk factor for cerebrovascular disease and vascular dementia (VaD), but there is still no consensus on the real role of DM in the development of Alzheimer's disease (AD) neuropathology. **Objective:** to investigate the association among DM and dementia, neuropathology (NP) of AD and VaD. **Methods:** Data were collected from the cases included in the Brain Bank of the Brazilian Aging Brain Study Group between 2004 and 2015. Cases were divided into 2 groups: no diabetics and diabetics. Clinical diagnosis of dementia was determined by the scores ≥ 1.0 in the Clinical Dementia Rating (CDR) and ≥ 3.42 in the Informant Questionnaire on Cognitive Decline in the Elderly (IQCODE). Etiological diagnoses of dementia were determined by neuropathological examination, using immunohistochemistry. The proportion of dementia cases, AD and VaD of no diabetics and diabetics were investigated as well as the relationship among DM and neuritic plaques (NPq) and neurofibrillary tangles (NFT). Mann-Whitney test and multiple linear regression for quantitative variables, and chi-square test and multiple logistic regression for categorical variables were

the statistical analyses applied. **Results:** Total sample included 1037 subjects, divided in 758 (73.1%) no diabetics and 279 diabetics (26.9%). Dementia was present in 27.8% of diabetics. DM did not increase the frequency for dementia (OR: 1.22; IC 95%: 0.81-1.82; $p=0.34$). DM was not associated with NFT ($p=0.81$), NPq ($p=0.31$), infarct group (0.94), cerebral amyloid angiopathy (0.42) and hyaline arteriosclerosis ($p=0.07$). After adjustment for demographic variables and vascular risk factors, DM was not associated with DA and vascular NP. **Conclusions:** DM was not associated with dementia, AD and vascular neuropathology. **Key words:** Alzheimer's disease, diabetes mellitus, dementia, vascular dementia, autopsy, neuropathology.

31. FUNCTIONAL CONNECTIVITY OF THE HIPPOCAMPUS AND MAINTENANCE OF MEMORY IN SUPERAGERS: PRELIMINARY RESULTS

Ricardo Trentin¹, Nathália Bianchini Esper¹, Wyllians Vendramini Borelli¹, Lucio D'Amico¹, Gabriel Almeida Bittencourt¹, Mirna Wetters Portuguese¹, Alexandre Rosa Franco¹, Jaderson Costa da Costa¹

¹Brain Institute of Rio Grande do Sul (BraIns), Pontifícia Universidade Católica do Rio Grande do Sul (PUCRS) - Porto Alegre, RS, Brazil.

Introduction: Superagers are defined as a group of elders, 80 years or older, with exceptional memory capacity for age. Memory circuitry can be measured through functional magnetic resonance imaging (fMRI), which plays a major role in conditions with amnesic onset, such as Alzheimer's disease. Resting state fMRI results showed early-onset changes in patients with memory complaints, but the opposite of cognitive continuum, the Superagers, have not been studied yet. **Objective:** The purpose of this study is to describe the functional connectivity of the Hippocampus in Superagers when compared to controls using resting state fMRI. **Methods:** Four Superagers and four Controls were selected through neuropsychological evaluation, including Mini-Mental State Examination (MMSE) and Rey Auditory-Verbal Learning Test (RAVLT), and underwent resting-state functional MRI (7 minutes). Criteria for inclusion in the Superagers group were defined as 80 years or more and a Delayed-Recall Memory Score (RAVLT, A7 list) comparable to that of individuals 50-60 years of age. Control group participants were 80 years or more and cognitively average for their age. Functional brain data was preprocessed and analyzed using the Analysis of Functional NeuroImages software (AFNI). Brain connectivity was performed using a seed-based region-of-interest (ROI) method, where a 6mm radius seed was

