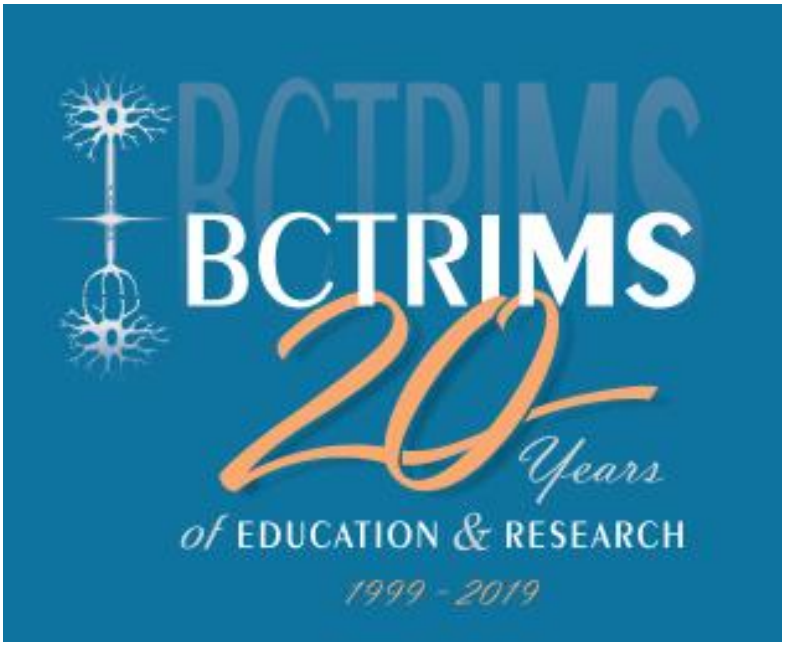
Approved abstracts



ORAL PRESENTATION

Oral presentation

85251 - THE PROFILE OF OPTIC NEURITIS AS THE INAUGURAL MANIFESTATION OF NEUROMYELITIS OPTICA SPECTRUM DISORDER

NMO, ADEM and CIS

Authors: Juliana Machado Santiago Santos Amaral; Natália C. Talim; Alice H. A. de Castro; Mariana A. Fontenelle; Denison A. Pedrosa; Rodrigo G. V. Kleinpaul; Marco Aurélio Lana Peixoto;

Institution: UFMG

Abstract: Introduction Optic neuritis (ON) is one of the most important symptoms of NMOSD. In spite of its high frequency and the severity of irreversible disability that is commonly associated with it, a number of issues related to its occurrence remain unclear. The majority of NMOSD patients develop ON which most frequently occurs at disease onset. We look at a cohort of NMOSD patients to analyze the clinical profile of ON occurring as the inaugural manifestation of the disease. Objectives To evaluate the profile of ON as the inaugural symptom of the disease in a cohort of NMOSD patients. Methods We retrospectively analyzed the medical records of a cohort of patients referred to our MS Center with suspected NMOSD. Patients who met the 2015 International consensus criteria for NMOSD diagnosis and presented ON were selected. Demographic and clinical data were assessed. Results Out of 187 patients who were evaluated, 85 (42.4%) met the inclusion criteria. In 42 (49.4%) patients ON occurred at disease onset - as an isolated symptom in 30 (71.4%), and in association with other symptoms in 12 (28.6%) (myelitis symptoms in 12, and brainstem symptoms in 2 patients). Comparison between the two groups showed females in 80% and 75%, age at onset of ON at 30 and 31 years, and no difference regarding race distribution racial (p 0.902). The median duration of NMOSD was 109 months in the group of patients with isolated ON group and 72 months in patients with associated ON (p 0.92). As compared with patients with associated ON at onset, patients with isolated ON at onset had higher number of ON attacks and attacks in general (2 and 5, vs 1.5 and 3.5, p 0.012, p 0.49), were more frequently aquaporin 4-IgG seropositive (63.3% vs 25%, p 0.071), started treatment later (median 34 vs 9 months, p 0.589), had a higher EDSS score (mean 5.53 vs 5.04, p 0.466), and higher score on Kurtzke‘s Visual Functional System/ Wingerchuck-Visual Acuity Scale (5.10/5.46, vs 3.33/3.25, p 0.018/0.009). Conclusion: In NMOSD patients, ON occurring as an isolated symptom at disease onset predicts a worse outcome than when it occurs in association with other symptoms, particularly regarding the visual function.

85204 - IS IT MS OR MOG-AB RELATED DISEASE? THE CHALLENGES OF PEDIATRIC ADS

NMO, ADEM and CIS

Authors: Bruna Klein Da Costa; Rafael Canani Sommer; Amanda Marchionatti; Jefferson Becker; Renata Barbosa Paolilo; José Albino da Paz; Dagoberto Callegaro; Fernanda Silveira de Quadros; Marlise de Castro Ribeiro; Manuela Fragomeni; Hanaie Cavalli; Marco Nihi; Henry Koiti Sato; Vanessa Fragoso; Maria Lucia Brito; Brenda Louise Banwell; Douglas Kazutoshi Sato;

Institution: PUCRS

Abstract: Introduction: Pediatric cases with acquired demyelinating syndromes (ADS) require a broader differential diagnosis for multiple sclerosis (MS) than adults. There are also concerns about defining the diagnosis of MS on young children with acute disseminated encephalomyelitis (ADEM) characterized by multifocal onset with encephalopathy. Moreover, several pediatric patients now have been identified with a distinct disease in association with myelin-oligodendrocyte glycoprotein antibodies (MOG-Ab). Objective: To evaluate the clinical phenotype of pediatric patients after their first ADS and its association with MOG-Ab seropositivity. Methods: We analyzed the prospective data from children and adolescents currently enrolled in the multicentric observational study to characterize MS in Brazil (EMOCEMP). Patients with a single clinical attack of suspected acquired demyelinating syndrome with available confirmatory magnetic resonance imaging (MRI) are being recruited in 6 neuroimmunology reference centers in Brazil. The study protocol comprehends clinical visits at baseline, 6, 12 and 24 months. The demographic characteristics, clinical phenotype, MRI, laboratory results, clinical diagnosis and chosen treatments are being evaluated. All serum samples were tested for MOG-Ab positivity blinded to clinical presentation using live cell-based assay using transfected HEK293 cells with full-length human MOG. Results: 94 pediatric patients with first ADS were included. The median age was 10.6 years (0.6-18 years) at first clinical presentation, 49 (52.1%) were female. 33 (35%) presented with optic neuritis (ON), 28 (30%) with ADEM, 26 with myelitis (27.6%) and 7 (8.6%) with other phenotypes. Among the patients younger than 10 years, the most common phenotype was ADEM (n=20, 51%). In contrast, ON (n=21, 40%) was the most common ADS among the patients older than 10 years. 11 of 94 ADS patients met 2017 McDonald criteria for MS. The MOG-Ab was tested in 78 patients, was negative in 57 patients with monophasic ADS, was negative in all 8 patients diagnosed with MS already tested and the one child with NMOSD-associated with AQP4 antibodies. MOG-Ab was positive in 12 (15%). The clinical phenotypes of MOG-Ab+ children younger than 10 years was ADEM (n=3), myelitis (n=1), ON (n=1) and ON with ADEM (n=1). The MOG-Ab+ patients older than 10 years presented with ON (n=5) and ADEM (n=1). Conclusions: ADEM is the most common ADS phenotype in young children, while ON is more common in adolescents, consistent with other studies. MOG antibodies were detected in 15%, which is a lower frequency than reported in UK or USA cohorts. MOG antibodies were detected in ADEM, ON and TM, although most of these children were MOG negative. As such, clinical phenotypes at onset do not predict MOG positivity. Future analyses will determine whether MOG status at onset predicts future relapses. Supported by TEVA (Investigator Initiated Study), FAPERGS/CNPq/SESRS/PPSUS/Ministry of Health Brazil

85156 - MASSIVE CYTOTOXIC CELLS ACTIVITY DURING NEUROMYELITIS OPTICA SPECTRUM DISORDER

Immunology, basic science and clinical findings

Authors: Maria Lucia Vellutini Pimentel; Vinícius De Oliveira Boldrini; Aline Vidal; Letícia Fêzer Mansur; Carlos Otávio Brandão;

Institution: Santa Casa RJ

Abstract: Introduction: Neuromyelitis Optica Spectrum Disorder (NMOSD) is an inflammatory autoimmune central nervous system (CNS) disease. Despite NMOSD immune mechanims are thought to be mainly driven by auto-antibodies, it's possible that the disease might share cellular cytotoxic activity resembling classical features of demyelination described in Multiple Sclerosis (MS). During MS, Granzyme B (GzmB)-derived from CD8+ T lymphocytes were found in massive CNS destruction during severe/fatal relapses after medication washout. Despite those evidences in MS, little is known about the classical and non-classical sources of GzmB during NMOSD. Objective: We investigated whether classical CD8+ T lymphocytes and non-classical GzmB-producing cells support cytotoxic activity during NMOSD pathology. Method: GzmB-expressing cells were investigated through flow cytometry (FACS) in the peripheral blood and cerebrospinal fluid (CSF) from a (AQP4+) NMOSD patient. Results: Unexpectedly, we observed that CD4+ T lymphocytes, B cells and plasmacytoid Dendritic Cells (pDCs) do share comparable levels of GzmB expression with cytotoxic CD8+ T lymphocytes. Massive GzmB-expressing cells were found abundantly both in the peripheral blood as in the CSF during NMOSD. Moreover, Runt-domain transcriptional factor 3 (Runx3), which drives the cytotoxic program in effector CD8+ T lymphocytes, is expressed in these ectopic sources of GzmB, resembling the classical cytotoxic behavior. Conclusion: Once granzymes seem to be important for MS pathology, it is possible that classical and non-classical sources of GzmB might be also relevant in the context of NMOSD. Further investigation on these classical and non-classical cytotoxic subsets will provide a better understanding about how neuroinflammation occurs in NMOSD. Moreover, cytotoxicity might be helpful, in the future, as an accessible diagnostic tool that discriminates NMOSD from other neurological conditions.

85100 - IMMUNOMODULATORY CAPACITY OF MURINE ENDOMETRIAL MESENCHYMAL STEM CELLS IN EXPERIMENTAL AUTOIMMUNE ENCEPHALOMYELITIS

Immunology, basic science and clinical findings

Authors: Carolina Manganeli Polonio; Carla Longo de Freitas; Cristiano Rossato; Wesley Nogueira Brandão; Luiza Ayumi Nishiyama Mimura; Marília Garcia de Oliveira; Lucila Pires Evangelista; Silvio Halpern; Marcelo Gil Nisenbaum; Mariangela Maluf; Carlos Eduardo Czeresnia; Paulo Perin; Jean Pierre Schatzmann Peron;

Institution: ICB - USP

Abstract: INTRODUCTION AND OBJECTIVES: Mesenchymal Stem Cells (MSC) are non-differentiated multipotent cells with immunomodulatory properties that can be found in many tissues, including fallopian tubes and uterus. MSCs have been studied as a therapeutic approach for inflammatory diseases, as they release molecules that suppress the inflammatory response. Multiple Sclerosis is an autoimmune disease mediated by self-reactive T lymphocytes against myelin epitopes initially activated in peripheral lymphoid tissues that further infiltrate the central nervous system promoting the rupture of the blood-brain barrier, inflammatory infiltrate and destruction of the myelin sheath that surrounds the neuronal axons. Thus, in this project, we intended to study murine endometrial mesenchymal stem cells (meMSC) suppressive capacity using the murine model of MS, the Experimental Autoimmune Encephalomyelitis (EAE). METHODS AND RESULTS: We treated EAE mice at days 0 and 10 post-disease induction with meMSC from WT and IDO-/- mice. Analysis were performed at days 7th for lymph nodes and day 15th for the CNS. We observed a significant reduction in EAE clinical scores associated with milder inflammatory infiltrate and demyelination in the meMSC WT treated group whereas no protection eas observed with meMSC IDO-/-. Furthermore, there was a reduction of Th1 (CD4+IFN-g+) and Th17(CD4+IL-17+) lymphocytes differentiation in lympho nodes, associated with increased IL-10-secreting Tr1 cells. Interestingly, it correlated with a significant reduction of Th1 and Th17 cells infiltrating the CNS, associated with a reduction of microglial activation. Quantitative PCR also showed increased IFN-b and IDO expression in the CNS of meMSC WT-treated animals. Corroborating that, in vitro co-culture analysis showed that the meMSC WT are able to impair proinflammatory cytokine production by MOG35-55 specific TCD4+ cells. CONCLUSION: Our results demonstrated that meMSC are capable of delaying the development of EAE by modulating Th1 and Th17 responses on the periphery probably due to the increase of suppressive IL-10 by in IDO-dependent manner, reducing overall CNS inflammation. This evidence the immunomodulatory features of meMSCs drawing attention to its therapeutic potential.

85240 - A FOURTH-GENERATION INHIBITOR OF PURINE NUCLEOSIDE PHOSPHORYLASE IMPROVES THE SYMPTOMS AND NEUROINFLAMMATION IN A MOUSE MODEL OF MULTIPLE SCLEROSIS

Immunology, basic science and clinical findings

Authors: Rodrigo Braccini Madeira da Silva; Alice Ribeiro; Pedro Henrique Fernandes Bergo; Valnês da Silva Rodrigues-Junior; Pablo Machado; Maria Martha Campos;

Institution: PUCRS

Abstract: Introduction: Purine nucleoside phosphorylase (PNP) enzyme is highly expressed in T and B cells. Recently, our laboratory developed and patented a fourth-generation selective PNP inhibitor, called DI4G. Objective: Herein, we investigated the effects of DI4G in a mouse model of multiple sclerosis (MS) – an autoimmune and demyelinating disease of central nervous system–, in comparison to those displayed by fingolimod – a drug clinically employed for MS management. Methods: The Institutional Animal Ethics Committee approved all of the experimental protocols (CEUA-PUCRS, 14/00424). Experimental autoimmune encephalomyelitis (EAE), a classical MS model, was induced in female C57BL/6 mice (18-25 g; N = 5-10/group), by a subcutaneous injection of MOG35-55 peptide plus Pertussis toxin (intraperitoneally). Animals were treated with DI4G (1.25 to 5.0 mg/kg, intraperitoneal) or fingolimod (0.3 mg/kg, oral route), from seven to 25 days after the onset of EAE induction. The nociception response was assessed using von Frey filaments and the hot-plate test. To analyze the motor coordination and fatigue, the rotarod test was used, whilst the spatial memory was evaluated using the object location task. Clinical signs were measured 7 days post-immunization, every 2 days. Mice were monitored daily and were weighted every 5 days – as parameters of general health–, for up to 25 days. The spleens were weighted as indicative of immune cell production. Inflammatory infiltrate (haematoxylin and eosin stain) and demyelination (luxol fast blue stain) were evaluated in the brain and spinal cord of EAE animals. The pro-inflammatory cytokines IFN-γ and IL-17 were quantified at peripheral (serum and spleen) and central (brain and spinal cord) sites. Results and Conclusion: The treatment with DI4G produced beneficial effects, by preventing nociception, body weight loss, and MS-like clinical scores, with an efficacy comparable to that observed for fingolimod, in the experimental of MS. Interestingly, DI4G administration was able to restore the spatial memory, the motor coordination, and the locomotor activity, allied to a protection against fatigue. Conversely, fingolimod failed to produce any improvement of the parameters cited above. Moreover, DI4G produced a favourable profile on EAE-elicited inflammatory infiltrate, demyelination and increased pro-inflammatory cytokines, in the brain and spinal cord. Again, Fingolimod lacked any significant effect. Our results bring novel evidence that pharmacological modulation of PNP by DI4G greatly improves the symptoms and the neuroinflammatory responses in a mouse model of MS, with a higher efficacy when compared to fingolimod. This compound might represent a promising strategy for managing MS in a near future. Financial support: CAPES, INCT-TB, CNPq, PUCRS.

85238 - THE RS3761548 FOXP3 VARIANT IS ASSOCIATED WITH MULTIPLE SCLEROSIS AND TRANSFORMING GROWTH FACTOR B1 LEVELS IN FEMALE PATIENTS

Immunology, basic science and clinical findings

Authors: Tamires Flauzino ; Daniela Frizon Alfieri; Wildea Lice de Carvalho Jennings Pereira; Sayonara Rangel Oliveira; Ana Paula Kallaur; Marcell Alysson Batisti Lozovoy; Damacio Ramón Kaimen-Maciel; Karen Brajão de Oliveira; Andrea Name Colado Simão; Edna Maria Vissoci Reiche;

Institution: UEL

Abstract: Introduction: The forkhead box protein 3 (FOXP3) gene is located on chromosome Xp11.23 and has been associated with multiple sclerosis (MS). It encodes the FOXP3 protein, a transcriptional factor for T regulatory (Treg) cell development and function. The A allele of rs3761548 FOXP3 -3279 C>A variant is correlated with a reduction in FOXP3 expression. Objective: To evaluate the association between rs37611548 FOXP3 (-3279 C>A) variant and MS, disability, disability progression, and transforming growth factor (TGF)-β1 and interleukin (IL)-10 plasma levels. Methods and subjects: The study included 170 MS patients and 182 controls. Disability was evaluated using Expanded Disability Status Scale (EDSS) and categorized as mild (EDSS≤3) and moderate/high (EDSS>3). Disability progression was evaluated using Multiple Sclerosis Severity Score (MSSS). The rs3761548 variant was determined with polymerase chain reaction-restriction fragment length polymorphism (PCR-RFLP). Plasma levels of TGF-β1 and IL-10 were determined using immunofluorimetric assay. Results: In all genetic models, we observed an association between rs37611548 and MS susceptibility in females. Among females, the allelic model showed that the A allele was associated with MS [odds ratio (OR): 2.23, 95% confidence interval (CI): 1.54-3.22, p<0.001). In a codominant model, the frequency of the CC, CA and AA genotypes in females differed between patients with MS and controls (25.6%, 53.7% and 20.7% versus 46.9%, 48.5%, and 4.6%, respectively, p<0.001). The CA and AA genotypes were associated with MS (OR: 2.03, 95% CI: 1.66-3.53, p=0.012; OR: 8.19, 95%CI: 3.04-22.07, p<0.001, respectively). With the dominant model, the CA+AA genotypes were also associated with MS (74.4% versus 53.1%) with OR of 2.57 (95% CI: 1.50-4.37, p<0.001). Furthermore, in the recessive model, the AA genotype was also associated with MS (20.7% versus 4.6%) with OR of 5.38 (95% CI: 2.12-13.64, p<0.001). After adjustment by age, ethnicity, BMI and smoking, all these results remained significant, as well as female patients carrying the CA+AA genotypes showed higher TGF-β1 than those carrying the CC genotype (OR: 1.35, 95%CI: 1.001-1.054, p=0.043). TGF-β1 levels were positively associated with the CA+AA genotypes in female MS patients (OR: 1.027, 95%CI: 1.001-1.054, p=0.043); however, after adjusted by age, ethnicity, smoking, age of diagnosis, and MS therapy in the model, the moderate/high disability was no longer significantly associated with the presence of CA+AA genotypes (OR:0.480; 95% CI: 0.159-1.450, p=0.193). Conclusion: Our results demonstrated that rs3761548 FOXP3 CA+AA genotypes were associated with MS and higher levels of TGF-β1 among female patients than those with the CC genotype. These data suggest that the A allele of rs3761548 variant may be associated with the quantitative or functional alteration of Treg cells, which could be one of the factors involved in susceptibility to MS in females.

84695 - REMYELINATION DYNAMICS IN PEDIATRIC MULTIPLE SCLEROSIS – AN ADVANCED MRI QSPACE MYELIN MAP (QMM) EXPLORATORY STUDY.

Epidemiology and MRI

Authors: Rafael Canani Sommer; Bruna Klein da Costa; Jefferson Becker; Jin Nakahara; Junichi Hata; Douglas Kazutoshi Sato;

Institution: PUCRS

Abstract: INTRODUCTION: Multiple Sclerosis (MS) is an inflammatory condition of the central nervous system (CNS) which courses with demyelinating lesions on brain and spinal cord. Pediatric-onset MS (POMS) corresponds to up to 10% of MS cases. Compared to adult-onset MS, POMS usually present with higher number of relapses and MRI disease activity. However, pediatric patients require a longer period to accumulate disease related disability compared to adult patients. This may be due to the capacity of remyelination which is considered to be elevated in children compared to adults. However, remyelination cannot be evaluated on the conventional MRI, requiring new advanced MRI sequences to differentiate CNS demyelinating lesions with and without remyelination. OBJECTIVES: We evaluated the remyelination in brain MS lesions from POMS patients after the first clinical attack according to the disease duration, using the advanced MRI q-Space Myelin Map (qMM). METHODS: We acquired qMM from 4 POMS patients and performed a transversal analysis on brain MS lesions comparing them to conventional T2-weighted imaging (T2WI). All MRI scans were performed using a 3-Tesla GE MRI scan. Patients were separated into two groups according to disease duration (below and above 36 months). Lesions were classified subjectively by a blind to group examiner into remyelinated or not based on visual comparison to T2WI lesions. In addition, we performed a semi-quantitative method defined by a ratio of qMM manually segmented lesion values to normal appearing white matter mean values (Lesionratio). Statistical analysis was performed in RStudio. Logistic Regression was performed to obtain Odds Ratios, Fisher´s Exact Test was used for categorical variables and Mann-Whitney U Test for continuous variables. RESULTS: Seventy-six lesions were included. Two patients with more than 36 months of disease contributed with 61 lesions (80.2%) and two patients with less than 36 months contributed with 15 (19.7%) lesions. Lesions classified as remyelinated lesions in the subjective visual analysis were associated with lower median Lesionratio($p < 0.001$) compared to those without remyelination. Lesions from patients with shorter disease duration had a higher probability to have remyelinated lesions (Odds Ratio [OR], 7.73 ; 95% confidence interval [CI], 2.29 – 31.2 ; $p < 0.001$) and a lower median Lesionratio (2.79 vs. 5.15, $p < 0.001$) compared to the patients with longer disease duration. CONCLUSIONS: The qMM indicates that POMS patients with shorter disease duration have a higher remyelination capacity in brain MS lesions compared to those patients with longer disease course irrespective of clinical attacks.