placed in the right Hippocampus. Regression analysis between memory scores and brain activity was also performed. Statistical significance was considered with a $p < 0.05$ (corrected for multiple comparisons). **Results:** Preliminary results indicated that right hippocampus showed significantly higher functional connectivity to posterior cingulate in Superagers in comparison to control group ($p < 0.005$, corrected). Results also showed a tendency ($p < 0.05$, uncorrected) of a negative correlation of the functional connectivity of hippocampus with the posterior frontal gyrus and the Delayed-recall Memory Score. **Conclusions:** Despite the limited number of subjects, preliminary results indicated increased hippocampal connectivity to a central node of default mode network, the posterior cingulate, in Superagers. The negative correlation between the episodic memory score and frontal lobe may reflect compensatory activity, as previously described in the amnesic processes. Further studies with multimodal neuroimaging could elucidate neural mechanisms involved in Superaging. **Key words:** fMRI, memory, hippocampus, superagers, aged, 80 and over.

32. MIGRATION ASSAY OF FIBROBLASTS AND INDUCED PLURIPOTENT STEM CELLS (iPSC) FROM PATIENTS WITH FOCAL CORTICAL DYSPLASIA TYPE IIB

Laise Prando da Silva^{1,2,3}, Daniel Rodrigo Marinowicz^{2,3}, Fernanda Majolo^{2,4}, Eliseu Paglioli⁵, André Palmini^{4,5}, Denise Cantarelli Machado^{2,3,4}, Jaderson Costa Da Costa^{2,3,5}

¹Biomedical Faculty, Feevale University, Novo Hamburgo, RS, Brazil. ²Biomedical Research Institute. ³Brain Institute of Rio Grande do Sul (BraIns). ⁴Postgraduate Program in Medicine and Health Sciences, Medical School. ⁵Epilepsy Surgery Program, Hospital São Lucas. Pontifical Catholic University of Rio Grande do Sul, Porto Alegre, RS, Brazil.

Focal cortical dysplasia (FCD) is the most frequent malformation during cortical development, which may result in drug-refractory epilepsy. The FCD type IIb is characterized by alterations of the cortical architecture, which leads to columnar disorganization and laminar interruption with cytological abnormalities and presence of balloon cells. Takahashi and Yamanaka developed a technique to induce pluripotent stem cells (iPSC) by reprogramming human adult fibroblasts, which allow translations of in vitro results and clinical characteristics. Once an iPSC is obtained, they can be induced to differentiate into several types of cells. This study aims to evaluate the migration of fibroblast and iPSC migration from patients with FCD type IIb comparing with fibroblasts and iPSC obtained from health individuals. Skin biopsies were obtained from two patients with FCD

and two healthy individuals. The tissues were cut into small pieces, cultured with DMEM supplemented with 10% FCS, penicillin/streptomycin and gentamicin into six well culture plates. After the seventh passage they were transfected with a Sendai viral vector containing *OCT4*, *KLF4*, *SOX2* and *c-MYC* genes in order to dedifferentiate the fibroblasts. The pluripotency was confirmed by the staining the subculture with antibodies against pluripotency markers: Nanog, SOX2, OCT4, TRAI-60 and TRAI-81. Fibroblasts and iPSC were cultivated in inserts with 8 μm pore size. Culture media supplemented with 30% of serum were added under the insert, whereas in the upper insert cells were cultivated with 10% of serum. Cell migration was evaluated by rhodamine staining by randomly capture 20 images with 20X objective lens, followed by quantification using the Image ProPlus 7 software. There were difference in cell migration on 24 and 48 hours cultures ($p < 0.001$). However, there no difference when 72 hours culture were evaluated. However, the iPSC migration assay observed that in the 7th day had a minimal reduction in the area of cell migration in the group cells from FCD patients when compared with cells from healthy individuals, although without significance. The greater potential for cell migration of adult cells (fibroblasts) from FCD patients may indicate that alterations occurs after tissue differentiation and the elevated potential of cell migration during the neurodevelopment can be responsible by cortex malformation. **Key words:** migration assay, focal cortical dysplasia, iPSC, fibroblasts, cortex malformation, drug-refractory epilepsy.