85244 - PET IMAGING OF NEUROINFLAMMATION IN RELAPSING-REMITTING AND SECONDARY PROGRESSIVE MULTIPLE SCLEROSIS WITH SIMILAR DISEASE DURATION

Epidemiology and MRI

Authors: Milena Sales Pitombeira; Kenia R. Campanholo; Fábio L. S. Duran; Samira L. Apóstolos-Pereira; Carolina M. Rimkus; Maria Fernanda Mendes; Geraldo Busatto Filho; Dagoberto Callegaro; Carlos Alberto Buchpiguel; Daniele de Paula Faria;

Institution: HCFMUSP

Abstract: Background: Several studies have addressed the differences between neuroinflammation profile of relapsing-remitting (RRMS) and secondary progressive multiple sclerosis (SPMS). Clear confounder factors to determine conversion from RRMS to SPMS are disease duration and higher disability. Molecular imaging using PET tracers for neuroinflammation may correlate with functional measures and help to predict the risk of conversion. Objective: This study aimed to characterize brain and cerebellar neuroinflammation using 11C-PK11195 Positron Emission Tomography (PET), disability and cognitive profiles in RRMS and SPMS patients with the same disease duration to determine whether they differ. Methods: Six RRMS and six SPMS patients underwent 11C-PK11195 PET/Magnetic Resonance (MR) and clinical evaluation with Expanded Disability Status Scale (EDSS), 25-Foot Walk (25FW), 9-Hole-Peg Test (9-HPT) and Symbol Digit Modalities Test (SDMT). PMOD™ software was used to assess volume and 11C-PK11195 uptake using 40–60 minutes standardized uptake values (SUV) for the following regions of interest (ROIs): cortical gray matter (GM), brain white matter (WM), corpus callosum (CC), thalamus, brainstem (BS), and cerebellum gray and white matter. T2 lesion load was calculated by Lesion Segmentation Tool from SPM™ 8 software. Mann-Whitney and Spearman Correlation were used to compare tracer uptake and assess correlations with clinical scores. Results: No statistical difference was observed between SPMS and RRMS patients concerning median age (44.0 vs. 45.0 years, respectively, p=0.818), disease duration (18 vs. 14.5 years, p=0.310), years of education (13.0 vs. 11.0 years, p=0.485) or T2 lesion load (25.0 vs. 36.3 ml, p=0.699). Median EDSS was higher in SPMS group compared with RRMS (6.5 and 2.75 respectively, p=0.002), as well as median time to execute 9-HPT (40.1 vs. 23.9 seconds, p=0.009) and 25FW (19.7 vs. 5.8, p=0.009). In RRMS patients, lower BS volume was associated with higher EDSS (r=-0.98, p<0.001) and higher BS tracer uptake, i.e. higher neuroinflammation, correlated with higher time to execute 9-PHT (r=0.83, p=0.042). Whereas, in SPMS patients longer time in 9-PHT was associated with neuroinflammation in CC (r=0.88, p=0.019), and lower volume in this region was observed in patients with higher times in 25FW (r=-0.81, p=0.050). No significant differences were found considering tracer uptake in the determined ROIs between groups. All patients were receiving disease-modifying treatment, except for one RRMS and two SPMS, been the highest 11C-PK11195 SUV in all ROIs observed in one of these SPMS patients. Conclusion: Poor performance in motor tasks, such as 9-PHT and 25FW, can be associated with higher neuroinflammation in brainstem and corpus callosum. Although our small sample size, this study raises the question of whether identifying neuroinflammation in specific regions may help to differentiate RRMS from SPMS, especially in transitional periods.

POSTER PRESENTATION

Epidemiology and MRI

Poster: 1 (78814)

Title: EVALUATION OF SLEEP QUALITY IN MULTIPLE SCLEROSIS (MS) PATIENTS

Authors: Camila Sando; Danyelle Balduino Sabbag; Rosa Hasan; Margarete de Jesus Carvalho;

Institution: FMABC

Abstract: Multiple sclerosis is a demyelinating disease with a wide range of symptoms, in which sleep disorders are inserted, which causes even greater losses for the diagnosed patients, bringing important changes into their routines. The study aims to assess and quantify the quality of sleep in patients with multiple sclerosis, as well as the somnolence presented during their daily activities of life. Application of the Epworth and Pittsburgh Scales. The Epworth Sleepiness Scale evaluates excessive daytime sleepiness. The patient answers eight questions about daily activities: sitting and reading; watching TV; sitting in a public place; walking by bus, car or train for an hour; lying down to rest after lunch; sitting and talking; sitting after lunch and stopping for a few minutes in traffic, for which the score goes from zero (no chance) to three (high chance). The patient is considered having excessive daytime sleepiness when the sum of the score is higher or equal to ten. The Pittsburgh Sleep Quality Index (PSQI) consists of nineteen questions, grouped into seven components: subjective sleep quality, sleep latency, sleep duration, habitual sleep efficiency, sleep disorders, use sleeping pills and daytime dysfunction. The score is summed and the overall score above five indicates poor sleep quality, while above ten indicates sleep disturbance. Of the thirteen participants, 23% (3) presented excessive daytime sleepiness (scores above ten on the Epworth scale), a result higher than the average of the general population presented in the literature (around 20%). In the PSQI, only one patient presented good sleep quality, corresponding to 7.7% of the total participants. 53.8% (7) presented poor sleep quality and in 38.4% (5) sleep disturbance was observed. 92% of the participants do not have a good quality of sleep, which is essential for a good performance in daily activities of life, besides being a risk factor for the development of diseases such as depression and anxiety disorders. Almost 25% of the patients already presented excessive daytime sleepiness, a consequence of the poor sleep quality of them. Multiple sclerosis is a pathology that already causes limitations, being extremely important for these patients a good quality in sleep,

Poster: 2 (78816)

Title: PSYCHOLOGICAL EVALUATION OF 17 PATIENTS WITH MULTIPLE SCLEROSIS

Authors: Camila Sando; Danyelle Balduino Sabbag; Estela Maris dos Reis Pedroso; Margarete de Jesus Carvalho;

Institution: FMABC

Abstract: Multiple sclerosis (MS) is a neurodegenerative disease that affects mostly young women. The symptomatology of the disease is wide, including paresthesia, visual disturbances, dysphagia, among others. The progression of the disease occurs in outbreaks, from which the patients leave cognitively compromised. The study evaluates levels of depression, anxiety, hopelessness and suicidal ideation of 17 patients with multiple sclerosis. Application of Beck Depression Inventory (BDI), Beck Anxiety Inventory (BAI), Beck Hopelessness Scale (BHS), and Beck Scale for Suicide Ideation (BSS). Seventeen patients with MS participated, being 11% men and 89% women. 47% of the patients presented changes in at least one of the applied scales. 17% presented changes in the BDI, 41% in the BAI, 23,5% in the BHS and 11,7% presented changes in the BSS. A significant number of patients with multiple sclerosis presented emotional dysfunction emphasizing the importance of this identification for the referral of these patients, aiming to improve their quality of life and functionality.

Poster: 3 (84622)

Title: DIFFERENT PATTERNS OF BRAIN MRI IN PRE-PUBERTAL PEDIATRIC MULTIPLE SCLEROSIS PATIENTS

Authors: Renata Barbosa Paolilo; José Albino da Paz; Samira Luisa Apostolos-Pereira; Dagoberto Callegaro; Douglas Kazutoshi Sato; Carolina Rimkus de Medeiros;

Institution: HCFMUSP

Abstract: Introduction: Brain magnetic resonance imaging (MRI) is essential in pediatric-onset multiple sclerosis (MS) diagnosis and monitoring. Recently the International Pediatric Multiple Sclerosis Study Group (IPMSSG) validated McDonald 2010 criteria for children with disease onset younger than 12 years, in which MRI imaging patterns are different than those described in adult-onset, showing more heterogeneous lesion types in this group. Objective: To describe brain MRI aspects of pre-pubertal onset MS patients. Methods: Cross-sectional retrospective analysis of MS patients fulfilling IPMSSG-2012 diagnostic criteria and disease onset before 12 years of age. Brain MRI analyzed by radiologist blinded for the clinical data. Three predominant lesion types were described: diffuse/confluent white matter lesions, round ill-defined margins, round well-defined margins. Lesion location and count were described. Results: 19/76 MS pediatric patients were identified with disease onset under 12 years of age; brain MRI from 12/19 patients were available. Most patients were male (10/12) with white ethnicity (10/12). Median age at onset was 10.5 (4-11) years. All have recurrent course with a median of 3.5 (1-10) attacks in 11 (3-22) years of disease duration. Median age at analyzed MRI was 10.5 (5-21) years; in 7/12 patients imaging was performed within the first two years of disease onset. All MRI were altered with the following patterns: diffuse/confluent white matter lesions (4/12); rounded ill-defined margins (3/12); rounded well-defined margins (5/12). Most patients had periventricular (all), subcortical (11/12), juxtacortical (7/12), internal capsule (9/12), Dawson's fingers (7/12), brainstem (9/12), cerebellum (7/12) T2-hyperintense lesions. 10/12 and 11/12 patients had more than 20 supratentorial and periventricular T2-hyperintense lesions respectively. Most (8/12) patients had T1-hypointense lesions. Conclusions: Pre-pubertal MS onset MRI have lesion configuration distinct from adult-onset MS and three different lesion patterns could be identified in this cohort.

Poster: 4 (85130)

Title: EVALUATION OF MAGNETIC RESONANCE IMAGING IN MULTIPLE SCLEROSIS PATIENTS

Authors: Dyana Gervana de Oliveira Fernandes; Alice Estevo Dias;

Institution: ABEM

Abstract: Introduction: Multiple Sclerosis (MS) is a demyelinating autoimmune disease, where the immune system affects the myelin sheath of neurons, resulting in several clinical manifestations. For the diagnosis, the magnetic resonance imaging (MRI) is used. Objective: To evaluate magnetic resonance imaging lesions in multiple sclerosis patients. Method: Magnetic Resonance Imaging (MRI) lesions of 10 individuals from a Civil Social Institution for MS in the city of São Paulo were examined in 2019. Results: most of them were women (60%) and married (50%), minimum and maximum age were 29 and 59 respectively; 40% has the disease for more than 10 years and relapsing-remitting (RRMS) phenotype was the comonnest (50%) followed by secondary progressive (SPMS) in 30%; in relation to disability 70% have an EDSS from 4.5 to 6.5. Last relapse occured in a period of time higher than 3 years (50%). Most patients have juxtacortical lesions (58%) and 20% of them have spinal cord injury. On the other hand jst 2% presented cerebellar involvement. Conclusion: in this small sample most patients were women, married, have RRMS, with moderate to high disability (EDSS from 4.5 to 6.5), and have a large amount of juxtacortical lesions.

Poster: 5 (85140)

Title: THE CHALLENGE OF TUMEFACTIVE LESIONS AS FIRST PRESENTATION OF DEMYELINATING DISEASE.

Authors: Nathane Braga da Silva Rezende; Viviane Tavares Carvalho; Leonardo Alves Araujo; Marcos Ravi Cerqueira Ferreira Figueiredo; Henrique Cal; Osvaldo José Nascimento;

Institution: UFF

Abstract: Case Presentation A fourteen-year-old patient, female, presented a global headache, somnolence and paresis in left dimidium, with a 2 days evolution for paralysis. She was hospitalized and received pulse therapy with glucocorticoids, with a good response, except on her motor symptoms. She was diagnosed with Multiple Sclerosis and started high doses of vitamin D. During two years after this first presentation, she had had four recurrence of symptoms, all with good response to steroids. She have came to our service after this period, with a clumsy hand, left paresthesia and sequelae of left optic neuritis. She had no other commorbity. Family history: her mother has lupus and her aunt has epilepsy with no etiology defined. Investigation: Brain MRI September, 2017: tumefactive lesion measuring 2,3x1,9cm in left semiovale center, with enhancement, and other T2 hyperintense lesions in periventricular, subcortical and infratentorial. Brain MRI May, 2018: extensive tumefactive right parietal lesion with enhancement, and other typical MS lesions, including Dawson‘s fingers and atrophic left optic nerve. Brain and spinal cord MRI February, 2019: improvement of tumefactive lesion, no enhancement, no new lesions. Rheumatologic and infections screening negative. CSF February, 2019: 1 cell, 19 protein, 54 glucose, presence of oligoclonal bands. Anti-Mog as differential diagnosis is still on analysis. Discussion Tumefactive lesions are an important and rare presentation. In young patients it can be presented as ADEM, Multiple Sclerosis and anti-Mog related diseases. Despite its size, clinical presentation varies. Related to MS, there are some classical presentations: as Balo and Marburg. Considering ADEM, which is usually preceded by infectious disease, it can be isolated, recurrent or multiphasic. In children, tumefactive lesion and encephalopathy can be related to anti-Mog antibodies, different from adults with NMO spectrum disorders. Also, there are few case reports with spontaneous recovery of tumefactive lesions. Of course, other autoimmune, neoplastic and infectious causes must be excluded. Our patient is a good example of delicate diagnosis. Although she has several clinical red flags, as somnolence, headache and recurrence of same symptoms, she also presents findings that indicates Multiple sclerosis, such as: oligoclonal band and typical lesions. The hypothesis of ADEM is less considered, since she had no infection and her age is not so typical. Final Comments Tumefactive lesions, especially in adolescents are a rare and interesting type of presentation of demyelinating disease. Although it can be an initial presentation of multiple sclerosis, anti-MOG spectrum should be highly suspected, since it is more frequent in children and with important interferences on treatment and establishing prognosis.

Poster: 6 (85147)

Title: ESTIMATED PREVALENCE OF MULTIPLE SCLEROSIS IN THE STATE OF RIO GRANDE DO NORTE, BRAZIL, IN 2018

Authors: Einstein Dantas de Aguiar Filho; Diego Maia Abrantes; Raphael Dantas Luz Peixoto; Elayne Flávia Pereira Castro; Maira Melo do Vale Lira; Alcileia Rodriges Marques; Mário Emílio Dourado;

Institution: UFRN

Abstract: Introduction: The prevalence of multiple sclerosis (MS) varies widely in different geographic locations, from less than 1/100,000 to more than 100/100,000. The geographic variation in the prevalence of MS appears to be due to both environmental and genetic factors. Brazil is con¬sidered a low prevalence area, however, there are me-dium-prevalence areas, as shown in studies from cities such as São Paulo, Belo Horizonte, Santos, Botucatu and Sorocaba, João Pessoa. Objectives: Clinical and epidemiological characterization of MS patients living in the State of Rio Grande do Norte, Brazil. Methods: This was a transversal retrospective and descriptive study, with patients from the Centro de Referência em Esclerose Múltipla from the Hospital Universitário Onofre Lopes/Universidade Federal do Rio Grande do Norte. A cross-sectional study was held from january 2018 to january 2019. The patients were classified in accordance with the revised McDonald criteria. Results: Included 138 patients, representing a prevalence of 3.96 cases/ 100.000 population, which 72.4% where women with mean age of 39.7 years and average age of first symptoms/outbreak was 30.1 years. Relapsing-remitting clinical form predominate with 81,9%; the mean illness time of MS found was 10.4 years and average Expanded Disability Status Scale (EDSS) score was 2.4 with standard deviation of 2.6. Conclusions: The prevalence of MS in the State of Rio Grande do Norte is low and clinical features are consistent with most Brazilian studies.

Poster: 7 (85154)

Title: IRON DEPOSIT AS AN TIME-SPACE DISSEMINATION MARKER IN MULTIPLE SCLEROSIS (MS): AN USEFUL YET UNDERRATED TOOL IN IMAGING DIAGNOSIS AND STAGING

Authors: VERENA SUBTIL VERENA; Matheus Dorigatti Soldatelli; Alessandro Finkelsztejn; Renata Londero; Fabiano Reis; Juliana Avila Duarte;

Institution: HCPA

Abstract: INTRODUCTION: There are many challenges in determining the time (DIT) and space dissemination (DIS) in Multiple Sclerosis (MS). T2 susceptibility weighted images(SWI) exploits intrinsic differences in susceptibility to generate contrasts by using magnitude and phase images from a gradient echo sequence, where the phase image reflects local susceptibility-induced changes of the resonance frequency. In MS, SWI have demonstrated a hypointense rim around lesions and nodular hypointensities in the WM. These findings seem to be relatively specific to patients with clinically isolated syndrome (CIS) or MS over other neurological disorders. Multiple studies were performed to elucidate this mechanism, and yet it has not been completely established. The non-haem iron deposition seems to be a major contributor, but demyelination and free radicals related to inflammatory processes might also have an important role. Therefore, the SWI hypointensities may indicate a significant contributor to tissue damage, disease severity, and/or progression. METHODS: In light of determining which of those advanced imaging sequences could support the evidence of DIS, alongside with studies to standardize the use of the central vein sign as a marker for MS, our research center has been interested in other MRI findings in MS. In this study, we demonstrate the presence of what we believe to be non-haem iron deposits by the rim of new lesions in a patient with MS through T2 SWI, in contrast to the absence of such finding in older lesions of the same individual:a 36yo man, diagnosed with RRMS over than 10 years ago and currently treated with Natalizumab. He presented with gait abnormalities and marked strength loss in both inferior limbs associated with hypoesthesia on the left inferior limb and was admitted to for performing a new MRI study and pulse therapy with methylprednisolone. The latest and previous brain MRIs were analyzed of the patient and were acquired in a 3T MRI sacnner. Exam 1 was performed in August 2017 while exam 2 was acquired in March 2019. We analyzed and counted the number of total WM lesions and next counted the number of lesions with the non-haem enhanced rim in SWI, comparing them in those two exams. FINDINGS: We found 18 lesions in exam 1 (first MRI), and 29 lesions in exam 2 (latest MRI). In T2 SWI sequence, there were 11 lesions that showed the non-haem rim, of which 3 presented with disrupted blood brain barrier after the gadolinium injection. CONCLUSIONS: As previously stated, the search for new methods in establishing DIS and DIT in neuroimaging is required in order to improve accuracy in the diagnostic methods in MS. These findings, even though have not a large number of subjects, are worthy of scrutiny and further elucidation. They hold the promise of lesion stadiation in a single MRI study, which would enable us to determine the progression of the disease,even though the patient had only recently reached for specialized medical attention.

Poster: 8 (85159)

Title: HOW MUCH MS PATIENTS KNOW ABOUT THEIR DISEASE?

Authors: Rodolfo Francisco Marques; Denison Pedrosa; Natália Talim; Jéssica Marques; Antonio Bernardes; Mariana Pardo; Karlla Cardinali; Juliana S. Amaral; Rodrigo G. Kleinpaul; Marco A. Lana-Peixoto;

Institution: UFMG

Abstract: Introduction - Multiple sclerosis (MS) is an immune-mediated chronic disease of the central nervous system that more frequently affects young adults and causes increasing disability during its course. Treatment requires the use of immunomodulatory and immunosuppressive agents for indeterminate periods of time which may have potential adverse effects. Knowledge about the nature and course of the disease as well as its treatment may help patients to better cope with their disease and adhere to its treatment. Objective – To evaluate how much MS patients know about their disease and their source of information. Methods - A cohort of MS patients seen at a MS research center in Belo Horizonte was studied. All patients met McDonald 2010 diagnostic criteria. Patients answered a specially designed questionnaire which contained questions about how they evaluated their own knowledge and what their sources of information were. Additional questions tested their correct knowledge about MS and its treatment. Patients were divided into groups according to gender, age, grade of education (≤ 8 years, and > 8 years), income by multiples of minimum wage (≤2, and ≥ 5), time of diagnosis (< 1 year, and ≥ 1 year), and grade of disability as measured by the Expanded Disability Status Scale (EDSS < 4.0, and ≥ 4.0). Results – 225 patients answered the questionnaire. Five of them were discarded (3 for answering a different version, 1 for being a NMOSD patient and 1 for not meeting diagnostic criteria for MS). 162 (73.6%) patients were women, the median age was 39.5 years, 169 (76.8%) had more than 8 years of formal education, and 183 (83.2 %) had the diagnosis for longer than 1 year. The main sources of information about the disease were the assistant physicians and the internet. 117 (53.2%) patients judged they had good knowledge about MS, but the mean score of correct answers to basic questions was 4.2 out of 10. Patients with higher education, better income and longer time of diagnosis scored better ($p<0.05$). Only one-half of the patients knew about the clinical form of their disease. Autoimmunity (42%) and psychological distress (29.5%) were considered the main factors in MS pathogenesis. One-fourth of patients do not talk to their doctors about their disease, treatment or personal concerns. To 86 (37.9%) patients trouble walking has the highest impact on daily life, particularly to those with more severe disability ($p<0.05$). Conclusion – Although MS patients know poorly about their disease they overestimate their level of knowledge. Patients with a higher level of formal education, better income, and longer disease duration have a better understanding of the disease.

Poster: 9 (85181)

Title: AN ECONOMIC EVALUATION OF MULTIPLE SCLEROSIS IN THE NORTHEASTERN BRAZIL.

Authors: Luciana Souza Dos Santos; Bianca Etelvina Santos De Oliveira; Lindinalva Ferreira De Souza; Tania Maria Guimaraes De Lima Albuquerque; Davi Veloso Guerra; Beatriz Do Nascimento Luna Barbosa; Camila Tavares Mauricio De Oliveira;

Institution: UNIPÊ

Abstract: Introduction: Multiple sclerosis (MS) is an autoimmune disease of the central nervous system, which poses a substantial financial burden on the population. Although patients with MS are covered by the national health insurance, there is little information of how to lower the expense of MS in Brazil. Objective: The aim of this study was to investigate the cost of MS to society and to individuals in the city of João Pessoa/State of Paraíba, in the Northeast Region of Brazil. Methods: we retrospectively assessed the cost of care provided to MS patients at the MS Reference Center of Paraíba State (CREM/PB), as well as the patients' private costs related to the disease in the last 12 months. We developed a questionnaire concerning resource utilization and 46 patients reported their spending. Besides sociodemographic data, the questions evaluated the use of health care professional services and the use of disease modifying drugs. Results: The sampled consisted mainly of mid-aged caucasian women. Descriptive analyses showed that the frequency of hospitalizations, emergency attendance and home-care services were low. Concerning the public health care system, patients sought more frequently the assistance of psychologists and alternative medicine services. We observed a high demand for physical therapists in the private expenses. In the overall resource consumption, the resources provided by the Brazilian health care supported most of the patients' financial burden, included the costs associated with disease modifying drugs. Additionally, we found sex differences on patients' private costs, in which women had higher expenses than men. Taken together, our results indicate that the national health policies provide a relevant support to MS in João Pessoa city-PB. Conclusion: Our data suggest that other types of interventions, such as implementing activities related to lifestyle habits, might lower or even avoid some costs. In conclusion, our study comprises a burden of illness investigation, which holds potential for designing strategies intended to lower the expense of MS health care, such as promoting physical activity programs and socialization initiatives, as well as to improve the structure of MS healthcare team in accordance with real patients' demands.

Poster: 10 (85219)

Title: “STABLE” VS. “SILENT PROGRESSIVE MS”: A RETROSPECTIVE CLINICAL IMAGING BRAZILIAN STUDY

Authors: Fernando Faria Andrade Figueira; Paula Vallegas Soares; Gustavo Medeiros Andrade Figueira; Raquel Custódio da Silveira; Fernanda Groppo NogueiraHerculano; Debora Bartzen Moraes Angst;

Institution: São Francisco na Providência de Deus Hospital

Abstract: Background. Lublin et al new phenotypes propose clinical and imaging requirements to characterize activity and progression in MS patients. Relapses and MRI findings are well defined parameters for activity but progression remains far from clear cut characterization. No evidence of disease activity (NEDA), an ideal target for long term treatment, includes neither clinical nor imaging signs of disease (NEDA 3), a concept stringently enriched by the inclusion of brain atrophy measurements (NEDA 4). Method. We studied retrospectively 185 consecutive non selected patients with diagnosis of relapsing remitting MS (McDonald 2001), included from 2001 to 2012, on regular treatment. All patients had at least 3 MRI available studies with proper protocol leading to a reliable evaluation of activity and progression in at least 7 years. Eleven patients were excluded: 3 cases for lost follow up and 8 for insufficient data. Clinical evaluation included annualized relapses rate and EDSS evolution at least annually, for at least 7 years (mean 8.4). MRI data included gadolinium positive lesions or new/enlarging T2W lesion as well as the annualized evolution of corpus callosum index (CCI). Results. From 174 patients of the original sample, 148 were considered clinically “stable” on basis of disability scores measured by EDSS. In this group, 33 (22.2%) showed an annualized reduction on CCI of more than 0.5%, cut off for a significant brain atrophy score. Data on relapses, EDSS evolution, gadolinium enhancing lesions and T2W lesions will be presented. Conclusion. From a population of 148 apparently “stable” MS patients over at least 7 years follow up period, 1/5 of them showed significant progressive brain atrophy. More robust data are required but it seems reasonable to conclude that a regular brain volumetry technique can provide valuable information about the real state of treatment response, selecting these “silent progressive” patients maybe for a switch to more active therapeutic strategy.

Poster: 11 (85222)

Title: SHORT MYELITIS AS AN ATYPICAL PRESENTATION OF NEUROSARCOIDOSIS

Authors: Ligia Henriques Coronatto; Ana Clara Garcia Silva; Samyra Melo Vital; Alice Cavalcante de Almeida Lins; Eduardo Augusto Gonçalves; Lucas Michielon de Augusto Ishi; Camilla Duarte Ribeiro; Frederico Mennucci Haidar Jorge; Ana Flavia Picerno Pouza; Paula Virgínia Tavares do Nascimento; Sônia Maria Cesar de Azevedo Silva; Herval Ribeiro Soares Neto;

Institution: IAMSPE

Abstract: A 64-year-old woman, hypertensive and diabetic, presented sudden shock in lower back while lifting a sand bag. Throughout the day, evolved with paresthesia in lower limbs, loss of thermal sensation in feet, urinary incontinence and heavy legs with gait difficulty. Admitted to neurology service 40 days after initial symptoms, with lower limbs paraparesis and superficial and deep sensorial deficits at T10 level. Nuclear magnetic resonance evidenced a small central-posterous spine injury at T8-T9 level with discrete contrast enhancement. Rheumatogram and vitamin B12 dosage were normal. Syphilis, HIV, HTLV, Hepatitis C and B serology non-reactive. Glycated hemoglobin, total cholesterol and LDL were slightly increased. Cerebrospinal fluid: 02/mm³ cells, 69mg/dl proteins and 89mg/dl glucose. A spinal cord infarction was initially considered. Investigation with aorta angiotomography didn't show vascular abnormalities, however, demonstrated generalized lymph node enlargement and multiple small bilateral lung nodules. Performed BAAR research in three sputum samples, all resulted negative. Borrelia, Cryptococcus, Paracoccidioidomycosis, Mycoplasma, Aspergilus and Histoplasma serology non-reactive. Tumor markers were normal. Angiotensin converting enzyme 117U / L (normal 35-90U / L). Chest and abdomen tomography revealed hypovascular nodular formations affecting splenic and hepatic parenchyma. Mediastinal lymph node biopsy was performed revealing granulomatous lymphadenitis with a research for fungus, bacteria and mycobacteria negative, suggesting sarcoidosis. Opted for hepatic nodule biopsy due to significant clinical radiological dissociation and absence of typical radiological findings suggestive of neurosarcoidosis. Biopsy was suggestive of sarcoidosis with IgG4 screening negative. Initiated treatment with Infliximab for probable neurosarcoidosis (NS). Patient presented significant improvement of neurological symptoms. Sarcoidosis affects central nervous system in about 5-10% of cases and may present with a wide variety of symptoms. Typical sarcoidosis presentations permit ready diagnosis, however, unusual clinical manifestations can make it rather difficult, which is particularly evident in NS. Extensive longitudinal myelitis is NS most typical spinal cord involvement, short myelitis are uncommon and difficult to diagnose. In 2019 diagnostic criteria were reviewed and NS definitive diagnosis can only be done with nervous system biopsy after excluded other causes. Treatment is with corticosteroids and immunosuppressants. Infliximab is an anti-TNFα that has become a viable option for NS treatment proving to be effective in both clinical and image improvement. Despite numerous studies, NS still a little known and undiagnosed pathology, which presents in very varied and sometimes atypical forms as in this case.

Poster: 12 (85250)

Title: WHEN A DRAWING ABILITY ASSESSMENT CAN TEACH US ABOUT MULTIPLE SCLEROSIS MIMICS

Authors: Lucas Silvestre Mendes; Igor Bessa Santigo; Iury Helder Santos Dantas; Renato Rodrigues Viana; Lucas Silvestre Mendes; Milena Sales Pitombeira; Gabriela Joca Martins; Fernanda Martins Maia;

Institution: HGF

Abstract: Case Presentation: A 27-years-old man, pencil artist, presented in October 2016 with subacute onset behavioral changes, confusion and gait abnormality. He was initially submitted to psychiatric assessment and discharged after prescription of antidepressant drugs. The symptoms worsened in a month and a brain MRI was requested. Due to the MRI findings, the patient was referred to our neurology department with a hypothesis of multiple sclerosis (MS). Our first evaluation showed cognitive dysfunction with a dramatic loss of previous drawing skills, hyperreflexia in lower limbs and gait ataxia. Blood workup was normal and CSF analysis showed elevated protein level and mild pleocytosis. Brain MRI disclosed hyperintense T2 lesions in the right periventricular white matter and centrally to the corpus callosum (CC). Initial ophthalmoscopy showed branch retinal artery occlusions (BRAO) and audiometry showed a mild left sensorineural hearing loss. The patient was diagnosed with Susac Syndrome (SS) and submitted to treatment with high-dose intravenous methylprednisolone, with important clinical response documented by improvement in drawing abilities. He was discharged with mild cognitive impairment, using oral prednisone as maintenance therapy that was later modified to rituximab due to a recurrence of symptoms. Discussion: SS is an immune-mediated microvascular endotheliopathy. Brain MRI lesions are often misdiagnosed as MS and occur centrally to the CC, sparing the callososeptal interface. Other lesions can be found in the deep white matter and infratentorium, but usually not in the temporal lobes or subcortical U-fibers. Less than 20% of SS patients exhibit the clinical triad that consists of encephalopathy, BRAO, and sensorineural hearing loss. In MS, symptoms such as confusion or behavioral changes are rare, therefore considered as a red flag. Sensorineural hearing loss can occur but usually improves over days to months. Visual symptoms are common, presenting as diplopia or optic neuritis, distinguished from SS that presents as scotomatous peripheral field loss and reduced visual acuity. Focal symptoms and a relapsing-remitting course are not helpful considering that can be found in both conditions. In SS, patients commonly experience a self-limited monophasic course with fluctuating symptoms, which usually resolves after 2 years, or a relapsing course with remission periods that persists after 2 years. Final Comments: In most cases, the distinction between SS and MS is based on clinical presentation and MRI findings. Unusual diagnostic tools, such as drawing skill, represented in this case, can be helpful, considering that substantial cognitive impairment at onset is a red flag for a misdiagnosed MS. A correct and comprehensive assessment is important considering that treatment and long-term prognosis of the two conditions differs considerably and can remarkably reduce permanent neurologic sequelae for both.

Poster: 13 (85254)

Title: SUSCEPTIBILITY WEIGHTED SEQUENCES AS A CLUE TO MS MIMIC

Authors: Iago Navas Perissinotti; Herval Ribeiro Soares Neto; Fernando Freua; Fernando Kok; Dagoberto Callegaro;

Institution: HCFMUSP

Abstract: A 34-yo woman presented for a follow-up visit in a tertiary multiple sclerosis (MS) center, accompanied by her sister. Her first symptoms presented at 31-yo as a left incomplete hemiparesis, which resolved after a short course of oral corticosteroids. The magnetic resonance imaging (MRI) at the time was not diagnostic for MS and she did not seek follow up. One year after the first episode, she was hospitalized with worsening of the weakness in her lower limbs and ataxia, with partial improvement after 8 days of 1g of methylprednisolone and 6 sessions of plasmapheresis. Investigation at this point revealed a cervicothoracic myelitis and her cerebrospinal fluid was positive for oligoclonal bands and a discrete pleocytosis (6 cells, lymphocytic). She was started on azathioprine, from March/15 until November/15 with a hypothesis of neuromyelitis optica spectrum disease. Anti-aquaporin 4 antibodies were sent but resulted negative and she was started on natalizumab, which she used until March/18, when it was suspended after JC seroconversion. Despite treatment, she progressed with worsening of her motor and cognitive functions. Fingolimod was then started in November/18. She returned to the office in May/19, unable to walk and communicate, with global spasticity and dystonic movements in her upper and lower limbs. Dissociation between the severity of the cognitive impairment and the magnitude of supratentorial MRI lesions raised concern for differential diagnoses. Reviewing the history, she had a past of developmental delay, which stabilized during adolescence and early adulthood, absence epilepsy since childhood controlled with valproate and no evidence of contrast-enhancing lesions at any point during her investigation. Despite some apparent flares, the disease course seemed to be progressive, in spite of multiple treatment attempts. After discussing the case with the neurogenetics group and thoroughly reviewing her imaging history, it was noticed a pronounced iron accumulation in the basal ganglia and red nucleus in the susceptibility weighted imaging sequences (SWI), not present in her first MRI. A hypothesis of neurodegeneration with brain iron accumulation type 5 was made and she was offered genetic testing.

Immunology and basic science

Poster: 14 (79446)

Title: IMMUNE MECHANISM IN MULTIPLE SCLEROSIS: A MODEL OF THE POSSIBLE CASCADE OF EVENTS UNDERLYING AUTOIMMUNITY-RELATED DEMYELINATION

Authors: João Marcos Brandet;

Institution: UNIFIL

Abstract: Introduction: Multiple sclerosis (MS) is a demyelinating disease in which the insulating covers of nerve cells in the central nervous system (CNS) are damaged. MS is a complex disease with many different immune cells involved in its pathogenesis, and in particular T cells as the most recognized cell type. Understanding the mechanisms of immune-mediated destruction of CNS components in MS promises to not only promote effective design of MS therapeutics, but also provides a broader understanding of immune-mediated diseases affecting the CNS. Objective: To elaborate a model of the possible cascade of events underlying autoimmunity-related demyelination. Method: The model was elaborated based on computational simulations that analyzed (a) the known and probable immunological mechanisms in MS; (b) the structure, composition, synthesis and physical-chemical properties of the myelin; (c) the putative mechanisms of action of histone-modifying enzyme inhibitors; (d) the mechanisms of noncoding (nc) RNAs in MS; (e) the role of the blood-brain barrier in multiple sclerosis. The model, computational simulations and analyzes of this scientific work were elaborated with the use of software: ACD/ChemSketch, Swiss-PdbViewer, ABCpred, BepiPred-2.0, ElliPro, DEseq, GOseq, FunRich, Cytoscape, BiNGO, PepSurf, AxonDeepSeg, AxonSeg, Computer-assisted Evaluation of Myelin formation (CEM), PyMol, ICM-Browser, Visual Molecular Dynamics (VMD), Cell Illustrator, C-ImmSim, Simmune and ChemDraw. Results and Conclusion: The model elaborated by this scientific work is in agreement with the most recent literature that demonstrates the relation of the immunology with the MS. This model demonstrates the cascade of events possibly underlying autoimmunity-related demyelination in MS, putative mechanisms of action of histone-modifying enzyme inhibitors and mechanisms of ncRNAs in MS. Understanding the immunological mechanisms should help developing new therapeutic tools to treat this disease and other autoimmune diseases. Investigations into the disruption of the homeostatic balance of the immune system should help guide future research into MS therapeutics, with particular attention to the long-term management of this disease.

Poster: 15 (85117)

Title: DIMETHYL FUMARATE INDUCES IN VIVO AND IN VITRO APOPTOSIS OF ACTIVATED LYMPHOCYTES IN EXPERIMENTAL AUTOIMMUNE ENCEPHALOMIELITES

Authors: BRENO BANDONI FERRARI; BRENO BANDONI FERRARI; Amanda Dias da Rocha Lima; Raphael Patrício da Silva Quintiliano; Fernando Pradella; Leonilda M.B. Santos;

Institution: UNICAMP

Abstract: Introduction: Dimethyl fumarate (DMF; Tecfidera, Biogen) is an oral fumaric acid ester, which has been shown to reduce clinical disease activity in relapsing-remitting Multiple Sclerosis (RRMS). The mechanisms by which DMF reduces inflammatory disease in Multiple Sclerosis (MS) remains incompletely elucidated. Lymphopenia is a complication of DMF treatment in patients with MS, although severe lymphopenia is experienced by a small group of patients. Experimental Autoimmune Encephalomielites (EAE) is an experimental model for studying MS. Objective: To investigate the effect of DMF treatment in the apoptosis of encephalitogenic T lymphocytes in EAE. Material and methods: C57BL/6 female mice were immunized with (MOG) 35-55 peptide in complete Freund's adjuvant supplemented with heat-inactivated Mycobacterium subcutaneously. Pertussis toxin was injected intraperitoneally (i.p.) on days 0 and 2 after MOG immunization. Daily monitoring of EAE mice was carried out and the mice were scored on a scale of 0-5. DMF was administered by gavage daily in the concentrations 7.5, 15 and 30 mg/kg Apoptosis and necrosis were evaluated by AnexinV/propidium iodide staining by flow cytometry. Results: In vivo administration of DMF reduces significantly the severity of EAE. The reduction of the disease was accompanied by the increase of apoptosis of CD4 and CD8 T lymphocytes in mesenteric lymph nodes. DMF also induce apoptosis of in vitro activated T lymphocytes, mainly the CD8 T lymphocytes. Discussion: The apoptosis of CD4 and CD8 T lymphocytes was observed in mice treated with DMF. DMF-induced apoptosis, may explain, at least in part, the lymphopenia observed after treatment with this drug. On the other hand, the dead of encephalitogenic T cells may also explain the beneficial effect of the treatment with DMF. Conclusions: We provide evidence that the in vivo treatment with DMF reduces the severity of EAE and induces apoptosis of encephalitogenic T lymphocytes, which may explain the lymphopenia.

Poster: 16 (85127)

Title: THE CLINICAL UTILITY OF SERIAL MOG-IGG SAMPLES TO IDENTIFY MONOPHASIC AND RELAPSING MOG-IGG ASSOCIATED DISEASE

Authors: Amanda Marchionatti; Amanda Marchionatti; Ana Paula Bornes da Silva; Bruna Klein da Costa; Giordani Rodrigues dos Passos; Jefferson Becker; Denise Cantarelli Machado; Douglas Kazutoshi Sato;

Institution: PUCRS

Abstract: Introduction: Myelin oligodendrocyte glycoprotein (MOG) is a protein exclusively expressed in the myelin sheath by oligodendrocytes. MOG reactive immunoglobulin G (MOG-IgG) have been recently described in the sera of patients with optic neuritis, encephalitis, and/or myelitis (MONEM). Persistent MOG-IgG may be a risk factor for a recurrent disease, distinct from multiple sclerosis and aquaporin-4-IgG positive neuromyelitis optica spectrum disorders. Treatment of MONEM cases is poorly standardized, but acute treatment includes high-doses of intravenous methylprednisolone (mPSL) and plasma exchange (PLEX). The relapse prevention therapy is based on off-label use of immunosuppressive drugs and anti-CD20 monoclonal antibodies. Objective: To evaluate the clinical utility of longitudinal MOG-IgG testing, the frequency of patients with transient MOG-IgG and interval for seroconversion to negative in those patients. Methods: Longitudinal serum samples from MOG-IgG+ patients were tested using the live cell-based assay (CBA) with HEK293 cells transfected with full-length human MOG. Results: Twelve MONEM patients with longitudinal samples were included. Six patients (50%) were males, with median age of 33 (range 12-77) years. Among the 12 patients, 66.7% (8/12) were persistently positive and 33.3% (4/12) became negative. The median time for MOG-IgG seroconversion to negative was 10.5 (range 10-16) months. All patients who became negative had only one attack (3 patients with myelitis and 1 with unilateral ON), 3 patients received acute treatment only with mPSL and one patient required mPSL+PLEX. In the group with persistent MOG-IgG, the median number of attacks was 2 (range 1-4), with 87.5% (7/8) with ON and only one had myelitis. All except one patient received acute treatment with mPSL and in 42.9% (3/8) were also treated with PLEX. Long-term immunosuppressive treatment with azathioprine was initiated in 62.5% (5/8) associated with prednisone in 4 patients, while one patient received chronic treatment with mycophenolate mofetil. Conclusions: Longitudinal samples for MOG-IgG testing is required to identify MONEM patients at high risk for a relapsing disease (persistent MOG-IgG) and those who could be candidate for cautious follow-up after becoming negative without immunosuppression. Persistent MOG-IgG patients had frequently ON, required mPSL+PLEX more frequently due to severe/refractory attack and received long-term immunosuppressive therapy.

Poster: 17 (85133)

Title: DIMETHYL FUMARATE STIMULATES TOLEROGENIC CELLS IN THE INTESTINE OF MICE WITH EXPERIMENTAL AUTOIMMUNE ENCEPHALOMYELITIS

Authors: Amanda Dias Da Rocha Lima; Amanda Dias da Rocha Lima; Breno Bandoni Ferrari; Raphael Patrício da Silva Quintiliano; Fernando Pradella; Leonilda M.B. Santos;

Institution: UNICAMP

Abstract: Introduction: Dimethyl fumarate (DMF; Tecfidera, Biogen) is an oral fumaric acid ester which has been shown to reduce clinical disease activity in relapsing-remitting multiple sclerosis. DMF is metabolized in monomethyl fumarate (MMF) in the small intestine. The mechanism of action of DMF is still being elucidated and several studies indicate that MMF is the active metabolite. MMF crosses the blood-brain barrier and can be detected in the CNS. Moreover, MMF activates the HCAR2/GPR109A, which is expressed by intestinal cells. Objective: To investigate intestinal cells from mice with experimental autoimmune encephalomyelitis (EAE) treated with DMF. Material and methods: Identification of HCAR2 receptors in the intestinal epithelial cells by flow cytometry. Identification of regulatory T cells from intestine by intracellular molecule Foxp3. DMF was administered by gavage twice a day in the concentrations 7.5 and 30 mg/kg. C57BL/6 female mice were immunized with (MOG) 35-55 peptide in complete Freund's adjuvant supplemented with heat-inactivated Mycobacterium subcutaneously. Pertussis toxin was injected intraperitoneally (i.p.) on days 0 and 2 after MOG immunization. Daily monitoring of EAE mice was carried out and the mice were scored on a scale of 0-5. Results: The in vivo administration of DMF in mice with EAE increases de expression of HCAR2/GPR109A in intestinal epithelial cells. Those cells also produce increased levels of prostaglandin E2 and anti-inflammatory cytokines. Discussion: The activation of hydroxycarboxylic acid receptor 2 (HCAR2/ GPR109A) by MMF, which is a potent agonist of HCAR2, stimulates the production of anti-inflammatory cytokines and PGE2 in intestine. Cells such as dendritic cells may become tolerogenic one and activate T reg in the intestinal environment. Conclusion: The activation of HCAR2/GPR109A receptor in the intestinal epithelial cells stimulates the production of tolerogenic molecules and may be a novel pathway to explain the mechanism of action of DMF.

Poster: 18 (85137)

Title: ESTABLISHMENT OF FUNCTIONAL OLIGODENDROCYTE PRECURSOR CELLS FROM EMBRYONIC STEM CELL

Authors: Tereza Cristina Barbosa; Tereza Cristina Barbosa; Eduardo Osório Frare; Murilo Sena Amaral; Irina Kerkis; Vanessa Olzon Zambelli;

Institution: Butantan Institute

Abstract: Introduction- The disabling effects of myelin diseases affect millions of people worldwide. This disturb is reported in various neurological disorders. The most common myelin-related neurological disorder is Multiple Sclerosis (MS). Promotion of remyelination is a potential strategy for therapeutic intervention in MS and other demyelinating diseases. Current therapies for such disorders with notable myelin loss are still ineffective in inducing remyelination. Thus, the development of new platforms for the discovery of pharmacological interventions is crucial. Oligodendrocytes (OLs) are myelinating cells of the Central Nervous System. These cells are originated from Oligodendrocyte Precursor Cells (OPCs) which are highly proliferative cells. Objective-We search to provide a platform for the differentiation of mESCs through a defined series of developmental transitions into a pure population of highly expandable OPC. Methods-The mESCs are feeder-dependent culture and mitotically inactivated primary mouse embryonic fibroblasts (MEFs) were used as coating. ITS medium was used to induce differentiation into neural precursor cells. Subsequently, the cells were differentiated into OPCs through incubation with FGF, EGF, PDGF mitogens. The gene expression of markers from differentiation steps were evaluated by RT-PCR. In addition, protein expression was confirmed by immunofluorescence assay. The differentiation of mESC to OPC occurred in 35 days. Results-The mESCs displayed gene and protein expression for Oct4, Sox-2 and Nanog, confirming their pluripotency. Differentiated neural precursors expressed Pax6 and nestin. After differentiation to OPC, cells were positive to Olig2, Sox10, PDGFRα, NG2, well-known OPC markers. Conclusion- The differentiation protocol from mESCs was effective in generating oligodendrocyte precursor cells. This study may provide an important platform for screening new compounds with remyelinating potential, as well as novel molecular targets for the treatment of demyelinating diseases.