33. KLOTHO PROTEIN AND ITS RELATION TO LATE-LIFE DEPRESSION AND MILD COGNITIVE IMPAIRMENT

Mariana de Souza Nicolau¹, Natália Silva Dias¹, Giovana Carvalho Mol¹, Lucélia Scarabeli Silva Barroso¹, Ana Paula Mendes Silva¹, Jéssica Diniz Rodrigues Ferreira¹, Luciano Inácio Mariano¹, Érica Leandro Marciano Vieira¹, Breno Satler de Oliveira Diniz²

¹Universidade Federal de Minas Gerais; ²University of Texas Health Science Center at Houston and Universidade Federal de Minas Gerais.

Introduction: Late-life depression is one of the most common psychiatric diseases among the elderly and may cause or intensify physical disorders. Major depression in older adults can be understood as an interaction of various risk factors such as stressful events, vulnerabilities, genetic factors, cognitive decline and neurobiological changes related to aging. Studies have shown that lower levels of klotho are closely associated to age-related diseases, yet little is known about its relation to

late-life depression. **Objective:** Due to its neuroprotective role we decided to investigate whether klotho may associate with major depression in the elderly. **Methods:** In this study we assessed 50 older adults from an outpatient service in Hospital das Clínicas/UFGM with ages from 60 to 86. We investigated them in three different groups: Controls-CT (N=17), Depression-DEP (N=15) and Depression associated to mild cognitive impairment-DEP+MCI (N=18). There were no significant differences among the three groups regarding sex, educational attainment and age. Peripheral blood sample was collected to measured plasmatic Klotho levels (pg/mL) by ELISA. **Results:** Our results show that Klotho levels are considerably lower ($p=0.034$) in patients with DEP+MCI (56.46) when compared to patients with DEP (160.09) and ($p=0.041$) CT (124.02). We also analyzed the following groups: late-onset DEP, early-onset DEP, late-onset DEP+MCI and early-onset DEP+MCI. A statistical difference was observed ($p=0.023$) between the early-onset (73.13), and late-onset DEP (1588.17) groups, between the late-onset DEP group and late-onset DEP+MCI (33.07) group ($p=0.017$), between the CT (124.02) and late-onset DEP ($p=0.0083$) and finally between the CT and late-onset DEP+MCI group ($p=0.0083$). We also found in depressed patients, with or without MCI, a positive correlation with the Frontal Assessment Battery and the Mattis Dementia Rating Scale. **Conclusions:** We hypothesize that late-life depression in the late onset group might trigger the increase of klotho levels due to its neuroprotective role. However in elderly patients with major depression associated with MCI this effort to recover body homeostasis appears differently, perhaps due to the neurobiological impacts involved in cognitive decline. Our results are consistent with previous findings showing an association between decreased levels of klotho and cognitive impairment.

34. ASSOCIATED FACTORS WITH DROPOUT IN BRIEF PSYCHOTHERAPY IN ADULT PATIENTS WITH MAJOR DEPRESSIVE DISORDER

Rosiene da Silva Machado, Tháise Campos Mondin, Jennifer Mendes Soares, Luciano Dias de Mattos Souza, Mariane Lopes Molina, Karen Jansen, Luciana Avila Quevedo, Ricardo Azevedo da Silva

Universidade Católica de Pelotas, RD, Brazil.

Background: Dropout is recurrent and severe outcome in psychotherapy in clinical trials study and clinical practice. The rate of dropout in a recent meta-analysis is around 17.5%. **Aim:** to verify associated factors with dropout in two brief psychotherapy models for depres-