Poster: 19 (85139)

Title: CYTOTOXIC B LYMPHOCYTES IN PERIPHERAL BLOOD AND CEREBROSPINAL FLUID OF PATIENTS WITH MULTIPLE SCLEROSIS

Authors: Raphael Patricio Da Silva Quintiliano; Raphael Patricio da Silva Quintiliano; Vinicius Oliveira Boldrini; Carla Stella; Alfredo Damasceno; Leonilda Maria Barbosa Santos;

Institution: UNICAMP

Abstract: Introduction: Cytotoxicity mechanisms are described as the most important in the induction of demyelination in MS. B lymphocytes actively participate in the pathogenesis of multiple sclerosis (MS) mainly in progressive forms of the disease. As CD4 T lymphocytes, the population of B lymphocytes is heterogeneous and regulatory and cytotoxic B lymphocytes were described. Objective: We investigated the production of granzyme B (GzmB) by B lymphocytes in peripheral blood and cerebrospinal fluid (CSF) sample from patients with MS. Material and methods: MS patients included 15 PPMS were recruited according to McDonald Criteria. Peripheral blood mononuclear cells were isolated by Ficoll-Hypaque gradient and labeled for flow cytometry analyses. GzmB were identified by intracellular staining. Results: A significant increase of granzyme-B positive in CSF when compared in peripheral blood was observed. This B cell population also expresses increased levels of integrin CD49d (VLA 4). Discussion: The increased expression of CD49d integrin in B lymphocytes surface indicated that this cells are activated in the peripheral blood and may explain, at least in part, the presence of B lymphocytes contained intracellular GrmB in the CSF of MS patients. Previous studies demonstrated that CSF cells may migrate to SNC parenquima. Here we provide evidence that cytotoxic B cells migrate to CSF and probably to the brain parenquina contributing to the brain injury in MS patients. Conclusions: Increased number of granzyme B positive lymphocytes was observed in peripheral blood and in the CSF of patients with MS, mainly those in the progressive form of the disease.

Poster: 20 (85149)

Title: TH1-LIKE CYTOTOXIC PROFILE OF CD4+ T LYMPHOCYTES DISCRIMINATES MS PATIENTS AND HEALTHY SUBJECTS

Authors: Vinícius De Oliveira Boldrini; Raphael Patrício Da Silva Quintiliano; Alfredo Damasceno; Leonilda Maria Barbosa Dos Santos; Alessandro Dos Santos Farias;

Institution: UNICAMP

Abstract: Introduction: Cytotoxicity mechanisms are described as important for induction of demyelination in Multiple Sclerosis (MS). Recently, a growing body of evidence supports the cytotoxic activity of CD4+ T lymphocytes during chronic viral infections, tumor-specific immune response, autoimmunity and allograft rejection. Interestingly, CD4+ T lymphocytes from peripheral blood of patients with MS are cytotoxic to oligodendrocytes in vitro. Moreover, the presence cytotoxic CD4+ T lymphocytes seems to drive MS progression. Objective: In this study, we intend to investigate the cytotoxic behavior of CD4+ T lymphocytes during relapsing-remitting MS (RRMS) in untreated patients in comparison with matched healthy individuals. Method: We included patients assessed at the very early stage of the diagnosis as well as patients that withdrawal the treatment by therapeutic failure or after reach 24 months of Natalizumab treatment (washout). All washout RRMS patients were free of treatment for at least 3 months. Then, we analyzed the expression of GzmB in CD3+CD4+ or CD3+CD8+ lymphocytes in PBMCs by flow cytometry and the expression of cytotoxic-related molecules by qPCR in sorted CD3+CD4+ T cells. Results: Our data demonstrated an increased percentage of CD4+GzmB+ but not CD8+GzmB+ T cells in RRMS patients in relation to healthy controls (HCs). Strikingly, there was no correlation between the percentages of CD4+GzmB+ and CD8+GzmB+ T cells, which indicates a specific enhancement of the cytotoxic profile by CD4+ T lymphocytes. Interestingly, the presence of CD4+GzmB+ T cells is significantly higher in the PBMCs from RRMS patients assessed at the time of the diagnosis in comparison with those in the washout period. Consistently with previous data obtained in the experimental model of MS by our group, qPCR results demonstrated increased expression of Runx3 and GzmB mRNA in CD4+ T lymphocytes sorted from RRMS patients in comparison with HCs. Interestingly, we also found an increased mRNA expression of SerpinB9, CD137, and VLA-4 in CD4+ T cells sorted from RRMS patients in comparison with HCs. Strikingly, cluster analysis almost completely segregates RRMS and HCs based on the expression of these molecules by CD4+ T lymphocytes. Conclusion: Together, these data indicate that, even in PBMCs, RRMS presents a specific enhancement of the cytotoxic profile in CD4+ T lymphocytes. In addition, this cytotoxic profile is more prominent in patients during the very early stage of the disease. Surprisingly, the expression of cytotoxic-related molecules and Th-specific transcription factors by CD4+ T lymphocytes segregates, almost perfectly, MS patients and matched HCs. In the future, these findings might help the development of diagnostic tools that discriminate MS patients from other neurological conditions.

Poster: 21 (85157)

Title: ZINC SERUM CONCENTRATION IN MS PATIENTS

Authors: Maria Luisa Pereira de Melo; Ádila da Silva Castro; Larissa da Silva Albuquerque; Paula Maria Cals Theophilo Maciel; Éllen Sousa Paz; Carla Soraya Costa Maia; Patrícia Chagas Rocha D'Almeida; Nair Assunta Antônia Corso Câmara; Keyla Rejane Frutuoso de Morais; Amene Cidrão Lima; Melyssa Brandão Mota Gonçalves; Carla Welch da Silva; Milena Pitombeira Sales; Gabriela Joca Martins; Lucas Silvestre Mendes; José Artur Costa D'Almeida;

Institution: UECE

Abstract: INTRODUCTION: Multiple sclerosis (MS) is a chronic autoimmune disease that causes demyelination and axonal degeneration of the central nervous system and has an inflammatory and a degenerative component. Zinc (Zn) is a mineral that plays a role in many different processes in the body. The results of limited studies of MS and zinc are unclear. Some studies in MS patients have found reduced Zn serum level, increased cerebrospinal fluid Zn level, increased whole blood and erythrocyte Zn levels compared with healthy controls, with decreasing levels during attacks in relapsing-remitting MS patients. OBJECTIVE: To investigate the status of serum zinc in individuals with and without MS at an MS Reference Center in Hospital Geral de Fortaleza (HGF). METHOD: This descriptive study was approved by the Human Research Ethics Committee at HGF. Plasma and erythrocyte zinc were analyzed by atomic absorption spectrophotometry and the activity of erythrocytic superoxide dismutase by spectrophotometry. We compared serum and erythrocyte Zn levels between the MS group and a healthy control group. RESULTS: The MS group presented a mean age of 35.2 years (± 10.7 years) with no significant difference from the control group (without MS), who had a mean age of 37.7 years (± 10.7 years). 89.8% of the MS group had MS in the relapsing-remitting clinical subtype. The mean values of plasma zinc were 94.6 (± 22.1 µL / dL) and 81.50 µL / dL (± 30.9 µL / dL) for patients with MS and without MS, respectively, with statistical significance between the groups($p<0.05$). The mean erythrocyte Zn level was 83.5 µg / gHb (± 41.2 µg / gHb) for the MS group and 72.5 µg / gHb (± 31.1 µg / gHb) for the control, with no statistical difference ($p<0.05$), being above the reference values for both groups. CONCLUSION: The results show that Zn levels are altered in our MS people and that we need more studies in our population with the aim of investigating homogeneous subgroups of MS patient and correlating Zn level and disease activity, disease subtypes, etc.

Poster: 22 (85232)

Title: CEREBROSPINAL FLUID (CSF) NEUROFILAMENT LIGHT (NFL) IN MULTIPLE SCLEROSIS PATIENTS: PRELIMINARY RESULTS IN 17 CASES

Authors: Cássio Batista Lacerda; Paulo Diego Santos Silva; Charles Peter Tilbery; Renan Barros Domingues; Gustavo Bruniera Peres Fernandes; Carlos Senne; Adriel dos Santos Moraes; Leonilda M. Barbosa dos Santos;

Institution: FCMSCSP

Abstract: INTRODUCTION: Cerebrospinal fluid (CSF) neurofilament light (NfL) has been assessed as a prognostic and therapeutic marker in multiple sclerosis (MS) patients. In the present study we report the preliminary results with the assessment of this biomarker in a group of MS patients. METHODS: Demographic data, disease time, time between the last attack and CSF colection, and MS form were recorded from 17 patients recruited in a reference MS center. EDSS, current treatment, and CSF NfL concentration in pg/mL were registered. NfL concentration was obtained using ELISA. The correlation bewteen NfL concentration, time of disease, time from the last attack, and EDSS were assessed with Spearman test. RESULTS: Twelve out of 17 patients were women. Mean age was 29.93±25.83 years. The time of disease was 9.11±6.14 years. The treatments distribution was natalizumab-8; betainterferon-3; glatiramer acetate-1; methotrexate-1, fingolimode-2. Two patients were not yet receiving disease modifying drugs (DMDs). The NfL concentration ranged from 269.87 to 5550.14 pg/mL. There was a significant and inverse correlation between the time from the last attack and NfL concentration (P=0.039). No correlation was found between NfL concentration with the time of the disease and the EDSS. CONCLUSION: The significant and inverse correlation between NfL concentration and the time from the last attack reflects the increase of this biomarker following an attack lasting at least three months. This increase was previosly reported in the literature and our data are in agreement with these findings.

Poster: 23 (85233)

Title: CEREBROSPINAL FLUID (CSF) NEUROFILAMENT LIGHT (NFL) CONCENTRATION IN PATIENTS USING NATALIZUMABE AND PATIENTS USING OTHER MULTIPLE SCLEROSIS (MS) TREATMENTS: PRELIMINARY FINDINGS

Authors: Paulo Diego Santos Silva ; Cassio Batista Lacerda; Charles Peter Tilbery; Renan Barros Domingues; Gustavo Bruniera Peres Fernandes; Carlos Senne; Adriel Dos Santos Moraes; Leonilda M. Barbosa Dos Santos;

Institution: FCMSCSP

Abstract: INTRODUCTION: The neurofilament light (NfL) has been shown to be a potential marker of therapeutic response in patients with multiple sclerosis (MS). The low level of NFl has also been associated with more aggressive treatments. In this present study we compared the NfL levels in patients receiving natalizumab and other MS treatments. METHODS: This is a cross section study. The NfL levels of 17 patients followed in a MS reference service were assessed by ELISA, with resuts expressed in pg/mL. The mean NfL levels in patients using natalizumab were compared with the mean NfL levels in other patients , we used the t-Student test. This comparison was further adjusted with the inclusion of the variable time from the last MS attack, using binary logistic regression. RESULTS: The patients were using the following treatments: natalizumab-8; betainterferon-3; glatiramer acetate-1; methotrexate-1, fingolimode-2. Two patients were not yet receiving disease modifying drugs. The mean NfL in the natalizumab group was 1559.93 ± 2052.94 pg/ml and in the other group was 616.46 ± 391.52 pg/mL (P=0.007). After adjusting by the time between the last attack and CSF collection this differece was no longer significant (P=0.631). CONCLUSION: The higher NfL level found in the group using drugs reflected the presence of a recent attack, which is known to importantly increase NfL levels. Larger and prospective studies are still needed to assess the relationship between different treatments and NfL levels.

Poster: 24 (85234)

Title: DISABILITY IN MULTIPLE SCLEROSIS IS ASSOCIATED WITH AGE AND INFLAMMATORY, METABOLIC AND OXIDATIVE/NITROSATIVE STRESS BIOMARKERS: RESULTS OF MULTIVARIATE AND MACHINE LEARNING PROCEDURES

Authors: Tamires Flauzino; Andrea Name Colado Simão; Wildea Lice de Carvalho Jennings Pereira; Daniela Frizon Alfieri; Sayonara Rangel Oliveira; Ana Paula Kallaur; Marcell Alysson Batisti Lozovoy; Damacio Ramón Kaimen-Maciel; Michael Maes; Edna Maria Vissoci Reiche;

Institution: UNICAMP

Abstract: Introduction: Genetic, immunological, hormonal, environmental, and epigenetic factors are most likely responsible for the heterogeneity of neurological symptoms of MS, as well as disease progression. Objective: The aim of this study was to evaluate the immune-inflammatory, metabolic, and nitro-oxidative stress (IM&NO) biomarkers as predictors of disability in MS patients. Subject and Methdos: A total of 122 patients with MS were included; their disability was evaluated using the Expanded Disability Status Scale (EDSS) and IM&NO biomarkers were evaluated in peripheral blood samples. Results: Patients with EDSS ≥3 were older and showed higher homocysteine, uric acid, advanced oxidized protein products (AOPP) and low-density lipoprotein (LDL)-cholesterol and higher rate of metabolic syndrome (MetS), while high-density lipoprotein (HDL)-cholesterol was lower than in patients with EDSS <3; 84.6% of all patients were correctly classified in these EDSS subgroups. We found that 36.3% of the variance in EDSS score was explained by age, Th17/T regulatory (Treg) and LDL/HDL ratios and homocysteine (all positively related) and body mass index (BMI) (inversely related). After adjusting for MS treatment modalities, the effects of the LDL/HDL and zTh17/Treg ratios, homocysteine and age on disability remained, whilst BMI was no longer significant. Moreover, carbonyl proteins were associated with increased disability. In conclusion, the results showed that an inflammatory Th17 profile coupled with age and increased carbonyl proteins were the most important variables associated with high disability followed at a distance by homocysteine, MetS and LDL/HDL ratio. Conclusion: These data underscore that IM&NO pathways play a key role in increased disability in MS patient and may be possible new targets for the treatment of these patients. Moreover, a panel of these laboratory biomarkers may be used to predict the disability in MS. Financial support Novartis Biosciences S.A.: Researcher‘s Initiative Study CFTY720DBR07T. grants from Coordination for the Improvement of Higher Level of Education Personnel (CAPES) of Brazilian Ministry of Education; Institutional Program for Scientific Initiation Scholarship (PIBIC) of the National Council for Scientific and Technological Development (CNPq).

Poster: 25 (85235)

Title: IMMUNE-INFLAMMATORY, METABOLIC AND HORMONAL BIOMARKERS ARE ASSOCIATED WITH THE CLINICAL FORMS AND DISABILITY OVER TIME IN PATIENTS WITH MULTIPLE SCLEROSIS: A FOLLOW-UP STUDY

Authors: Wildéa Lice de Carvalho Jennings Pereira; Tamires Flauzino; Daniela Frizon Alfieri; Sayonara Rangel Oliveira; Ana Paula Kallaur; Andrea Name Colado Simão; Marcell Alysson Batisti Lozovoy; Damacio Ramón Kaimen-Maciel; Michael Maes; Edna Maria Vissoci Reiche;

Institution: UEL

Abstract: Introduction: Different pathological mechanisms are involved in multiple sclerosis (MS), including autoimmune inflammation, demyelination, neurodegeneration with axonal and neuronal death, astrogliosis, and metabolic alterations that are most likely responsible for the disease heterogeneity. Objective: The objective was to evaluate the role of immune-inflammatory, metabolic, hormonal, oxidative and nitrosative stress biomarkers on disability, disability progression and clinical forms of MS during 16 months follow-up. Subjects and Methods: The study evaluated 140 MS patients at admission (T0), eight (T8) and 16 months (T16) later. Disability, evaluted using Expanded Disability Status Score (EDSS), and the biomarkers were determined at T0, T8 and T16. The disability progression (ΔEDSS) was expressed as continuous or dichotomized variable (as ≤0 or >0). Results: ΔEDSS from T0 to T16 was positively associated with systemic arterial hypertension (SAH), age, high sensitivity C-reactive protein (hsCRP), interleukin (IL)-17 and advanced oxidized protein products (AOPP), and negatively associated with folic acid and calcium. ΔEDSS from T8 to T16 was predicted by biomarkers from T0 to T8, namely decreased 25-hydroxyvitamin D [25(OH)D] and folic acid and an increased composited z score zIL-6+zIL-17-zIL-4. Moreover, 51.1% of EDSS at T16 were explained by SAH, smoking, age, male sex, and zIL-6+zIL-17-zIL-4 at T8 (all positively), 25(OH)D and calcium at T0 (both negatively). In another model, 40.3% of EDSS at T16 was explained by SAH, smoking, age, homocysteine/folic acid ratio at T16, zIL-6+zIL-17-zIL-4 at T16 (all positively) and 25(OH)D at T8 (negatively). Homocysteine, parathormone, IL-6, and IL-4 were higher and 25(OH)D was lower among patients with progressive MS than those with relapsing-remitting MS. Conclusion: a set of immune-inflammatory, metabolic, hormonal, oxidative and nitrosative stress biomarkers, together with SAH, age, and smoking, were strongly associated with changes in disability of MS patients during 16-month follow-up. Financial Support Novartis Biosciences S.A.: Researcher's Initiative Study CFTY720DBR07T. This study was also financed, in part, by the Coordenação de Aperfeiçoamento de Pessoal de Nível Superior – Brasil (CAPES), Finance Code 001.

Poster: 26 (85236)

Title: PROLACTIN IS NOT ASSOCIATED WITH DISABILITY AND CLINICAL FORMS IN PATIENTS WITH MULTIPLE SCLEROSIS

Authors: Wildéa Lice de Carvalho Jennings Pereira; Tamires Flauzino; Daniela Frizon Alfieri; Sayonara Rangel Oliveira; Ana Paula Kallaur; Andrea Name Colado Simão; Marcell Alysson Batisti Lozovoy; Damacio Ramón Kaimen-Maciel; Michael Maes; Edna Maria Vissoci Reiche;

Institution: UEL

Abstract: Introduction: Elevated prolactin serum levels have been associated with many autoimmune diseases, including multiple sclerosis (MS). An association between prolactinemia with disability, clinical forms and sex of patients with MS remains unclear. Objective: The aim of this study was to evaluate the association of prolactin with clinical forms and accumulating disability over time in patients with MS. Subjects and Methods: A longitudinal study was carried out with 101 patients with relapsing-remitting MS (RRMS) and 19 with progressive forms of MS (ProgMS). The disability over time, as well as prolactin and ferritin serum levels were evaluated at baseline (T0), eight month-follow-up (T8), and 16 month-follow-up. Results: The disability at T0, T8 and T16 was higher among patients with ProgMS than those with RRMS. Prolactin and ferritin levels did not differ over time between both groups. Initially, prolactin was associated with MS disability. After introducing age and sex, the effects of prolactin on disability were no longer significant. Prolactin was associated with age and sex, whereby age was positively associated with disability. In the same way, after introducing age and sex, the effects of diagnosis on prolactin levels, as well as the association between prolactin and ferritin, were no longer significant ($P=0.563$ and $P=0.599$, respectively). Moreover, 21.6% of the variance in the disability was predicted by age ($P<0.001$), and sex ($P=0.049$), while prolactin was not significant. Conclusion: Our findings do not support the hypothesis that the disability of MS patients is associated with a hyperprolactinemic state, but rather they suggest that associations between the EDSS and prolactin levels may be spurious correlations. Actually, age and sex are real factors that exert a role in the pathophysiology of MS and are associated with the clinical forms and disability over time. Nevertheless, this finding should be replicated in other samples to further examine the role of prolactin in the pathophysiology of MS. Financial Support Novartis Biosciences S.A.: Researcher's Initiative Study CFTY720DBR07T. Coordination for the Improvement of Higher Level of Education Personnel (CAPES) of Brazilian Ministry of Education; Institutional Program for Scientific Initiation Scholarship (PIBIC) of the National Council for Scientific and Technological Development (CNPq).

Poster: 27 (85239)

Title: CORRELATION BETWEEN NEUROFILAMENT LIGHT, OLIGOCLONAL BANDS COUNT, AND OTHER CEREBROSPINAL FLUID (CSF) INFLAMMATORY PARAMETERS

Authors: Renan Barros Domingues; Gustavo Bruniera Peres Fernandes; Márcio Vega dos Santos; Fernando Brunale Vilela de Moura Leite; Regina Setsuko Akiyoshi; Simone Benko; Adriel dos Santos Moraes;

Institution: Senne Líquor

Abstract: INTRODUCTION: The aim of this study was to assess the correlation between neurofilament light (NfL) concentration, an axonal degeneration marker, and some cerebrospinal fluid (CSF) inflammatory parameters, including the oligoclonal bands (OCBs) count. METHODS: We analyzed 17 CSF samples sent to Senne Líquor Diagnóstico for the search of OCBs. These samples were obtained from patients with suspected mutiple sclerosis (MS). CSF white blood cell (WBC) count, protein concentration, serum and CSF IgG, and IgG index were recorded. The presence of OCBs was assessed with isoeletric focalization. NfL concentration was assessed with ELISA. The data normality was assessed with Shapiro-Wilk test and the correlations were assessed with Spearman test. RESULTS: No significant correlation between NfL concentration with the number of OCBs (P=0.747), IgG index (P=0.198), CSF IgG (P=0.553), serum IgG (P=0.156), WBC (P=0.748), and CSF protein (P=0.328) was found. The number of bands did not correlate with other inflammatory parameters: WBC (P=0.471), serum IgG (P=0.179), CSF IgG (P=0.675), and IgG index (P=0.881). CONCLUSION: It is possible to suppose that the number of OCBs represents the amont of activated B cell clones. One possible assumption is that a greater number of activated B cells clones is associated with response to a greater number of central nervous system targets leading to more axonal degeneration. The findings of the present study did not support this hypothesis since there were not significant correlations with inflammatory parameters and NfL concentration. It is possible that part of the activated B cell clones reacts against non-specific antigens and not necessarily against CNS targets.

Poster: 28 (85243)

Title: ANTIOXIDANT AND ANTI-INFLAMMATORY BIOMARKERS CONTRIBUTE TO THE PATHOPHYSIOLOGY OF MULTIPLE SCLEROSIS: A MACHINE LEARNING STUDY

Authors: Leda Mezzaroba; Andrea Name Colado Simão; Sayonara Rangel Oliveira; Tamires Flauzino; Daniela Frizon Alfieri; Wildea Lice de Carvalho Jennings Pereira; Ana Paula Kallaur; Marcell Alysson Batisti Lozovoy; Damacio Ramón Kaimen-Maciel; Edna Maria Vissoci Reiche;

Institution: UEL

Abstract: Introduction: The imbalance between inflammatory and anti-inflammatory as well as oxidant and antioxidant molecules has been implicated in the demyelination and axonal damage in multiple sclerosis (MS). Objective: The aim of this study was to evaluate a panel of immune-inflammatory, oxidative, and nitrosative stress biomarkers, including adiponectin and zinc, that may contribute to predict the MS diagnosis. Subjects and Methods: This case-control study included 174 patients with MS and 182 normal controls. We measured plasma levels of tumor necrosis factor (TNF)-α, soluble TNF receptor (sTNFR)1 and sTNFR2, adiponectin, hydroperoxides (LOOH), advanced oxidation protein products (AOPP), nitric oxide metabolites (NOx), total plasma antioxidant capacity using the total-radical antioxidant plasma (TRAP), sulfhydryl (SH) groups, and zinc. Results: We demonstrated a highly significant association between MS and oxidant/antioxidant profile, with MS explaining 68.2% of the variance of their levels, with a particularly strong impact on adiponectin (45.1%), zinc (36.8%) and TRAP (36.8%), as well as a modest effect on sTNFR2 (16.7%) and TNF-α (14.7%) variance levels. A combination of the zinc, adiponectin, TRAP and SH group antioxidant biomarkers with sTNFR2 yielded the best prediction for MS diagnosis ($x^2=162.29$, df=5, $p<0.001$, Nagelkerke=0.919). With these results, high zinc levels were associated with low probability of developing MS [odds ratio (OR): 0.102; 95% confidence interval (CI): 0.019-0.560, p=0.009], as well as adiponectin (OR: 0.011, 95%CI: 0.001-0.209, p=0.003), TRAP (OR: 0.019, 95%CI: 0.001-0.233, p=0.002), and SH groups (OR: 0.223, 95%CI: 0.006-0.831, p=0.025). On the other hand, high levels of sTNFR2 were associated with high probability for developing MS (OR: 5.60, 95%CI: 1.38-22.83, p=0.016). Moreover, TRAP and adiponectin are the most important predictors for MS, followed at a distance by zinc and sTNFR2. Using neural network analysis, the area under receiving operating curve (AUC/ROC) was 0.997. Using the support vector machine (SVM), the training accuracy was 92.9% and the validation accuracy was 90.6%. Conclusion: Our results underscored that MS is characterized by high levels of oxidant and low levels of antioxidant molecules. We demonstrated that MS have lower levels of adiponectin, total antioxidant capacity of plasma, zinc and SH groups, as well as higher levels of TNF-α and sTNFR2 compared to controls, independently of sex, age, and BMI. To our knowledge, this is the first report demonstrating a combination of these laboratory biomarkers, including adiponectin, total plasma antioxidant capacity, SH groups, and zinc with sTNFR2 may be useful for MS diagnosis. These results also suggest that the pathways involved with these biomarkers could be considered as potential targets for an integrative therapy of MS patients.

Poster: 29 (85253)

Title: THE EFFECTS OF INTERFERON-BETA TREATMENT ON CYTOKINES PRODUCTION AFTER TLR2 AND TLR4 ESTIMULATION IN MULTIPLE SCLEROSIS PATIENTS

Authors: Iara Barreto Neves Oliveira ; Rodrigo Saar Gomes; Larissa Fonseca Gomides; Jéssica Cristina dos Santos; Marcos Alexandre Diniz Carneiro; Fátima Ribeiro Dias; Denise Sisterolli Diniz;

Institution: UFG

Abstract: Multiple sclerosis (MS) is an inflammatory, autoimmune, chronic disease of the central nervous system (CNS). Specific T lymphocytes cross the blood-brain barrier (BBB) and initiate inflammatory lesions due to the production of many proinflammatory cytokines, leading to myelin and oligodendrocyte damage. Toll-like receptors (TLRs) are expressed in immune and nonimmune cells, mainly in macrophages and other antigen-presenting cells. TLR2 and TLR4 in dendritic cells or macrophages has been shown to recognise the antigens and to facilitate the leukocyte invasion through the BBB, contributing to neuroinflamnation in MS patients. After stimulation of TLRs, the production of pro- and anti-inflammatory cytokines is induced. Previous studies have suggested the involvement of tumor necrosis factor (TNF)-α in the immunopathogenesis of MS, whose proinflammatory effects favor the active course of the disease. Moreover, it has been shown that the suppression of interleukin (IL)-10 may exacerbate inflammation and that CD4+ T cells do not respond to the suppressive role of IL-10 in MS patients. IL-32 is an important cytokine in pathogenesis of chronic inflammatory autoimmune diseases such as rheumatoid arthritis, but the association of this interleukin with gene expression in MS patients has not been established. The results of the effect of Interferon- beta (IFN-β) on the production of these cytokines under TLR stimulation are still inconsistent. The main of this study was to evaluate the effects of IFN- β treatment on cytokines production and mRNA expression in whole blood cell cultures from MS patients. For this, 30 patients from Neurology Service of Clinics Hospital of Federal University of Goiás were recruited. The cytokine production was evaluated by ELISA from whole blood cell cultures supernatants and it was performed real-time PCR in peripheral blood mononuclear cells (PBMCs) for mRNA expression. In patients treated with IFN- β, the TNF-α production after exposure to TLR2 agonist (Pam3Cys) was lower compared to healthy controls and untreated MS patients. On the other hand, there was no significant effect of IFN-β treatment on TNF-α production after TLR4 agonist (LPS) stimulation. The IL-10 production was increased in TLR4, but not in TLR2-stimulated whole blood cell culture from MS patients under IFN-β treatment compared to the controls. The TNF-α or IL-10 mRNA expression in PBMCs from healthy controls and untreated or treated MS patients did not differ, despite the PBMCs from treated patients presented higher levels of IL-32γ mRNA than the controls. These data suggest that IFN-β treatment can alter differentially the TLR-dependent cytokine production of peripheral blood cells from MS patients, which may contribute to better understand the system immune modulation by this treatment and to provide more information to future studies.

Clinical Findings

Poster: 30 (83997)

Title: AUTOIMMUNE DISEASES SJÖREN SYNDROME, HASHIMOTO'S THYROIDITIS, RAYNAUD'S SYNDROME, ERYTHEMATOSUS LUPUS AND MULTIPLE SCLEROSIS: CASE REPORT

Authors: Juliana Aparecida Rhein Telles; Bruna Helena Sciarini; Thiago Henrique Silva; Alice Estevo Dias; Fatima Aparecida Caromano; Mariana Calil Voos;

Institution: USP

Abstract: Introduction: Multiple sclerosis (MS) is a chronic inflammatory demyelinating autoimmune disease of the central nervous system that can result in various damages to the neuronal systems. The Sjögren's syndrome (SS) is a systemic autoimmune disease of unknown etiology, with chronic and insidious evolution, characterized by inflammatory involvement of exocrine glands. The Raynaud phenomenon (FRy) is characterized by reversible episodes of vasospasm of the extremities, associated with pallor, followed by cyanosis and flushing of the hands and feet, usually occurring after stress or exposure to cold. Systemic Lupus Erythematosus (SLE) is a chronic inflammatory and autoimmune disease, characterized by the production of autoantibodies, formation and deposition of immunocomplexes, with inflammation in various organs and tissue damage, mainly affecting women and youngsters in the reproductive phase. Hashimoto's thyroiditis (TH) or chronic lymphocytic thyroiditis is an autoimmune disease, characterized by lymphoplasmocytic infiltration of the thyroid parenchyma. Objective: The objective of this study is to evaluate the relationship between several autoimmune diseases. Method: This is a case study with a complete anamnesis and a neurofunctional assessment of an individual with the above-mentioned autoimmune diseases. Results: A female, 40 years patient was including. The MS diagnosis occurred in 2014, the diagnoses occurred in 2008. The initial symptoms were visual, balance and muscle strength deficits. Nowadays, the most intense symptoms include fatigue and muscle strenght deficits. In 2019, the Medical Research Council evaluation, demonstrated an important deficit in lower limbs (score3) and the Modified Fatigue Impact Scale (MFIS), demonstrated a high degree (score 43). Conclusion: This kind of study is extremely important to show the symptoms of auto immune diseases occurring at the same time.

Poster: 31 (84539)

Title: SMALL (AUTONOMIC) FIBER INVOLVEMENT IN MULTIPLE SCLEROSIS (MS)

Authors: Francisco De Assis Aquino Gondim; Gabriela Mie Ejima Basso; David Nunes De Lima Júnior; Eduardo Ferreira Soares; Denisse Sales Paula;

Institution: UFC

Abstract: Introduction: Peripheral neuropathies were estimated to affect 5-10% of MS patients. However, recent studies have disclosed that the extent of peripheral nerve involvement may be far more important than previously appreciated and is still not fully understood (Jende, Ann Neurol 2017;82:676). Objective: To evaluate small (autonomic) fiber involvement in a cohort of MS patients from Northeast of Brazil. Method: After IRB approval, all patients from a MS Outpatient Clinic from the Universidade Federal do Ceará (Fortaleza, Ceará, Brazil) were invited to participate in a 10-year cohort study designed to evaluate the presence of peripheral nerve involvement and the natural history of the neurological deficits and effects of the different treatments in the clinical course of MS and neuromyelitis optica. After signing an informed consent, we conducted a medical records review, neurological exam, skin wrinkling test (SWT) and/or electromyography. SWT scores were induced by osmotic challenge and considered to be abnormal if <2 (Teoh JNNP 2008;79:835). Additional 23 patients also had SWT but medical records review was not fully completed. Descriptive statistics, t-test and chi-Square tests were used to compare the different groups. Results: Among the total sample of 51 MS patients (36 women, mean age of 42.6±2 years), the percentage of abnormal SWT was 35.3%. Age and gender were not risk factors for abnormal SWT (P>0.05). Among the 28 patients with complete medical records review, we found 19 women, age 41.6±2.4 years, MS diagnosed at age 32.6±2.3 years, first MS symptoms present at age 30.2±2.2. MS presentation was sensory in 21.4%, motor in 35.7%, sensorimotor in 32.1%, visual abnormalities in 17.8%, behavioral/cognitive in 3.6% and ataxia in 7.1%. MRI revealed brainstem involvement in 32.1%, spinal cord disease in 67.9%. At some point of the disease, 89.3% were treated with interferons, 78.6% with glatiramer, 60.7% with natalizumab, fingolimod in 32.1%, fumarate in 7.1% and mitoxantrone in 3.6%. Abnormal SWT was found in 42.9% of the patients (12/28). Among the patients with abnormal SWT, other co-morbidities were found in 3 (diabetes, hypothyroidism and vitamin B12 deficiency). Neither age (41.9±3.5 years in normal vs. 41.3±3.3 in abnormal SWT patients), gender (13/16 vs 6/12, P=0.08) or medication type was associated with abnormal SWT test. Conclusion: Small (Autonomic) fiber involvement in MS patients is prevalent and commonly subclinical and/or overshadowed by the other deficits. Further studies are necessary to fully understand the spectrum of peripheral and autonomic nervous system involvement in MS patients, and identify possible risk factors. Financial support: CNPq, UFC

Poster: 32 (85122)

Title: CRYPTOCOCCAL MENINGOENCEPHALITIS PRESENTING AS CENTRAL NERVOUS SYSTEM VASCULITIS

Authors: Luiz Otávio Sales Pimenta; Euldes Mendes Júnior; Maurício Teixeira Xavier; Sara Rogério Brandão De Araújo; Mariana David Cangussu Fernandes Ribeiro; Bárbara Queiroz Muniz Fonseca;

Institution: FUNORTE

Abstract: Case Presentation: A 34 year old woman developed sudden tetraparesis, conjugate gaze deviation to the left and aphasia. She has no infections preceding the symptoms. She had Crohn's disease, treating with azathioprine and infliximab. CT brain showed hypodense cortical, subcortical and nucleocapsular lesions. The next day, her level of consciousness and tetraparesis worsened with bilateral babinski and nucal rigidity. Brain MRI in DWI sequence revealed multiple lesions in cerebral cortex, subcortical region, cerebellar, nucleocapsular region and corpus callosum, with ADC map correspondence. MR angiography venous phase and echocardiogram were normal. MR angiography arterial phase showed multiple vessels stenosis compatible with central nervous system vasculitis. Before programmed corticosteroid treatment, lumbar pucture was performed to differential diagnosis. The cerebrospinal fluid was collected with an opening pressure of 32cm H2O, 68 cells, 181 proteins and 2mg / dL glucose (capillary glycemia 129). Direct search for fungi with China ink showed presence of cryptococcus. So, the diagnosis of autoimmune CNS vasculitis was changed for infectious vasculitis related to neurocryptococosis. Amphotericin B and fluconazole was started and eight days after treatment, patient evolved with asystole CRP, lasting 22 minutes, when she died. Discussion: Cryptococcal meningoencephalitis (CM) is caused by the encapsulated yeast organism Cryptococcus neoformans, that can infect both immunosuppressed and immunocompetent hosts. Immunocompromising conditions that raise the risk of cryptococcal central nervous system (CNS) infections include HIV infection, leukemia, post-transplantation immunosuppression, an organ failure syndrome, or innate immunologic problems, such as common variable immunodeficiency. The infection of the CNS is the most frequent form presented of extrapulmonary disease, which can result in high morbidity and mortality. Individuals with CM can occasionally present small vessel vasculitis causing infarcts primarily in the basal ganglia, internal capsule and thalamus. However, CNS vasculitis associated with cryptococcal infection is a rare clinical manifestation and only few reports have described this involvement in CM. Failure to recognize the early clinical manifestations of CM may lead to a markedly delayed diagnosis, inappropriate treatment, and deterioration of prognosis in otherwise healthy patients. In addiction, it is important to consider fungal infections in the differential diagnosis of stroke in immunocompetent patients. Final Commments: CNS vasculitis associated with cryptococcal infection is rare and not well described. The nonspecific manifestations of this condition usually leads to delayed identification and treatment. The diagnosis is very challenging and usually relies on lumbar puncture and cultures. This infection should be investigated and treated correctly to avoid neurological complications.

Poster: 33 (85124)

Title: MULTIPLE SCLEROSIS AND CHARCOT-MARIE-TOOTH: PERIPHERAL AND CENTRAL DEMYELINATING DISORDERS TOGETHER

Authors: Luiz Otávio Sales Pimenta; Euldes Mendes Júnior; Maurício Teixeira Xavier; Sara Rogério Brandão De Araújo; Bárbara Queiroz Muniz Fonseca; Mariana David Cangussu Fernandes Ribeiro;

Institution: FUNORTE

Abstract: Case Presentation: A 30 year old man developed eleven years before the first appointment paraparesis, ataxia, dysphonia, tremors and blurred vision. He used 5 days of methylprednisolone, with partial improvement of symptoms. EDSS was 8,0 at that time. Brain MRI showed typical lesions of MS, mainly in brainstem. Cervical spinal cord MRI was unremarkable, but thoracic showed lateral hyperintese lesions. CSF studies showed oligoclonal bands and high protein levels. NMO IgG antibodies was negative (cell based assay). The diagnosis of MS was made and he started interferon beta 1a, however, he evaluated with side effects two years after beginning and the drug was stopped. Glatiramer acetate was started, but it was not well tolerated. Four years after the diagnosis, he had another severe attack and he was not able to walk. Because of severity of disease, Alemtuzumab was indicated. Five years after the second attack, he used the first cycle of alemtuzumab and after one dose of second cycle, he developed serious adverse effect with coma and the drug was stopped. He had partial improvement of symptoms. Currently, he's no longer able to walk, needing a wheelchair (EDSS 8,0). In addiction, on neurological examination was seen hammer toes and distal areflexia. He was tested for inherited peripheral neuropathies and the molecular diagnosis of Charcot-Marie disease type 1A was made (duplication of PMP22 gene). Discussion: Multiple sclerosis (MS) is an immune-mediated inflammatory disease that attacks myelinated axons in the central nervous system (CNS), destroying the myelin and the axon in variable degrees. In most cases, the disease follows a relapsing-remitting pattern, with short-term episodes of neurologic deficits that resolve completely or almost completely. A minority of patients experience steadily progressive neurologic deterioration. Charcot-Marie-Tooth (CMT) disease is the most common inherited neuromuscular disorder. It is characterized by inherited neuropathies without known metabolic derangements. These disorders are also known as hereditary motor and sensory neuropathies (HMSNs). The association between MS and CMT is extremely rare. Although an incidental coexitence of MS and CMT1A in the presented case could not be excluded, the possibility of a causal association could be hypothesized. There is evidence to suggest that PMP22 shares partial homology with other CNS proteins like proteolipid protein (PLP). Final Commments: The patient presented agressive course of multiple sclerosis with adittional signs of nerve peripheral disease suggestive of CMT. The presentation of MS and CMT1A together is very uncommon. More studies are nedded to define direct relation between demyelination of CNS and peripheral nervous system.

Poster: 34 (85125)

Title: AGGRESSIVE MULTIPLE SCLEROSIS: A CASE REPORT

Authors: Fernanda Schuh Martins; Norberto Weber Werle; Georgia Lelis Aranha Tavares; Monique Dolzan Benetti; Jefferson Becker; Lucas Immich Gonçalves; Lucas Fachin;

Institution: PUCRS

Abstract: A 24-year-old female was referred to our department with progressive gait difficulty and right hemiparesis starting two weeks ago, which evolved with reduction of bilateral visual acuity. She reported that five months ago she noticed hypoesthesia and dysesthesia in the right upper limb with spontaneous but partial recovery. After two months monoparesis appeared in the lower right limb also with incomplete recovery. Family mentioned behavioral change characterized by emotional lability, carelessness with self-care and social isolation, with diagnosis of depressive disorder by psychiatrist. The patient presented with drowsiness, bradypsychism, vague eyesight, little interaction with the examiner in addition to temporo-spatial disorientation. Neurological exam revealed an afferent pupillary defect in the right pupil, reduction of visual acuity 20/20 // 20/50 and bilateral dyschromatopsia. Tactile hypoaesthesia on the left side, alteration of proprioception in lower limbs, globally enlarged osteotendinous reflexes, and severe gait ataxia were also observed. Head MRI showed multiple lesions in the periventricular and juxtacortical white matter, impairment of the brainstem, some with a swelling aspect, with ring-shaped and nodular enhancement by gadolinium in some lesions. Cervical MRI showed a small extrinsic lesion in the posterolateral region at the C4-C5 level. The vast range of differential diagnoses was excluded and the patient was diagnosed as having MS of poor prognosis and was then submitted to five days of pulse steroid therapy. Due to the frustrating response, plasmapheresis was chosen which provided substantial clinical improvement. Discussion: MS is the most common immune-mediated inflammatory demyelinating disease of the CNS and the impact on any individual varies according to a series of measures, including severity of signs and symptoms, lesional load, corticoid response, and frequency of relapses. Although most patients initially present recurrent-remitting clinical signs, they may present fairly variable severity in the early stages, with a high degree of neurological impairment, even in the younger groups. Abnormalities in MRI do not correlate linearly with the degree of clinical incapacity. Lesional load is one way of assessing the condition, which in this case shows extensive T2/FLAIR involvement at the time of diagnosis. The initial choice of a specific therapeutic agent should be individualized. Induction therapy is often suggested for cases with high activity already in the initial diagnostic manifestation. Conclusion: The main objective of this case was to evaluate the severity of the demyelinating condition of the patient with posterior fossa, cervical spine and multifocal involvement. In addition, this case served to assess the frequent situation regarding the restricted therapeutic arsenal of pharmacological order that many developing countries face, even in severe situations of high neurological impairment.

Poster: 35 (85138)

Title: AREA POSTREMA SYNDROME: IS IT ALWAYS NEUROMYELITIS OPTICA?

Authors: Stephanie Gomes de Almeida; Ronaldo Maciel Dias; Plínio Rodrigo Máximo Macêdo; Josiane Aparecida Duarte;

Institution: IHB

Abstract: Area postrema syndrome (APS), characterized clinically by intractable hiccups or nausea and vomiting is a well described syndrome and core symptom in Neuromyelitis Optica (NMO), being a rare finding in Multiple Sclerosis (MS). We describe the case of a 23-year-old male patient that was admitted in our emergency room with typical APS but did not meet criteria for NMO and received a final diagnosis of MS. A 23-year-old male was hospitalized after the onset of repetitive, incoercible vomiting and hiccups refractory to multiple drugs. He also had a 6-month history of diplopia and low visual acuity which worsened progressively, and one month before being admitted he also developed ataxia, depression and cognitive symptoms. The medical records revealed a previous admission two years earlier in another service due to nausea and vomiting that lasted several days and was associated with depressive mood and social isolation. After being hospitalized, he was referred for a Neurology evaluation. His neurological exam revealed low visual acuity, optic nerve swelling bilaterally, left internuclear ophthalmoplegia, dysmetria, dysdiadochokinesia bilaterally, ataxic gait. Severe cognitive impairment was also noted. A brain MRI was performed displaying multiple egg-shaped hyperintensities of multiple dimensions in T2-weighted and Flair images, in supratentorial areas including the callososeptal interface and subcortical fibers, and infratentorial involving the cerebellum and brainstem including the dorsal surface of the medulla oblongata. Infectious work-up in serum and cerebrospinal fluid (CSF), as well as serum anti-aquaporin 4, were negative. Complementary investigation revealed presence of oligoclonal bands in CSF. The patient received treatment with pulse steroid therapy which significantly improved most of the symptoms presented including the APS. A final diagnosis of Multiple Sclerosis causing APS was made. Despite being a clinical core symptom of NMO, the case shows that this syndrome can present in another demyelinating disease and it should prompt further clinical investigation so a final diagnosis can be made. There are very few cases described in literature of APS related to MS, so more data is needed to understand if this syndrome has different characteristics in these disorders.