sion in adults patients attended at an outpatient clinic in the city of Pelotas. **Methods:** Clinical trial randomized with two models of psychotherapy for major depressive disorder (MDD): Cognitive Behavioral Therapy (CBT) and Supportive-Expressive Dynamic Psychotherapy (SEDP). 252 people diagnosed with MDD were randomized, resulting in 120 allocated to CBT and 132 to SEDP. The evaluations were performed at the baseline and first session of psychotherapy. The sample was selected for convenience. The Mini International Neuropsychiatric Interview Plus (MINI Plus) was used for the diagnosis of MDD and anxiety disorders, personality disorders were evaluated through the Millon Clinical Multiaxial Inventory III (MCMI-III), the Beck Depression Inventory (BDI) was used to assess the severity of depressive symptoms and resilience was assessed through Resilience Scale (RS). Data were analyzed using the Chi-square test and the t-test. **Results:** The dropout rate found was 41.9% (CBT=47.8%, SEDP=52.2%, $p=0.933$), most of whom were female (91.1%) ($p=0.009$), with white skin color (63.3%) ($p=0.001$), worked and/or studied at the moment of psychotherapy (56.7%) ($p=0.020$), belonging to economic class C and D (67.8%) ($p=0.008$), had children (71.1%) ($p=0.032$) and severity of moderate or severe depression (95.4%) ($p=0.035$). The clinical pattern of compulsive personality was more prevalent in those who did not quit (22.8%) ($p=0.033$), whereas borderline personality disorder was more prevalent in those who abandoned (29.3%) ($p=0.023$). **Conclusions:** The prevalence of dropout found was higher than the average rate of the last meta-analysis on the subject, being that belonging to lower economic classes and presenting borderline personality disorder are common characteristics among studies on dropout. The damage caused by this interruption affects all those involved in the psychotherapeutic process, so the clinician must pay attention to the predictors found in this study in order to develop approaches that prevent dropout. **Key words:** psychotherapy, dropout, major depressive disorder.

35. ZIPRASIDONE, A SECOND GENERATION ANTIPSYCHOTIC DRUG CAPABLE OF TRIGGERING INFLAMMATORY RESPONSE IN MACROPHAGES: AN IN VITRO STUDY

Thiago Duarte¹, Fernanda Barbisan², Vitor Vieira Bueno³, Pedro Antônio Schmidt do Prado-Lima⁴, Verônica Farina Azzolin⁵, Ivo Emílio da Cruz Jung⁶, Marta Maria Medeiros Frescura Duarte⁷, Euler Esteves Ribeiro⁸, Ivana Beatrice Mânica da Cruz

¹Programa de Pós-Graduação em Farmacologia, Centro de Ciências da Saúde, Universidade Federal de Santa Maria, Santa Maria-

RS, Brasil. ²Programa de Pós-Graduação em Farmacologia, Centro de Ciências da Saúde, Universidade Federal de Santa Maria, Santa Maria-RS, Brasil. ³Acadêmico do Curso de Medicina, Centro de Ciências da Saúde, Universidade Federal de Santa Maria, Santa Maria-RS, Brasil. ⁴Instituto do Cérebro, Pontifícia Universidade Católica do Rio Grande do Sul, Porto Alegre-RS, Brasil. ⁵Programa de Pós-Graduação em Farmacologia, Centro de Ciências da Saúde, Universidade Federal de Santa Maria, Santa Maria-RS, Brasil. ⁶Programa de Pós-Graduação em Farmacologia, Centro de Ciências da Saúde, Universidade Federal de Santa Maria, Santa Maria-RS, Brasil. ⁷Universidade Luterana do Brasil, Santa Maria, Santa Maria-RS, Brasil. ⁸Universidade Aberta da Terceira Idade- Universidade do Estado do Amazonas. ⁹Programa de Pós-Graduação em Farmacologia, Centro de Ciências da Saúde, Universidade Federal de Santa Maria, Santa Maria-RS, Brasil.

Introduction: Antipsychotic drugs are used in the treatment of schizophrenia and other psychiatric disorders. However, almost all drugs have side effects causing obesity and other important metabolic changes associated with some chronic inflammatory degree. On the contrary, Ziprasidone seems to attenuate the metabolic side effects when compared to other antipsychotic drugs. However, there are reports that this drug may cause hypersensitive allergic reactions. **Objective:** Since the nature of Ziprasidone exposure in peripheral inflammatory metabolism has not been fully elucidated yet, we conducted an in vitro study to evaluate the effect of Ziprasidone on a commercial macrophage cell culture on inflammatory markers. **Methods:** RAW 264.7 macrophages were commercially purchased and cultured under appropriate conditions of sterility in DMEM medium supplemented with 10% fetal bovine serum, 1% antibiotics and antifungal. All tests were performed at initial cell concentration of 1×10^5 cells/mL. Phytohemagglutinin was used as a pro-inflammatory agent (positive control) and lithium as an anti-inflammatory agent. Cell proliferation analysis was performed via MTT test and flow cytometric analysis (cell cycle test) as described in Azzolin et al 2016, cytokine levels of the route of inflammation were measured through protein levels and gene expression as described in Jung Et al., 2016. **Results:** In non-activated macrophage cells, ziprasidone caused increased cell proliferation, protein levels and gene expression of proinflammatory cytokines (IL-1 β , IL-6, TNF- α and IFN- δ). Levels of IL-10, an anti-inflammatory cytokine were lower in cells exposed to ziprasidone. The proinflammatory results of Ziprasidone were more attenuated compared to positive inflammatory control (phytohemagglutinin) and more intense than the lithium used as an anti-inflammatory control molecule. Ziprasidone has been able to modulate the gene expression of cytokines. **Conclusions:** Data suggest that ziprasi-

done may have some peripheral inflammatory response, and this response could explain the allergen-inflammatory response observed in some patients treated with this antipsychotic drug.

36. EVALUATION OF COGNITION IN FRAILTY ELDERLY IN A CONTEXT OF SOCIAL VULNERABILITY

Fabiana de Souza Orlandi, Isabela Thais Jesus Machado, Leticia Souza Didoné, Marisa Silvana Zazzetta
Federal University of São Carlos, São Paulo, Brazil.

Introduction: Elderlies living in a context of social vulnerability have low educational level and socioeconomic status. The social context is assumed risk factor to the development cognitive impairment and consequently be come for frailty. **Objective:** Evaluate the cognition in elderlies in a situation of frailty in a context of social vulnerability, enrolled in a Social Assistance Referral Center (CRAS) in a city of interior of São Paulo. **Methods:** Exploratory, comparative and cross-sectional study, using the quantitative research method. In the study was used semi-structured interview, Montreal Cognitive Assessment (MoCA) and Frailty Scale of Edmonton (FSE). To verify the level of the vulnerability was verified from the Paulista Index of Social Vulnerability for the Brazilian context (IPVS). The data analysis was performed in a descriptive way and Spearman's correlation test. The project was approved by the Research Ethics Committee of the Federal University of São Carlos, São Paulo, Brazil, in the opinion No. 1785874/2016. **Results:** Betwixt the 247 elderlies, average age 68.56 (sd=7.35) years, white (n=142), married (n=109) and with schooling from one to four years (n=133). All the elderly evaluated lived in a region with vulnerability, being that, 144 (58.30%) in high vulnerability, 56 (22.67%) in level and 47 (19.03%) in region with low vulnerability. As to evaluation of the frailty, 91 (36.84%) presented in a level fraity (mild, moderate, severe), 53 (21.45%) have presented vulnerables and 103 (41.70%) have not presented frailty. In relation to cognition, of the elderly who were frailty, 84 (38.88%) have presented with cognitive impairment. There was no correlation between frailty and cognition ($r = -0.216$), however statistically significant difference ($p = 0.0006$). **Conclusions:** Knowing the cognition of elderlies in a frailty context reinforces the need the evaluation when it come to the elderly in a context of vulnerability, since in a medium term, elderlies can present limitations that contribute to the advancement of the frailty. Stands out the need of the early detection for the public services that assist this population, so that delay the appearance of futures commitments.