Poster: 36 (85155)

Title: POST-HERPETIC AUTOIMMUNE ENCEPHALITIS IN YOUNG PATIENT: CASE REPORT

Authors: Samuel da Silva Gomes; Sara Rogério Brandão De Araújo; Mariana David Cangussu Fernandes Ribeiro; Débora Gonçalves Pereira Guimarães; Luiz Otávio Sales Pimenta; Thaís da Silva Sá; Euldes Mendes Junior; Maurício Teixeira Xavier; Renato Sobral Monteiro Júnior;

Institution: UNIMONTES

Abstract: Case Presentation: A 14 year old female patient previously healthy, presented a history of fever, mental confusion, vomiting and urinary incontinence followed by generalized tonic-clonic seizures. CSF resulted in a viral pattern, thus initiating aciclovir. The patient progressed favorably, receiving medical discharge without deficit.Three months later, the patient came back with severe headache and seizures. Brain CT evidenced hypodensity area in the left temporal region. Brain MRI showed a temporal, parietal and occipital involvement with hyperintensity in FLAIR, hypointensity in T1 without contrast enhancement, whith mass effect and left lateral ventricular compression. CSF showed 3 cells/mm³ with 100% limphomononuclear, 67g/dL glucose, 28g/dL protein and 4,9 lactate. She started on a seven day course of methylprednisolone that improved the coordination and mental confusion, but motor transcortical aphasia, dysarthria and altered perception of color persisted. We performed immunoglobulin for 5 days with a significant improvement of encephalopathy and speech return. After seven months, she returned with general state degradation and mental confusion. MRI showed hyperintensity in T2/FLAIR in the left temporal region. At the neurological examination, the patient presented left heminegligency, hemiparesis, simultagnosia, optic ataxia and gait ataxia, left hypertropia, non-specific saccadic intrusions and difficulty in fixation of the gaze, associated with disinhibition with unmotivated laughter. She started a five day course of methylprednisolone , followed by IV immunoglobulin 5 days with significant improvement of symptoms. Immune-mediated anti-NMDA encephalitis was questioned, but it was not confirmed. She has received medical discharge with residual sequelae and azathioprine 3mg/kg maintenance plus prednisone 1mg/kg per day. Discussion: Herpes simplex encephalitis (HSE) often courses with neurological residual symptoms. Relapsing symptoms may occur a few weeks after viral therapy and might be caused by a true viral relapse or autoimmune disorders. Recent studies suggest HSE as a trigger for brain autoimmunity. Choreoathetosis is a common finding in children with relapsing post-HSE related to NMDAR antibodies, but some patients often present changes of behavior and cognitive deficits. There are no pathognomonic signs in brain MRI and the research of NMDAR antibodies is not available at accessible cost worldwide, which makes the diagnose more challenger. The therapy includes corticosteroids, human immunoglobulin and monoclonal antibodies. Final Comments: We here present a case of presumed autoimmune encephalitis in female teenager. The second relapse brings up the question about more intense therapies and long term immunosuppression. Thus we reinforce the necessity of a close follow up and special attention for early signs of autoimmune encephalitis post-HSE, which demands prompt diagnosis since immunotherapy can be highly effective.

Poster: 37 (85208)

Title: PEDIATRIC MULTIPLE SCLEROSIS AFTER A FIRST INFLAMMATORY CNS SYNDROME: EMOCEMP PRELIMINARY RESULTS

Authors: Bruna Klein da Costa; Rafael Canani Sommer; Amanda Marchionatti; Jefferson Becker; Renata Barbosa Paolilo; José Albino da Paz; Dagoberto Callegaro; Fernanda Silveira de Quadros; Marlise de Castro Ribeiro; Manuela Fragomeni; Vanessa Fragoso; Maria Lucia Brito; Hanaie Cavalli; Marco Nihi; Henry Koiti Sato; Brenda Louise Banwell; Douglas Kazutoshi Sato;

Institution: PUCRS

Abstract: Introduction: Multiple Sclerosis (MS) is the main inflammatory central nervous system (CNS) disorder and up to 10% of cases begin in childhood or adolescence. Especially, in children under 12 years of age, the diagnosis of pediatric onset MS (POMS) is difficult given the high frequency of monophasic acquired demyelinating syndrome (ADS) episodes and a broader differential diagnosis. Objective: To evaluate the diagnosis of POMS after 6 months of the first ADS below and above 12 years of age. Methods: We analyzed the prospective data from children and adolescents currently enrolled in the multicentric observational study to characterize MS in Brazil (EMOCEMP). Patients with a single clinical attack of suspected acquired demyelinating syndrome with available confirmatory magnetic resonance imaging (MRI) are being recruited in 6 neuroimmunology reference centers in Brazil. The study protocol comprehends clinical visits at baseline, 6, 12 and 24 months. The demographic characteristics, clinical phenotype, MRI, laboratory results, clinical diagnosis and chosen treatments are being evaluated. All patients are tested for aquaporin-4 (AQP4-Ab) and myelin-oligodendrocyte glycoprotein (MOG-Ab) using CBA at baseline irrespective of clinical presentation. Results: 95 patients were recruited after their first ADS. Of those, 40 completed the 6-month visit in the study and were included in this analysis. Five were previously excluded due to loss of follow-up or fulfilment of exclusion criteria. 8/40 (20%) received the diagnosis of POMS according to the 2017 McDonald criteria. The median duration of disease from onset was 9 months (5.9 – 38 months). Six patients fulfilled radiologic criteria for dissemination in space - DIS and time – DIT at the onset and one fulfilled the criteria for DIS and had cerebrospinal fluid oligoclonal bands). One patient was diagnosed with POMS after a second attack. The diagnosis of POMS was more frequent (n=7) in patients older than 12 years compared to below 12 years (n=1, p=0.002). The median age of the POMS patients at onset was 15.3 years. They presented most frequently with monofocal symptoms (n=5, 62%). Two patients presented multifocal symptoms without encephalopathy (25%) and one presented with ADEM (12.5%). All patients were negative for MOG-Ab and AQP4-Ab. Conclusions: In this prospective Brazilian cohort, the frequency of the diagnosis of POMS after a first inflammatory CNS event is comparable to that observed in other studies. Moreover, we also observed post-pubertal predominance of POMS. EMOCEMP is supported by research grants from TEVA (Investigator Initiated Study) and FAPERGS/CNPq/SESRS/PPSUS/Ministry of Health Brazil (grant 17/2551-0001391-3)

Poster: 38 (85229)

Title: SUDDEN LOSS OF VISION IN GRANULOMATOSIS WITH POLYANGIITIS. POSTERIOR ISCHEMIC OPTIC NEUROPATHY, OPTIC PERINEURITIS, OR BOTH?

Authors: Emerson de Paula Santos; Belisa Lopes Alvares; Antonio Bernardes; Bárbara Akemy; Josemary Cavalcante; Natalia Talim; Juliana Santiago Amaral; Rodrigo Kleinpaul; Marco Aurelio Lana-Peixoto;

Institution: UFMG

Abstract: Introduction Granulomatosis with polyangiitis (GPA), formerly known as Wegener's granulomatosis, is a small-vessel necrotizing vasculitis characterized by granulomatous inflammation, associated with circulation of antineutrophil cytoplasmic antibodies (ANCA). GPA may affect any organ system with upper respiratory tract, lungs, and kidneys being involved most commonly. Here we report the case of a patient with previous history of prostatitis and orchitis due to GPA who developed sudden loss of vision associated with ocular pain on awakening. Neurological work-up disclosed pachymeningitis with involvement of the optic nerve sheath, sinusitis and mediastinal adenopathy. Case Report A 58-YOWM was referred to the Neuro-Ophthalmology Clinics with a 4-day history of painful severe loss of vison in the left eye (LE) observed on awakening. He had a history persistent bilateral frontal headache with variable intensity for the last six months with daily use of analgesics. Two years earlier, because of an increased serum level of PSA and induration of the right testicle he had undergone a prostate biopsy and right orchiectomy. Histopathological examination disclosed a granulomatous inflammation suggestive of GPA in both prostate and testicle. Neuro-ophthalmological examination in our Department showed best corrected VA of 20/25 in the right eye (RE) and 20/200 in the LE. Fundi were normal. Perimetry disclosed generalized constriction of the visual fields. Discussion This patient developed sudden loss of vision in the LE two years after having urological involvement as the opening manifestation of GPA. Fundi were normal. These features suggest posterior ischemic optic neuropathy. However, the generalized constriction on visual fields examination, and the findings of pachymeningitis and thickening of the optic nerve sheaths on brain MRI, are typical characteristics of optic perineuritis. Conclusion Ischemic optic neuropathy and optic perineuritis are very rare complications of GPA. Their association in a patient with GPA emphasizes the pleomorphic phenotypic neuro-ophthalmological manifestations of the disease.

Poster: 39 (85237)

Title: PARANEOPLASTIC STIFF-PERSON SYNDROME AND KIDNEY CANCER: AN EXTREMELY RARE ASSOCIATION

Authors: Giordani Rodrigues dos Passos; Lucas Immich Gonçalves; Monique Benetti; Cassia Elisa Marin; Fernanda Schuh Martins; Lucas Fachin; Norberto Weber Werle; Georgia Lelis Aranha Tavares; Jefferson Becker;

Institution: PUCRS

Abstract: A 47-year-old woman presented to our clinic with a 7-year history of progressive rigidity. It started with sporadic, short-lasting, painful muscle contractions, spontaneous or triggered by movement, affecting variable body segments (face, limbs, or axial muscles). Over the years, these episodes had increased in frequency, duration, and severity, eventually affecting the whole body in the form of opisthotonus and stridor. She developed fixed dystonic postures, worse on her left side, leading to impairment of upper limb function and gait, refractory to multiple drugs. In addition, she had complex partial seizures, occasionally with secondary generalization, and reported two episodes of focal neurological deficits (diplopia and unilateral dyschromatopsia in the first; left hemiparesis in the second), which lasted a few days and improved after intravenous methylprednisolone pulse therapy. She was admitted to our hospital for investigation and management of suspected stiff person syndrome (SPS). On admission, she presented generalized dystonic posture, which would evolve to opisthotonus upon even mild passive mobilization by the examiner. She had no weakness, spasticity or other extrapyramidal signs. Laboratory workup (including serum anti-GAD), MRI of the brain and spinal cord and EEG were unremarkable. CSF examination showed mild increase in protein, normal IgG index and absent oligoclonal bands. EMG was compatible with SPS. She responded poorly to diazepam (80 mg/day) and partially to baclofen (40 mg/day) but could not tolerate higher doses. Screening for neoplasms revealed a kidney nodule with radiographical features suggestive of malignancy, for which she underwent partial nephrectomy. Anatomopathological examination confirmed a renal eosinophilic cell neoplasm. As early as 10 days after the surgery, she noticed improvement of rigidity. At last follow-up (6 weeks after surgery), she had already achieved a dramatic improvement of rigidity, despite complete discontinuation of diazepam and baclofen, with only minor residual symptoms on her hands. Results of further testing, especially for anti-glycine-receptor and other autoantibodies, are still pending. Paraneoplastic SPS is rare and usually associated with breast cancer, lung cancer or Hodgkin lymphoma. Its association with kidney cancer is almost unheard of (to our knowledge, this is the second case reported so far). Of note, our case had some features not typically associated with SPS, such as seizures and transient focal neurological deficits, which could point out to a related condition known as progressive encephalomyelitis with rigidity and myoclonus (PERM); yet, this patient did not have the typical clinical picture for PERM either. Despite uncommon, a paraneoplastic etiology should always be considered in the setting of SPS, since remission of the neurological symptoms may be achieved following treatment of the neoplasm, even without immunotherapy.

Poster: 40 (85241)

Title: MULTIPLE SCLEROSIS IN NON-IDENTICAL TWINS WITH IDENTICAL HUMAN LEUKOCYTE ANTIGEN (HLA): CASE REPORT

Authors: Marco Túlio Rodrigues Franco; Damacio Ramón Kaimen-Maciel; Edna Maria Vissoci Reiche; Pedro Henrique Favero Cetolin; Renata Menon Leite;

Institution: ISCAL

Abstract: Presentation: WG, male, 50 years old, without comorbidities, in 2008 presented episode of paraparesis. After one year, he had a retro-orbital headache, worsening of eye mobilization and sudden loss of visual acuity the right. Patient complained of sexual impotence and intestinal constipation. Nuclear magnetic resonance imaging (MRI) of the skull showed numerous hyperintense lesions in T2 and flair. The lesions involved the posterior fossa in the left bulbar olive, the middle and upper cerebellar hemispheres, the periphery of the bridge and the left cerebral peduncle. MRI of orbits showed intra-orbital and intracanalicular hypersignal of the right optic nerve. In the dorsal and cervical spine showed small oval lesions without contrast enhancement suggesting demyelinating substrate. The disability was evaluated by EDSS and presented a score of 4.0. Rheumatological exams were negative, with presence of oligoclonal bands (BOC) only in cerebrospinal fluid (CSF). He had previous use of beta interferon with therapeutic failure, being initiated dimethyl fumarate, which is still in use. Her sister D.S.G. twin not identical showed full hemiparesis of right leg predominance, associated with transient moderate dysarthria in 2016. New symptoms appeared with complaints of dysarthria resumption. Skull MRI showed rounded and projecting lesions from the corpus callosum, affecting white matter and without contrast enhancement, as well as left parietal juxtacortical lesion. BOC screening was positive only in the CSF. His EDSS was 1,5. Additional tests were negative. HLA genotyping revealed in both cases the presence of the HLA-DRB1 * 01:08 allele. The male patient currently presents as a diagnosis the secondarily active form and his or her non-active recurrent sender. Discussion: Studies have shown a 3-fold increased risk for MS when carrying the HLA-DRB * 15: 01 allele, this allele influences the activation of TCD4 + cells. Most recent has been shown additive risk effects of HLA-DRB1 * 13: 03 and HLA-DRB1 * 08:01 alleles. Although both patients had the same HLA, the male patient presented the disease earlier and with a higher EDSS than his sister. These characteristics reinforce the importance of the hormonal factor in the pathophysiology of MS. The fact can be explained due to the action of the sex hormones, mainly estrogen that can influence in the maturation and activation of immune cells and secretion of inflammatory cytokines. In MS, disease mediated by an initial Th1 response, progesterone may act as a protective factor, since it directs a Th2 response, generating a non-active aspect of the disease, the immunological response may be more pronounced in males due to less protection by the endogenous glucocorticoids, present in greater quantity in the female sex. Comments: MS has a polygenic inheritance, there is a modest effect of each allelic variant, so more important is the hormonal factor in modulation of the immune response and clinical presentation.

Poster: 41 (85252)

Title: EVALUATION OF METAL LEVELS IN BLOOD OF PATIENTS WITH MULTIPLE SCLEROSIS

Authors: Marcela de Oliveira; Fernando Coronetti Gomes da Rocha; Marina Piacenti da Silva; Paulo Noronha Lisboa Filho;

Institution: UNESP

Abstract: Introduction: Multiple sclerosis (MS) is a chronic neurological disease associated with both genetic and environmental factors. MS is characterized by periods of disease activity and remission, which over time may involve disease progression with cumulative disability. Engineered nanoparticles (ENPs) are objects with dimensions about hundreds of nanometers, which dimension is smaller than animal and plant cells. In general, people are exposed to nanometer-sized metals particles, modernly present in cosmetics, pharmaceuticals, food and in the air. Metallic ENPs have the potential to penetrate in human cells and cause neurodegenerative diseases. Multiple sclerosis (MS) is a multifactor neurological disease that could be associated to the exposure to metallic elements. Exposure to metallic elements is possible risk factor in the development and progression of MS. However, the present literature still needs to trace possible relation between the present of metallic elements in the blood and this pathology. Objectives: The aim of the present study was to analyze the concentration of metallic nanoparticles in the blood of multiple sclerosis patients and healthy individuals. Methods: Blood of 30 patients with multiple sclerosis and 30 healthy individuals were collected and digested in closed vessels using microwave. Inductively coupled plasm optical emission spectrometry (ICP-OES) was used to determine the concentrations of three metallic elements (copper, lead and zinc) in blood. This analytical technique provides a tool to quantify metal elements concentrations in blood sample of individuals with neurodegenerative disorders. Results and Conclusions: We observed reduction in concentrations levels for copper and zinc in multiple sclerosis patients. Zinc results were 0.132 mg/L for MS patients and 0.213 mg/L for control group. Our cooper results showed a concentration of 0.007 mg/L in blood of patients and 0.021 mg/L for healthy individuals. We observed an increased in concentrations levels of lead in multiple sclerosis patients. Lead results were 1.2 mg/L for MS patients and 0.59 mg/L for control group. In general, people are exposed to nanometer-sized metals particles, modernly present in cosmetics, pharmaceuticals, food and in the air. The low values found of metal levels in the blood of patients with multiple sclerosis may suggest its accumulation in the brain and be responsible for the desmyelination process. According to our results, a possible imbalance of these metallic elements can be considered as a possible cofactor in the multiple sclerosis. However, more investigation in MS is required to clarify their correlations with metallic elements.

MS treatment

Poster: 42 (82246)

Title: FUNDAMENTAL ELEMENTS FOR A PATIENT SUPPORT PROGRAM FOR MULTIPLE SCLEROSIS IN TREATMENT OF FIRST-LINE IMMUNOMODULATORY DRUGS

Authors: Karen Francine Moreira;

Institution: MERCK

Abstract: The objective of this study is to outline the fundamental elements for a support program for patients with Multiple Sclerosis (MS). And for this, theoretical questions were addressed about this pathology, treatment with immunomodulators, patient support and customer relationship management (CRM). The object of study was the different patient support programs offered by the pharmaceutical companies in this market. Data collection was done through qualitative descriptive exploratory research and focused on identifying which elements are fundamental for these patient support programs to offer services that meet or exceed clients' expectations. Nowadays, practically all pharmaceutical industries offer some support to the users of their medicines, but to know how to manage all this information made available by the different contacts between patients and companies, it is necessary to have a good CRM system (Customer Relationship Management) to manage information about these customers which will integrate different areas such as marketing, pharmacovigilance, callcenter, logistics, among others. The fundamental elements for these support programs are, in addition to CRM, to allow the patient to feel unique and prioritized, have a facilitated communication channel and offer of kit (applicator, informative, thermal bag, among other materials) that provides the adhesion and ease of treatment, because the well-informed patient reacts better, more easily surmounts the disease, and manages to be more resilient to day-to-day problems.

Poster: 43 (85108)

Title: IMPACT OF GADOLINIUM-ENHANCING LESIONS AT BASELINE ON NO EVIDENCE OF DISEASE ACTIVITY STATUS IN PATIENTS TREATED WITH SUBCUTANEOUS INTERFERON BETA-1A

Authors: Giancarlo Comi; Mark S. Freedman; Giancarlo Comi; Patricia K. Coyle; Julie Aldridge; Kurt Marhardt; Ludwig Kappos;

Institution: Università Vita Salute San Raffaele, Ospedale San Raffaele, Milan, Italy;

Abstract: Introduction: Subcutaneous interferon β-1a (scIFNβ-1a) has been available since 1998, with 1.69 million patient-years of exposure. Treatment with scIFNβ-1a after clinically isolated syndrome (CIS) increases the chance of having no evidence of disease activity (NEDA) vs delayed treatment (DT) after clinically definite multiple sclerosis (CDMS). Objective: Post hoc analysis of REFLEX/REFLEXION to assess the impact of gadolinium-enhancing (Gd+) lesions at baseline on NEDA. Methods: In REFLEX, CIS patients were randomised to scIFNβ-1a 44 µg three times weekly (tiw), once weekly (qw) or placebo for 24 months; upon CDMS patients switched to open-label scIFNβ-1a tiw. In REFLEXION, placebo patients switched to tiw (DT); scIFNβ-1a patients continued their initial regimen up to 60 months. This analysis used the integrated intent-to-treat REFLEX/REFLEXION population: tiw n=170; qw n=174; DT n=170. NEDA is defined as no relapses, disability worsening, new Gd+ lesions and new/enlarging T2 hyperintense lesions. To examine data without the influence of the 3-month MRI, time to first disease activity (FDA) event after 105 days post-randomisation (105d) was calculated. Kaplan-Meier curves and median times (95% confidence intervals [CI]) are presented with non-overlapping 95% CIs considered significant. Results: In all patients, time to FDA event after 105d was significantly shorter in those with baseline Gd+ lesions (n=213) than without (n=301): 0.5 years (0.5–0.7) vs 1.0 year (0.8–1.4), respectively. In the higher risk group with baseline Gd+ lesions, scIFNβ-1a tiw increased the time to FDA (n=68; 0.7 years [0.5–1.2]) vs DT, but this was even longer in those without baseline Gd+ lesions (n=102; 1.7 years [1.5–2.0]). With scIFNβ-1a qw, time also differed significantly between patients with (n=72) and without (n=102) baseline Gd+ lesions: 0.7 years (0.5–0.8) vs 1.0 year (1.0–1.5). For DT, no statistical difference was seen for time between patients with (n=73) and without (n=97) baseline Gd+ lesions: 0.5 years (0.5–0.5) vs 0.7 years (0.5–0.7). In patients without baseline Gd+ lesions, differences in time between scIFNβ-1a tiw and qw vs DT were significant. Conclusions: In CIS patients, presence of baseline Gd+ lesions were associated with a lower chance of remaining NEDA beyond the 3-month MRI vs those without baseline Gd+ lesions. Regardless of baseline Gd+ lesion status, early scIFNβ-1a treatment was associated with a higher chance of NEDA beyond the 3-month MRI than DT.

Poster: 44 (85116)

Title: IMPROVEMENTS IN MULTIPLE DOMAINS OF QUALITY OF LIFE WITH ALEMTUZUMAB OVER 6 YEARS REGARDLESS OF PRESENCE OF THYROID ADVERSE EVENTS

Authors: Maria Fernanda Mendes; Aaron Boster; Rafael Arroyo; Alexey N Boyko; Sara Eichau;

Institution: HCFMUSP

Abstract: Introduction: Alemtuzumab, a therapy for RRMS, has demonstrated a positive benefit-risk profile across clinical trials. In two phase 3 trials (CARE-MS I [NCT00530348]: treatment-naive; CARE-MS II [NCT00548405]: inadequate response to prior therapy), patients had significantly improved efficacy and quality-of-life (QoL) outcomes with alemtuzumab vs SC IFNB-1a over 2 years (y). Efficacy was maintained through 4 y in an extension (NCT00930553), in which 81% of pooled CARE-MS I/II patients remained on study from core study baseline until end of Y6 in the absence of continuous treatment. The safety profile of alemtuzumab is well known and includes the risk of autoimmune thyroid adverse events (AEs). Objective: Examine the impact of thyroid AEs over 6 y on multiple domains of QoL, as assessed using the Functional Assessment of Multiple Sclerosis (FAMS) questionnaire, in pooled CARE-MS I/II patients. Methods: Alemtuzumab patients received 2 treatment courses (12 mg/day; baseline: 5 days; 12 months later: 3 days) in the core CARE-MS studies, with additional alemtuzumab courses (12 mg/day for 3 days; ≥12 months apart) as needed for disease activity or other disease-modifying therapies in the extension. QoL was assessed using the FAMS questionnaire (44 questions, divided into 6 subscales [emotional well-being, general contentment, mobility, family/social well-being, symptoms, and thinking/fatigue]). Thyroid function testing (baseline and quarterly) was done per comprehensive monitoring program. Results: Of the 811 pooled CARE-MS I/II alemtuzumab patients, 42% had thyroid AEs, with 83% occurring in the first 2 y after the last alemtuzumab course; 95% (767/811) of patients had no serious thyroid AEs. Thyroid AE incidence peaked in Y3 (16%) and then declined. At Y6, patients with thyroid AEs showed significant improvements from core study baseline in FAMS total score (least-squares mean change from baseline [95% CI]: 4.0 [0.98, 6.92], P<0.01), and in 4 of 6 subscales (emotional well-being: 0.9 [0.31, 1.49], P<0.01; general contentment: 1.3 [0.65, 1.88], P<0.0001; mobility: 0.7 (0.04; 1.27, P<0.05; thinking/fatigue: 1.4 [0.51, 2.23], P<0.01). FAMS-assessed QoL improvements were also observed in patients without thyroid AEs. Conclusion: Over 6 y, thyroid AEs did not impact improvements in multiple aspects of QoL with alemtuzumab, as assessed by the MS-specific FAMS instrument. These findings further support the positive benefit-risk profile of alemtuzumab.

Poster: 45 (85123)

Title: EXPERIENCE WITH ALEMTUZUMAB IN A NORTHEAST BRAZILIAN MULTIPLE SCLEROSIS (MS) CENTER

Authors: Francisco De Assis Aquino Gondim; Gabriela Mie Ejima Basso; Lucas Nogueira Lemos; Eduardo Ferreira Soares; Ineusi Teixeira de Araújo;

Institution: UFC

Abstract: Introduction: Alemtuzumab is a humanized CD52 monoclonal antibody approved for the treatment of MS in Europe since 2013, and subsequently in USA and Brazil. Although highly efficacious, it may induce additional auto-immune conditions in 30-40% of the patients and requires monthly laboratory monitoring of possible side effects. Objective: To report our experience with 3 MS patients treated in a single medical center from Northeast Brazil. Method: We evaluated the medical records from 3 patients with severe forms of MS treated with alemtuzumab from 2016-2018 at the Universidade Federal do Ceará, Fortaleza, Brazil. Results: Patient 1: A 48 year-old woman with fluctuating right (R) leg weakness and burning pain in the R foot was diagnosed with MS after 2 years and started on betaferon®. After disease progression she was switched to glatiramer in less than a year and subsequently natalizumab (for 3 months). After a new relapse, fingolimod was started but her condition progressed (paraplegia due to multiple spinal cord lesions). Her neurological exam showed EDSS 7 with paraparesis and mild L arm weakness. Alemtuzumab was prescribed but while waiting for the treatment she had 2 additional relapses treated with methylprednisolone. After a 5-day course of alemtuzumab (12 mg, i.v./day), her disease stabilized, but since she lost several follow-ups and had no blood testing for 9 months, she did not receive a second course of alemtuzumab. She has been free of relapses, new MRI lesions and new neurological deficits for 3 years. Patient 2: A 39-year old man presented with diplopia and ataxia, optic neuritis (after 2 ys), paraparesis (after 4 ys) and was diagnosed with MS after 5 ys and started on Avonex®. After 3 years, glatiramer was started after 2 relapses and later fingolimod after tetraplegia. After liver disease he was switched to natalizumab, that was continued for 2 years due to JC high positivity. After a new relapse he was treated with alemtuzumab and had 2 5-day cycles (last on 2/2019)and has been disease-free since the 1st alemtuzumab cycle. Patient 3: A 39 year-old woman presented with fluctuating L hemiparesis for 3 years and was diagnosed with MS and started on glatiramer. After severe disease progression that also included seizures (even status epilepticus), she was switched to natalizumab. During a 2-year treatment with natalizumab, she had several relapses. Alemtuzumab was started. Few months later she developed hypothyroidism, that was sucessfully controlled with levothyroxine. A R sphenoid wing meningioma was diagnosed and delayed the second course of alemtuzumab, that was administered on 2/2019. On May 2019, she died due an undiagnosed abdominal disease (ruptured gallbladder?) not related to alemtuzumab treatment. Conclusion: Alemtuzumab is a potential therapy for severe forms of MS in Brazil and disease stability may be reached even after a single Alemtuzumab course. Supported by research grants from CNPq and Universidade Federal do Ceará

Poster: 46 (85128)

Title: ALEMTUZUMAB IMPROVES CLINICAL AND MRI DISEASE ACTIVITY, INCLUDING SLOWING OF BRAIN VOLUME LOSS, IN RRMS PATIENTS: CARE-MS II (TOPAZ): 8-YEAR FOLLOW-UP

Authors: Samira Apostolos Pereira; Carlos Navas; Barry A Singer; Raed Alroughani; Simon Broadley;

Institution: HCFMUSP

Abstract: Introduction: In CARE-MS II (NCT00548405), alemtuzumab (2 courses; 12 mg/day; baseline: 5 days; 12 months [M] later: 3 days) significantly improved outcomes versus SC IFNB-1a in RRMS patients with inadequate response to prior therapy. In a 4-year (y) extension (NCT00930553), patients could receive additional alemtuzumab courses (12 mg/day on 3 days; ≥12M apart) as needed for disease activity or receive another DMT (investigator discretion); efficacy was maintained with 50% receiving no additional alemtuzumab or DMT through Y6. Following this extension, patients could continue in TOPAZ (NCT02255656), an additional 5-y extension. Objective: Evaluate alemtuzumab efficacy/safety through Y8 in CARE-MS II patients. Methods: In TOPAZ, patients can receive as-needed alemtuzumab (≥12M apart) or receive another DMT. Results 300/435 (69%) patients completed TOPAZ Y2 (Y8 post-alemtuzumab); 44% received neither additional alemtuzumab nor another DMT. In Y8, annualized relapse rate was 0.18; 85% were relapse-free. From baseline through Y8, 70% had stable/improved EDSS, mean change in EDSS was +0.17, 64% were free from 6-M confirmed disability worsening, and 47% achieved 6-M confirmed disability improvement. In Y8, 70% were free of MRI disease activity; 58% achieved no evidence of disease activity. Median percent cumulative brain volume loss from baseline through Y8 was –1.06%. Safety remained consistent through Y8. Conclusion: Alemtuzumab efficacy and safety were maintained through Y8 in the absence of continuous treatment, with 69% of patients completing Y8 post-alemtuzumab and 44% receiving no additional treatment after the initial 2 courses.

Poster: 47 (85146)

Title: A NEGATIVE JC VIRUS BY PCR IN CSF DOES NOT RULE OUT NATALIZUMAB-ASSOCIATED PML IN PATIENT WITH MULTIPLE SCLEROSIS.

Authors: Mário Emílio Dourado; Gabriel Braga Diegues Serva; Clécio de Oliveira Godeiro Junior;

Institution: UFRN

Abstract: Introduction: No single criterion establishes the diagnosis of progressive multifocal leukoencephalopaty (PML); rather, it requires clinical, imaging, and virologic evidence. Case presentation: FOS, female, 34 years old, single, student, was diagnosed with RRMS in 2006. After several relapses and the appearance of new brain lesions on MRI, subcutaneous interferon Beta 1-a was stopped and the patient started NTZ treatment in December 2012. Was JCV-seropositive at the time of initiating NTZ treatment (index not available). The EDSS score was 2. After 31 months of NTZ treatment, MS disease was well controlled, but she developed a myoclonic tremor in the left upper limb and brain MRI showed typical lesions of PML (right frontal juxtacortical lesion). The index for the JCV was 2.45. Although JCV was negative (PCR on cerebrospinal fluid for diagnosis of JVS was negative twice in two certified laboratories, one in Brazil and another one in the USA) plasmapheresis was initiated to accelerate the clearance of the medicine and mirtazapine to prevent viral replication. Two months later the neurological condition deteriorated, with tetraparesis, restriction to bed and myoclonic tremor in the upper limbs. MRI showed an increase in white matter lesions, bilaterally, more accentuated to the right, compatible with IRIS and was treated with high doses of corticosteroids. The brain biopsy was positive for JCV, confirming the diagnosis. Currently, she presents tetraparesis, worse on the left side, but she walks with unilateral support, EDSS of 6 and KPS of 50%. Discussion and Final Comments: Unlike patients with HIV-associated PML, individuals with multiple sclerosis have low viral load. In cases of clinical and radiological suspicion, in the absence of PCR positivity, the definitive diagnosis should be made with a brain biopsy. The PML/IRIS is a severe and rare complication, however with the increase use of natalizumab, pharmacovigilance must be performed, so that diagnosis and treatment can be made earlier, thus improving the prognosis.

Poster: 48 (85160)

Title: HOW MS PATIENTS SEE THEIR FUTURE? WHAT DO THEY EXPECT FROM ?

Authors: Denison Alves Pedrosa; Denison Alves Pedrosa; Natalia Talim; Rodolfo F. Marques; Mariana Pardo; Jessica Marques; Antonio Bernardes; Letícia Ussen; Karlla Cardinali; Juliana S. Amaral; Rodrigo G. Kleinpaul; Marco A. Lana-Peixoto;

Institution: UFMG

Abstract: Introduction - Multiple sclerosis (MS) is a chronic immune-mediated disease of the central nervous system that more frequently affects young adults and causes increasing disability during its course. Although there has been a significant advance in the disease treatment no therapeutic intervention is effective to stop axonal degeneration which results in neurologic disability. Evaluation of MS patients' expectations about their health status in the future, and the efficacy of treatment may provide doctors with a better perception of needed educational actions towards their patients. Objective – To evaluate MS patients' expectations about their future neurologic status and the efficacy of disease treatment. Methods - A cohort of MS patients seen at a research center, in Belo Horizonte, was studied. All patients met McDonald 2010 diagnostic criteria. Patients answered a specially designed questionnaire which contained questions about their expectations regarding their disease and its treatment. Patients were divided into groups according to age (≤ 30, 31-50 and > 50 years), sex, income in multiples of the minimum wage (≤ 2 and ≥ 5), level of education (≤ 8 years, and > 8 years), time of diagnosis (< 1 year, and ≥ 1 year), and scores of disability as measured by the Expanded Disability Status Scale (EDSS < 4.0, and ≥ 4.0). Results – 225 patients answered the questionnaire. Five of them were discarded. 162 (73.6%) patients were women. The median age was 39.5 years. 169 (76.8%) patients had > 8 years of formal education, and 183 (83.2 %) patients had diagnosis of MS for ≥ 1 year. Disability was the main concern of MS patients about their future (132 patients, 60%). Expectation about disease outcome within 5 years was very good or good to the large majority of patients (180 patients, 81.8%), particularly to those with less severe disability (EDSS <4.0) ($p<0.05$). Prevention of new relapses was the main expectation from treatment (62 patients, 42.5%). These patients had EDSS <4.0 and ages between 31-50 years ($p<0.05$). 22 (15%) patients expressed skepticism about the real benefit of disease modifying drugs, and 51 (34.7%) had already thought of discontinuing their medication. Patients with higher level of education and more severe disability (EDSS ≥ 4.0) have higher tendency to associate alternative treatments, such as high dosage vitamin D, spiritual care and physical exercises ($p<0.05$). Conclusion – Although MS patients with lower EDSS have a good expectation about their future neurologic status, disability is the main concern in all groups. The severity of disability and the educational level positively correlate with a tendency to associate alternative treatments. Income and sex did not correlate with patients' expectations about their future neurologic status, and the efficacy of treatment.

Poster: 49 (85182)

Title: DATABASE ANALYSIS OF A PSP (PATIENT SUPPORT PROGRAM) FOR PATIENTS USING INTERFERON BETA-1A FOR RELAPSING MULTIPLE SCLEROSIS IN BRAZIL

Authors: Luiza Vasconcelos Biglia; Luiza Vasconcelos Biglia; Raquel Araújo Vassão; Vivian Borali Conceição;

Institution: MERCK

Abstract: Objectives: PSP is a personalized support program for patients with relapsing forms of multiple sclerosis (RMS) who are being treated with interferon beta-1a. A database was created to identify treatment patterns of these patients enrolled in the PSP. Our goal is to report on that data in order to characterize the RMS patient in our PSP. Methodology: Data was obtained from patients participating in the PSP in April 2018. Information such as age, sex, dropout risk (0 missed calls: low drop-out risk; 1-2 missed calls: medium drop-out risk; more than 3 missed calls: high drop-out risk), treatment duration and discontinuation, including the reason for stopping interferon beta-1a, was collected by the PSP team. All patients in the program use(d) Rebif 22/44mcg in solution for injection in pre-filled syringe. Results: There were 3,453 patients enrolled in PSP, among those, 72% were female. About 60% of the female patients and 65% of the male patients were about 20-44 years old. Eighty-six percent have low or medium dropout risk (less than 3 calls missed from PSP), of which 76% have at least 25 months of treatment. Of those 14% with high dropout risk, 55% had less than 6 months on treatment. Between January-April 2018, 182(5%) patients dropped-out, 41% due to medical choice (17%), relapses(8%) or assumption(16%) by the multidisciplinary team, due to difficulty in contacting the patient. Conclusion: The database analysis indicates that the majority of patients treated with interferon beta-1a and participating in the PSP are young and female. The follow-up provided by the PSP allows frequent contact with the patients who use the medication, allowing a prospective statistical analysis to identify those patients who are more likely to abandon treatment. This prospective analysis could also give more information about treatment duration and drop-out risk.

Poster: 50 (85183)

Title: SURVEY ANALYSIS OF TREATMENT WITH INTERFERON BETA 1A IN BRAZIL AMONG MS PATIENTS PARTICIPATING IN A PATIENT SUPPORT PROGRAM (PSP)

Authors: Luiza Vasconcelos Biglia; Luiza Vasconcelos Biglia; Raquel Araújo Vassão; Vivian Borali Conceição;

Institution: MERCK

Abstract: Objectives: Interferon beta-1a is indicated for patients with relapsing forms of Multiple Sclerosis (MS) and usually used as first line therapy in the Brazilian public health system. The objective of this study was to assess patient satisfaction with the patient support program using a survey with MS patients receiving interferon beta-1a. Methodology: A questionnaire consisting of 20 objective questions was developed by the Merck PSP Team and sent to patients recently using interferon beta 1a participating in the PSP. An online survey was sent to 965 prospective participants. PSP specific information was measured including: time of enrollment in the PSP, quality of the online visits, assessment of advantages of the program, clarity of information provided online, frequency of contact with the PSP, and the level of satisfaction with the support that was provided. Results: Between November 2017 and April 2018, 550 responses were recorded. The majority of the patients originated from the Southeast Region (60.9%) and 71% were female. 41.8% reported that never had difficulty to access the medication, 58.3% were enrolled in the program for more than 24 months, 50.5% classified web visit as optimal and availability/convenience were cited as the main benefits of this kind of visit. About 80% of the patients were very satisfied with the quality of the service and believed that the clarity of information and frequency of contact were very important for their treatment. Conclusion: Our study indicates a high level of program satisfaction among MS patients due to continuous follow-up and clarity of information from the multidisciplinary team. In addition, many patients were enrolled in the PSP for 2 years or longer, suggesting the potential benefit brought by the program. Further research to assess the PSP's impact on adherence and clinical outcomes remains to be done.

Poster: 51 (85200)

Title: EM DIÁRIO: A DIARY APP FOR MULTIPLE SCLEROSIS PATIENTS

Authors: Antônio Bernardes Bacilar Campos; Marco Aurelio Lana Peixoto; Rodrigo Gonçalves Kleinpaul Vieira; Juliana Machado Santiago dos Santos Amaral; Natalia Cirino Talim; Emerson de Paula Santos;

Institution: UFMG

Abstract: Introduction - Multiple sclerosis (MS) is a demyelinating immune-mediated inflammatory disease of the central nervous system (CNS) with a variety of neurologic symptoms. Most frequently, the disease affects young adults, is characterized by relapses and progressive disability, and has a life-long course. Patients are usually followed-up in MS Centers at every 6-12 month-intervals. During the visit intervals, patients may make a number of observations on their disease itself, or its treatment. However, due to the long periods of time between visits, they may fail to fully and adequately report their clinical observations to doctors. This failure may hamper the evaluation of the disease course, as well as the efficacy and safety of treatment Objectives - To provide MS patients with an app in their mobiles with a friendly platform to record new symptoms, exacerbations, scores in different scales, and side effects of DMDs, at the real time of their occurrence. The app would also work as a calendar to create disease-related events such as medical appointments and examinations. Methods - We designed a logo that could evoke CNS connections. We elaborated an easy-to-use wizard style questionnaire where MS patients could add their daily clinical observations. We incorporated a variety of icons related to symptoms of the disease, and the Expanded Disability Status Scale. A Web-based platform was used to store clinical data put in by patients, laboratory and imaging data, and objective findings added by doctors at patient visits. Results – The EM Diário app was built containing a front-end and a back-end. The front-end is installed at mobile, and is used by patients and caregivers to report clinical symptoms, and laboratory and imaging data. A calendar of treatment-related events was included. The back-end is a Web-based platform to be installed in MS Centers or doctors' Offices. It receives, stores and analyzes data from mobiles, and those provided by doctors at patient visits. They can also generate reports. Conclusions – MS patients will benefit from the EM Diário app by reporting their clinical observations at the real time of their occurrence. They will also use it as a MS calendar to create treatment-related events. Doctors will benefit from the EM Diário app as a tool to follow-up their patients, monitor their treatment and improve medical care.

Poster: 52 (85224)

Title: ASYMPTOMATIC HEMOPHILIA A, METHYLENETETRAHYDROFOLATE REDUCTASE POLYMORPHISM AND MULTIPLE SCLEROSIS. WHAT DOES THIS ASSOCIATION MEAN?

Authors: Pedro R. Silva Junior; Marco A Lana-Peixoto.; Natalia C Talim; Juliana S Amaral; Rodrigo Kleinpaul;

Institution: UFMG

Abstract: Background Hemophilia A (HA) is an X-linked hereditary disorder characterized by bleeding due to abnormalities in fator VIII (FVIII). It is the most common coagulation factor deficiency around the world with a prevalence of 3-20/1000,000 population. It exceptionally occurs in females (female:male ratio of 1:120). Family history is negative in 1/3 of the cases. On the other hand, acquired hemofilia A (AHA) predominantly affects females and appears spontaneously or in association with other conditions such as autoimmune diseases, malignancies, pregnancy and puerperium. It may also occur as an adverse effect of drugs such as interferons and alemtuzumab. Methylenetetrahydrofolate reductase (MTHFR) polymorphism has been described in association with various diseases, such as vascular disorders, cancers, diabetes, psoriasis, and hypothyroidism. Herein we report on a MS patient who had asymptomatic HA and MTHFR polymorphism and deficiency of FVIII. The association of MS with these two disorders had not been described previously. Case report A 36-year-old white woman was seen in a local hospital because of bilateral visual loss. A comprehensive laboratory work-up disclosed deficiency of the blood coagulation FVIII and mutation in MTHFR gene. She denied any history of hemorrhage or ischemia. One year later, she developed ataxia, paresis and dysesthesia in the right lower limb, and mild bladder incontinence. Neurological examination showed mild paraparesis. Cerebrospinal fluid analysis showed 24 leukocytes/mm3; protein content of 37% mg/dL, and positive oligoclonal bands, Search for serum AQP4-IgG by cell-based assay was negative. Brain MRI showed a T2-hyperintense lesions in periventricular regions (Dawson fingers) and deep white matter with no gadolinium enhancement. Spinal MRI revealed a laterally-located contrast-enhancing T2-hyperintense lesion extending from the C3 to C7 segments. The patient was initially was given glatiramer acetate which was switched to fingolimode because of injection intolerance. She has had no relapses. Discussion The association of MS with coagulation disorders has been rarely documented. Some patients developed AHA as a complication of treatment with beta interferons or natalizumab. On the other hand, the relationship of hereditary HA with MS is controversial. In this patient, coagulation disturbances were found as part of laboratory work-up of an attack of bilateral visual loss. The simultaneous occurrence of a prothrombotic factor and a bleeding factor in this patient may have had mutual protective effect, avoiding previous hemorrhagic and ischemic events. Conclusion This case shows that MS may be associated with a cluster of genetically-determined diseases, including coagulation disorders. The exact meaning of these associations remain to be clarified.