37. THE ROLE OF THE HISTAMINERGIC (H1 AND H2) RECEPTORS IN THE HIPPOCAMPUS (CA1 REGION) IN THE RECONSOLIDATION OF THE OBJECT RECOGNITION MEMORY IN RATS

Ariley Queiróz, Débora Czanarbay, Marco Colomé Beck, João Victor Damasceno, Fernando Benetti

Federal University of Rio Grande do Sul, Porto Alegre, RS, Brazil.

Histaminergic system in the central nervous system (CNS) presents cognitive activities that modulate learning and consolidate memory. In addition in reconsolidation we can labializes the memories to the point of adding information to the originals, increasing the possibility of storing them for a longer time. The aim of this study it is verify the effect of histamine on the reconsolidation of object recognition memory and the role of histaminergic receptors (H1 and H2) and the CA1 region of the dorsal hippocampus of the rats. The animals were handled gently touched and put in contact of light (40 lux), odor and the apparatus of the experimental room during four consecutive days in the open field for 20 minutes (habituation procedure). Twenty four hour after, the training session was carried out. Rats were exposed to two objects (A and B) in the freely moving apparatus exploration for 5 min. After 24h (reactivation), one of the objects was randomly changed to a new one (object C), and the rats were re exposed in the open field for 5 min. Immediately thereafter, the animals received intra-CA1 bilateral infusions of histamine, SKF-91488 (for increase endogenous histaminergic production/release) and agonists or antagonists for type 1 (H1) or type 2 (H2) histaminergic receptors. The object recognition (RO) reconsolidation test was performed 24h, 72h, 7 days or 10 days after the reactivation session. **Results:** Our data shown that 3 days after the infusion, both saline (56.69±4.651) and histamine (61.10±4.712) explored more the new object (D) in relation to the family object. At 7 days after reactivation, the animals treated with histamine (55.96±7.022) spending more time exploring object (D) a novel than family object compared to saline (39.40±4.845) $p < 0.05$. In the test of day 10 it wasn't more statistical difference between the groups $p > 0.05$. This mainly result shown cronobiological effects of histamine inducing precognitive performance in rats to remind of familiar and a novel object 7 days after reactivation session. To confirm this histaminergic effect, SKF 91488 shown that increase in endogenous histamine induces improvement in RO when tested 7 days (57.60±5.210) compared to saline (48.09±7.582) for $p < 0.001$. Considering this pronounced effect and knowledge the time-window of this histaminergic RO memory improvement, H2 agonist Dimpril (56.14±7.425) also improved RO memory

compared to saline (49.04±9.309) $p < 0.05$. The same did not occur with the agonist H1 Pyridylethylethanolamine (52.93±8.946) and the saline group (49.04±9.309). Furthermore, co-infusions were prepared for the study of histaminergic antagonists effects. So, animals that receiving Pirilamine + histamine (56.41±6.694) or histamine (60.04±10.16) into CA1 remembered the familiar object. However, animals that received Ranitidina + histamine (51.06±7.238) had an impairment of RO to recognize familiar and novel object in comparision the saline group (47.04±4.718) $p < 0.05$. Histamine infused into the CA1 region of the hippocampus immediately after reactivation improves RO memory through H2 histaminergic receptor.

38. EPISODIC MEMORY PROFILE IN ELDERLY PEOPLE WITH HIGH COGNITIVE PERFORMANCE

Nathália Alves Mathias, Wyllians Vendramini Borelli, Mirna Wetters Portuguese, Eduardo Leal Conceição, Jaderson Costa da Costa

Brain Institute of Rio Grande do Sul, Porto Alegre, RS, Brazil.

Introduction: A group of elderlies with high cognitive performance, called Superagers, is required to perform at or above average normative values for individuals in their 50s and 60s in an episodic memory test. The delayed verbal recall score of the Rey Auditory Verbal Learning Test (RAVLT) is used to assess episodic memory, among other characteristics. **Objective:** We aimed to evaluate verbal learning, immediate episodic memory with interference, and late episodic memory of older adults with high cognitive performance. **Methods:** Seven individuals were selected through telephone screening and a subsequent in loco evaluation were performed. Both Mini-Mental State Examination (MMSE) and the Rey Auditory-Verbal Learning (RAVLT) Test were applied. The inclusion criteria for Superagers was 80 years of age or more, with delayed-recall memory score (A7 list of the RAVLT) similar to scores of individuals aged 50 to 65 years. The memory test scores were decomposed according to the Learning score (sum of the first 5 lists, A1-A5) and the Immediate-recall memory score after a list of interference (list A6). The scores of each list were compared with normalized values for Brazilian data according to age and education (n=20). All scores were compared with Student's t-test. The data were presented with mean±standard deviation. **Results:** Seven individuals met Superagers criteria and were included in the study (6 females, age 80.85±1,57 years, MMSE score 28,7±0.95). This group presented RAVLT-A7 list score significantly higher than normalized scores for 80 years (11.8±2.6 $p = 0.003$). Decomposed scores showed

significantly higher scores than normalized values for age in the RAVLT-A6 list (10.8 ± 2.53 , $p < 0.5$) and sum of A1-A5 (53.8 ± 5.3 , $p = 0.0001$). **Conclusions:** Superagers presented a delayed-recall memory score significantly higher than normalized values of Brazilian population for age and education. Also, the Learning and Immediate-recall memory score after interference list in the RAVLT were above average for age. Further investigation is needed in order to clarify the mechanisms beyond the preservation of these functions.

39. EFFECTS OF TRANSCRANIAL DIRECT CURRENT STIMULATION WITH A COGNITIVE TRAINING FOR WORKING MEMORY IN PATIENTS WITH FIBROMYALGIA

Maxciel Zortea, Vinicius Santos, Thomás Nunes Ribeiro, Rael Lopes, Prisca Ücker Calvetti, Wolnei Caumo
Universidade Federal do Rio Grande do Sul (UFRGS).

Introduction: Chronic and generalized musculoskeletal pain is one of the main complaints of patients with Fibromyalgia (FM). Nevertheless, other symptoms such as sleep disturbance, anxiety and depressive symptoms and cognitive dysfunction are also reported. Evidences suggest that multidisciplinary treatment approaches are a better option in these cases, and the combination of intervention techniques can reach a better clinical effect. **Objective:** This study aimed to analyze the performance of patients with FM during a combined treatment with transcranial direct current stimulation (tDCS) and a working memory (WM) training. **Methods:** Preliminary data from a randomized double-blind sham-controlled clinical trial was obtained and a cross-sectional study with repeated measures was per-

formed. Twenty-three women diagnosed with FM, with ages from 24 to 69 years, with diverse levels of education participated. Eleven received 8 sessions with daily 20 minutes of active 2mA anodal tDCS over the dorsolateral prefrontal cortex (DLPFC) while they performed a Dual (auditory and visual) n-back task with adaptive WM load leveling. Twelve received the same treatment, but with sham stimulation. WM specific scores were obtained during the treatment. Depressive symptoms and anxiety were measured before treatment. **Results:** Independent of the treatment group, patients increased their accuracy in WM along the 8 sessions of treatment. Although auditory stimuli were more sensitive to these changes, a better overall accuracy was found for the visual stimuli, as well as a higher response time (RT) in some sessions. After the second session on, the 2-back level was more frequent than the first session, indicating a greater WM load. Despite of this, the performance did not differed between active and sham tDCS groups. Non-parametric correlations indicated that better performances on the Dual n-back were associated with more years of education and less state anxiety symptoms. **Conclusions:** The null effect of tDCS can be the result of a saturated functioning of frontal areas when performing the Dual n-back task, not allowing for extra neuromodulation. Nevertheless, tDCS effects could be observed in other offline WM tasks (transfer effect), which needs to be examined. Considering the complaints of FM patients in relation to attention, WM and executive function, this study presents important clinical advantages. **Key words:** fibromyalgia, transcranial direct current stimulation, working memory, cognitive training.