Poster: 53 (85249)

Title: TREATMENT OF PEDIATRIC ONSET MS IN A MULTICENTRIC BRAZILIAN PROSPECTIVE COHORT

Authors: Bruna Klein da Costa; Rafael Canani Sommer; Amanda Marchionatti; Jefferson Becker; Fernanda Silveira de Quadros; Marlise de Castro Ribeiro; Renata Barbosa Paolilo; José Albino da Paz; Dagoberto Callegaro; Hanaie Cavalli; Marco Nihi; Henry Koiti Sato; Manuela Fragomeni; Vanessa Fragoso; Maria Lucia Brito; Brenda Louise Banwell; Douglas Kazutoshi Sato;

Institution: PUCRS

Abstract: Introduction: Several disease modifying therapies (DMTs) are not approved yet for treatment of pediatric onset MS (POMS), despite the high lesion loads and frequent clinical relapses on the first years of the disease. Furthermore, regulatory issues in Brazil sometimes difficult the use of DMTs according to clinical indication at disease onset. Objective: Describe the DMTs used in POMS in a multicentric observational cohort in Brazil. Methods: We analyzed the prospective data from children and adolescents currently enrolled in the multicentric observational study to characterize MS in Brazil (EMOCEMP). Patients with a single clinical attack of suspected acquired demyelinating syndrome (ADS) with available confirmatory magnetic resonance imaging (MRI) are being recruited in 6 neuroimmunology reference centers in Brazil. The study protocol comprehends clinical visits at baseline, 6, 12 and 24 months. The demographic characteristics, clinical phenotype, MRI, laboratory results, clinical diagnosis and chosen treatments are being evaluated. All patients are tested for aquaporin-4 (AQP4-Ab) and myelin-oligodendrocyte glycoprotein (MOG-Ab) using CBA at baseline irrespective of clinical presentation. Results 95 patients were recruited after their first ADS, but 5 were excluded due to loss of follow-up or fulfilment of exclusion criteria. Forty completed the 6-month visit in the study and were included in this analysis. 8/40 (20%) received the diagnosis of POMS according to the 2017 McDonald criteria. The median duration of disease from onset was 9 months (5.9 – 38 months). At baseline visit, 5/8 were on DMT since disease onset, 3/8 children were untreated but started on DMT between the baseline and the 6-month study visit. Patients were initially treated with subcutaneous interferon-beta1a - SC INF-beta1a (n=4), intramuscular interferon-beta1a - IM IFN-beta1a (n=1), glatiramer acetate - GA (n=1), and teriflunomide (n=1). One patient was initially treated with mycophenolate mofetil (MMF) until the AQP4-Ab and MOG-Ab testing were negative. Four patients switched DMTs. One switched because of side effects (from GA to fingolimod – FTY) and one for non-adherence related to side effects (from SC IFN-beta1a to FTY), one due to new T2 hyperintense lesions and gadolinium enhancing lesions after 38 months of treatment (from IM IFN-beta1a to dimethyl fumarate) and one after exclusion of alternative diagnosis (from MMF to rituximab). Conclusions Most patients were initially treated with injectable first-line DMTs. Half switched during the follow-up period. Those preliminary findings suggest that tolerance and adherence to first line injectables might be an issue in pediatric patients. EMOCEMP is supported by research grants from TEVA (Investigator Initiated Study) and FAPERGS/CNPq/SESRS/PPSUS/Ministry of Health Brazil (grant 17/2551-0001391-3)

Poster: 54 (85255)

Title: A SEVERE MS CASE WITH REBOUND AFTER NATALIZUMAB INTERRUPTION DUE TO SOCIAL CULTURAL CONDITIONS

Authors: Thiago Francisco Almeida de Paula; Vanessa Gil Humberto dos Santos; Maria Ignez Nogueira do Nascimento; Lais Borneo Moreira; Renan Paes Alves; Letícia Fêzer Mansur; Maria Lucia Vellutini Pimentel;

Institution: PUC-Rio

Abstract: Case presentation We describe a case of a black female patient who in 2011, at the age of 19, sought neurological evaluation after four years of distinct neurological complaints. At the age of 15, she had paresthesia in the right wrist and hand, evolving with sensory motor deficit in the lower limbs, with a total recovery after six months. At the age of 17, she had myelitis with spontaneous remission after two months. Until her first neurological evaluation, in July 2011, she had two another bouts. Her neurological exam showed a spastic triparesia with cerebelar ataxia and bilateral optic neuritis (EDSS 5.0). At that moment, a brain MRI demonstrated widespread hyperintense lesions in T2 and FLAIR, some with gadolinium enhancement and black holes. A cervical and dorsal MRI showed diffuse lesions without gadolinium enhancement. The visual evoked potential showed bilateral compromise. She was treated with metilprednisolone in pulsetherapy with 70% improvement after three cycles. With the diagnosis of RRMS she was treated with Betaferon. After five months as her clinical condition worsened with new outbreaks, due to the great lesion load and with a JCV test negative we decided to change treatment to natalizumab (NTZ), which she started in 2012. From February 2012 to February 2014, she had significant improvement of gait, remained stable without outbreaks, her EDSS was 3.5 and the brain MRIs did not changed. She then abandoned treatment and, in February 2015, she had a very severe outbreak that put her on a wheelchair in addition to an important cerebelar ataxia and worsened of cognitive impairment with immotivated laugher (EDSS 7.5). A new brain MRI discharged PML, showed new lesions, some with gadolinium enhancement, increased size of some lesions and reduced brain volume. She started again with NTZ and had a slight improvement for five months when she again decided to interrupt treatment. She had two more bouts. The following brain MRs showed coalescent lesions, new gadolinium enhancement lesions, black holes and brain atrophy. She did not have significant improvement with pulsetherapy, and on March 2019 she started treatment with NTZ. Today, the patient is restricted to a wheelchair with a cerebelar ataxia and an important cognitive deficit, without inhibitory control. Discussion NTZ is a monoclonal antibody and has shown efficacy in preventing relapses and new lesions. The recurrence of severe symptoms is possibly related to immune reconstitution after treatment withdrawal, suggesting a rebound effect. The relapse within one year after NTZ withdrawal was estimated in 45%. On average, 25% of patients experienced a first relapse after 4.9 months. The risk of relapse was higher in patients who were younger when they started NTZ and had a higher disease activity. This case highlights the need to be cautious when considering the treatment with NTZ, because of the lack of adherence in the social economic and cultural context of the patient.

Poster: 55 (85262)

Title: CEREBRAL TOXOPLASMOSIS AND RITUXIMAB: CASE REPORT OF A PROGRESSIVE MS PATIENT

Authors: Vinicius Andreoli Schoeps; Frederico Mennucci de Haidar Jorge; Mauricio Hoshino; Marcos Aurélio Peterlevitz; Lazaro Luis Faria do Amaral; Luiz Carlos Barradas Barata; Dagoberto Callegaro;

Institution: HCFMUSP

Abstract: Case presentation JL, a 39-year-old male was diagnosed in 04/2013 with Multiple Sclerosis after an episode of acute right hemiparesis and paraparesis. His medical records were consistent with previously undiagnosed relapses of vertigo (2007), left optic neuritis (2008) and a right facial palsy (2011) with complete recovery. The Initial workup consisted of a typical MS MRI with some active hemispheric lesions, a nonenhanced cerebellar and 2 cervical eccentric T2 lesions; CSF with positive oligoclonal bands and an asymptomatic positive SSA/SSB antibodies. The patient agreed to start on Avonex® but due to intense flu-like symptoms was transitioned to Fingolimod after a 2-year loss of follow-up, in 02/2015. After approximately a year, JL complained of progressive walking impairment and was readily escalated to Rituximab 1g/6mo in 09/2016. During the treatment period JL remained free from clinical or radiological activity and achieved gait improvement. In 01/2019, 4 months after his 4th dose, the patient is admitted to an ER service due to subacute paraparesis, disorientation and daily fever. The MRI revealed multiple enhancing and 2 tumefactive lesions (right gangliocapsular and a left temporal). A mild lymphocytic CSF with positive PCR for toxoplasmosis has led to a prompt diagnosis of cerebral toxoplasmosis (CT). A TMP-SMX course was administered with significant clinical and radiological improvement. Interestingly, anti-Toxoplasma IgG and IgM persisted negative even 1 month after the acute phase. Until 04/2019 the patient remained with CD19/CD20 suppression, normal CD4/CD8 counts, no evidence of neutropenia or HIV. Discussion In contrast to the favorable course in immunocompetent individuals, Toxoplasmosis can be life-threatening in those who are immunocompromised. The CNS is the site most typically affected and almost always is a result of reactivation of a latent infection. These individuals usually have primary or secondary T cell disfunction, such as in AIDS, cancer and transplant recipients. It has long been recognized that T. gondii induces an antibody response that can help to distinguish acute and chronic infections, however its contribution to the hosts response is not completely understood. There is some experimental evidence that the passive transfer of antibodies can enhance the parasite control in T CD4+ deficient mice. Despite the possible role of a B cell defense mechanism, the extensive use of Rituximab in autoimmune disorders and the rarity of CT challenge our pathophysiological understanding. Has the patient became infected by a more pathogenic strain? Has the patient developed an impairment in B-T cell interaction? In a comprehensive literature review the authors have only found 3 cases of CT in MS patients, 2 in the pre-DMT era and 1 with Fingolimod-induced lymphopenia. Final Comments CT is a rare complication of Rituximab treatment and, to our knowledge, has never been reported in a MS patient.

Poster: 56 (85264)

Title: ALEMTUZUMAB DEPLETION FAILURE? CLINICAL CASE PRESENTATION.

Authors: Gutemberg Augusto Cruz dos Santos; Gabriela Albernaz Campos; Lucas Rodrigues Campos; Thaís Xavier Direito; Claudia Cristina Ferreira Vasconcelos;

Institution: UNESA

Abstract: Background: Multiple sclerosis (MS) is an immune-mediated, demyelinating disease of the central nervous system. Brazil is a miscegenate country, with continental dimensions, known as an area of low prevalence of multiple sclerosis.. The development of disease modifying therapies has led to a reduction in the relapse rates and progression of MS. Alemtuzumab is a lymphocyte-depleting monoclonal antibody and one of the most effective treatments for relapsing multiple sclerosis. Although alemtuzumab depletes lymphocytes in most individuals, some people fail to deplete/deplete-poorly, probably due to biological- response variation and neutralizing antibodies (Nabs) and this may lead to treatment failure. Objective: The objective of this study is to describe the clinical case of a patient diagnosed with MS treated with alemtuzumab. Methods: Retrospective medical records review and revision of the literature at Pubmed. Case Report: Female, 47 years old, caucasian, with no history comorbidities. Her disease has started when she was 30 years old, with medullary syndrome, but she received diagnosis only five years later, after presenting a cerebellar syndrome. Treatment for the relapse was done with methylprednisolone pulse therapy, resulting in significant but partial improvement. Disease modifying therapy was started with interferon beta. The patient remained stable until 2015, when she had a new relapse, and the control MRI showed 3 new lesions with gadolinium enhancement. The preventive treatment was changed to Natalizumab since. Again she remained stable for two years, but after that, presented a new relapse, and another MRI has showed increase of lesion load and two gadolinium enhancing lesions. Treatment failure was discussed, and we opted to change treatment to Alemtuzumab. First five days cycle was done in December of 2017. In the first year after the infusion, the lymphocyte count vary from 624 to 1856. After one year of the first cycle, patient had no new symptoms, but control brain MRI showed at least 10 lesions with gadolinium enhancement, and the hypothesis of depletion failure was raised. Conclusion: This case emphasizes the importance of the close clinical and image follow up of the MS patients. Literature shows that is evident that some people do not deplete/delete-well on first infusion, and it may be related to single nucleotide polymorphism (SNP). It is important to determine whether these alleles are important in depletion caused by alemtuzumab in MS. Alternatively it has also been suggested that specific prior treatment may block the activity of alemtuzumab and allow more rapid repopulation. It will also be important to monitor whether high-titre neutralizing antibodies (Nabs) are present prior to re-infusion of additional treatment cycles, as well the lymphocyte count. This may affect decisions to retreat, switch treatment and influence which treatments people are switched to.

Multidisciplinary Care

Poster: 57 (83179)

Title: THE IMPACT OF PHYSICALTHERAPY AND PILATES IN FATIGUE IN PATIENTS WITH MULTIPLE SCLEROSIS

Authors: Juliana Aparecida Rhein Telles; Thiago Henrique Silva; Renata Coelho Rodrigues.

Institution: USP

Abstract: Introduction: Fatigue causes a high degree of impairment in the daily routine of patients with multiple sclerosis and the recognition of this problem is crucial to understand the importance of studying their evaluation better. Objective: The objective of this study is to evaluate the level of pre and post physiotherapy intervention in patients with multiple sclerosis who underwent classical physiotherapy and pilates, in order to propose the best type of treatment and evaluation resource. Methods: This is a retrospective clinical study, with adult individuals affected by Multiple Sclerosis. After initial assessment of functional mobility, fatigue and muscle strength, it was determined which type of intervention will be performed, pilates or classical physiotherapy.The patients were submitted to protocols of Physicaltherapy or pilates and were evaluated with the Modified Fatigue Impact Scale (MFIS), pre and post intervention. Results: The results were homogeneous between the Physiotherapy Group and the Pilates Group, and the age factor interfered in the results of the evaluation of the psychosocial domain of the scale. Discussion: When comparing before and post intervention results, it was possible to perceive significant evolutions in all domains in the two FG and PG groups. Conclusion: Pilates interventions and conventional physiotherapy showed similarly positive improvements, and the age factor may interfere in the improvement of postoperative fatigue conditions.

Poster: 58 (84423)

Title: DYSARTHRIA IN MULTIPLE SCLEROSIS: ANALYSIS AND REHABILITATION

Authors: Alice Estevo Dias; Alice Estevo Dias;

Institution: ABEM

Abstract: Introduction: Multiple Sclerosis (MS) can affect the speech motor system and result in dysarthria. The Lee Silverman Voice Treatment (LSVT-LOUD®) is an intensive behavioral treatment program to improve overall voice and speech functions in individuals with neurological diseases. Objective: The main goal of this study is to inspect the efficacy of LSVT-X treatment in MS patients. Method: Thirty four participants (RRMS relapsing remitting =16, SPMS secondary progressive =14, PPMS primary progressive =4), 27 female and 7 male, with ages ranging from 31 to 81 years, received the LSVT-X, administered twice a week in 1-hr sessions over 8 weeks. The evaluation was performed by three expert speech therapists. The auditory-perceptive analysis of their voices was carried out, based on the GRBASI scale. The acoustic analysis was also conducted by Praat software (version 6.0.50), considering the following measures: fundamental frequency, and voice intensity. Data were statistically analyzed to compare pre and post rehabilitation. Results: Several signs and symptoms related to voice and speech were verified in different proportions and impacts on the intelligibility of verbal communication. Four altered domains have been identified: articulation (slow articulation, imprecise consonants), voice (pitch and intensity instability, impairment in vocal quality), respiration (decreased phonatory time, short cycles) and prosody (longer and frequent pauses, deficient loudness control). After treatment, there was improvement in parameters analyzed, dysarthria was attenuated and positive results were achieved. Conclusion: In addition to conventional pharmacologic therapy, dysarthria treatment should be emphasized as part of a management plan focused on overall health and well-being, regardless of the type of MS, course of disease and manifestation of speech and voice symptom.

Poster: 59 (84424)

Title: OCCUPATIONAL PERFORMANCE IN ACTIVITIES OF DAILY LIVING IN MULTIPLE SCLEROSIS

Authors: Alice Estevo Dias; Alice Estevo Dias; Gina Corsi;

Institution: ABEM

Abstract: Introduction: Multiple Sclerosis (MS) is a chronic, inflammatory and degenerative disease that affects the central nervous system. Occupational performance is often compromised and negatively impacts daily activities and activities. Objective: To understand the perception of people affected by MS on occupational performance and identify the main difficulties in routine activities. Method: 55 people with MS participated, being 40 (73%) women and 15 (27%) men, aged between 27 and 60 years. The five major impairments in occupational performance were observed, according to the degree of importance, according to the Canadian Occupational Therapy Model (COTM), then the participants self-assessed their performances and satisfactions by means of a scale of 1 to 10 points. Results: The analyzes revealed that participants considered their ability to perform routines and perform roles and tasks related to moderate to poor personal care, leisure and productivity. Conclusion: Signs and symptoms of muscle weakness, fatigue, cognitive and visual changes and sensitivity were determinant to impair occupational performance appropriate to the needs and interests of the participants. The evaluation of occupational therapy and the rehabilitation of disabilities organized and facilitated the daily lives of people with MS.

Poster: 60 (84428)

Title: SOCIAL VULNERABILITY IN MULTIPLE SCLEROSIS

Authors: Alice Estevo Dias; Alice Estevo Dias; Tatiane Martins Leite; Priscila da Silva Santos; Beatriz Maciel Sodré;

Institution: ABEM

Abstract: Introduction: Multiple sclerosis (MS) is a chronic autoimmune disease that affects the central nervous system and affects young adults. In addition to the difficulties caused by disabling symptoms, the disease triggers vulnerability, which requires specialized assistance to circumvent imminent social exclusion. Objective: to identify the social difficulties of a group of people with MS, showing the activity of the Reception. Method: 73 patients with MS and ages between 20 and 60 participated in Social Organization for non-economic purposes. All answered the Epidemiological Questionnaire. Results: the analyzes revealed that the characteristics that most marked the state of social difficulty were the socioeconomic factors related to marital status and income, identified as responsible for the process of social exclusion. Conclusion: the specialized actions carried out through guidelines and referrals to obtain rights and benefits promoted the necessary social protection to maintain the quality of life.

Poster: 61 (85109)

Title: EDUCATION LEVEL, INTELLIGENCE QUOTIENT AND VOCABULARY AS PROXIES OF COGNITIVE RESERVE IN A SAMPLE OF ADULTS WITH RELAPSING-REMITTING MULTIPLE SCLEROSIS

Authors: Isabella Maria Bello Avolio; Carolina De Medeiros Rimkus; Samira Apostolos Pereira; Maria Fernanda Mendes; Claudia Da Costa Leite; Dagoberto Callegaro; Eliane Correa Miotto;

Institution: HCFMUSP

Abstract: Background: Cognitive dysfunction is frequent in Multiple Sclerosis (MS) patients. The concept of cognitive reserve (CR) as a protective factor in degenerative disorders is widely used in dementia and MS studies. Education level, Intelligence Quotient (IQ) and Vocabulary (VC) have been used as proxies of CR, which protect brain in the presence of injury and cognitive impairment. The aim of this study is to examine the relationship between education level, IQ, VC and Matrix Reasoning (MR), subtests of Wais-III, and a selected number of neuropsychological assessments, to determine the best proxy of CR in a Brazilian cohort of relapsing-remitting multiple sclerosis (RRMS) patients. Methods: In this retrospective cross-sectional study, we have included 125 RRMS patients (86 females; mean age 35 ± 10.8; mean years of school education 13.5 ± 3.2; mean EDSS 2 ± 1.7) and 76 healthy controls (HC)(49 females; mean age 33 ± 10.0; mean years of school education 15.0 ± 4.1). All subjects underwent extensive neuropsychological examination evaluating information processing speed, visual and verbal memory, working memory, attention and executive functions. We applied automatic linear modeling analyses, including education level, IQ, VC and MR as independent variables and raw scores of each neuropsychological test entered as dependent variables. All tests were normalized by age and gender. Results: After multiple regression analyses, RRMS patients group showed significant correlations between VC and executive functions (β=.423; ρ=.012), working memory (β=.374; ρ=.005) and attention (β=.357; ρ=.031); education level and information processing speed (β=.252; ρ=.003) and Mini-Mental State Examination (β=.283; ρ=.004). In the HC group we have not observed significant correlations between the variables of cognitive reserve and the neuropsychological performance. Conclusion: The results indicate that VC and years of education can be used as proxies of cognitive reserve in our cohort of RRMS patients. The study is in line with previous studies, suggesting that a better premorbid cognitive reserve might protect patients from cognitive decline when facing neurological diseases.

Poster: 62 (85110)

Title: THE ROLE OF PHYSICALTHERAPY ON FATIGUE OF PATIENTS WITH MULTIPLE SCLEROSIS

Authors: Juliana Aparecida Rhein Telles; Thiago Henrique Da Silva; Alice Estevo DiasFatima Aparecida Caromano; Bruna Helena Sciarini;

Institution: USP

Abstract: Introduction: Multiple sclerosis (MS) is a chronic inflammatory demyelinating autoimmune disease of the central nervous system that can result in various damages to the neuronal systems. Objective: To assess the level of fatigue pre and post physiotherapy intervention in patients with multiple sclerosis undergoing a conventional physiotherapy program Methods: A retrospective clinical study was carried out, through the collection of data from medical records from the Modified Fatigue Impact Scale (MFIS) and Expanded Disability Status Scale (EDSS). The MFIS scale was applied by two trained professionals, in the pre and post physiotherapy intervention, during four months totaling 16 sessions, in which the patient underwent physiotherapy at least once a week. This study was carried out at the Brazilian Multiple Sclerosis Association (ABEM). Multiple sclerosis patients were recruited in the recurrent remission form, with a score of 1.0 to 6.5 of EDSS. Physical therapy consisted of stretching of upper limbs, lower limbs and trunk, upper limb muscle strengthening (MMSS) and lower extremity limbs (MMII), exercises to work the balance and gait, lasting 45 minutes. Results: Eleven patients were selected, of which 8 were female and 3 were male. The age ranged from 22 to 61 years, with an average of 47.95 (± 11.06) years. The clinical staging, evaluated through the EDSS scale ranged from 1.0 to 6.5 with a mean score of 3.81. There was a statistically significant improvement in the three domains of the scale (physical, cognitive and psychosocial) after the rehabilitation program. Conclusion: We observed a significant improvement in the fatigue of all patients after the rehabilitation program. We suggest that new studies with this theme and with a larger group of individuals be done to verify possible statistically more relevant changes.

Poster: 63 (85111)

Title: EFFECTIVENESS OF PSYCHOLOGICAL INTERVENTIONS IN MULTIPLE SCLEROSIS: A SYSTEMATIC REVIEW

Authors: Tania Maria Netto;

Institution: UFMS

Abstract: Introduction: Evidence has indicated that various forms of psychological interventions can activate neuroplasticity and decrease the progression of chronic diseases, even in patients with substantial brain damage, such as in multiple sclerosis. These findings have made these interventions one of the main focuses in neuroscientific research. However, there is a very limited body of literature investigating the effectiveness of psychological interventions in patients with multiple sclerosis (MS). Objective: The aim of this review was to systematically assess the available data on the effectiveness of psychological interventions in patients with MS. Method: PubMed, PsycARTICLES, SciELO, and LILACS were searched from 2014 to 2019, using the terms psychotherapy, psychological intervention, and multiple sclerosis. Inclusion criteria were quantitative and experimental studies, with at least two groups, one with multiple sclerosis patients and instruments that assessed cognitive functions, depression, anxiety, stress, fatigue, and quality of life. Results: Two hundred and ten studies were found and 18 were included. The most prevalent psychological intervention used were cognitive-behavioral and its variant stress management; self-management and education. Positive psychology, guided imagery, and cognitive-behavioral programs used novel variants of their techniques. Two studies used the internet and three telephone-based interventions which were cost-effective. Overall, most of the psychological interventions in this review had a positive effect on reducing symptoms of stress, depression, anxiety, fatigue and improving cognitive functions and quality of life in patients with MS. Conclusion: Psychological interventions seem to have a positive effect on the reduction of MS symptoms, internet, and telephone-based interventions seem to be a new trend that is accessible, feasible and cost-effective for people with MS and mobility impairments. Randomized controlled trials on a larger scale with longer follow-ups are needed to further investigate the effectiveness of these modalities of psychological interventions in MS.

Poster: 64 (85112)

Title: MINDFULNESS-BASED INTERVENTIONS IN NEURODEGENERATIVE DISEASES: AN EXPERIMENTAL LITERATURE REVIEW

Authors: Tania Maria Netto;

Institution: UFMS

Abstract: Introduction: There is an increasing interest in mindfulness-based interventions (MBI) to help manage cognitive deficits and neuropsychiatric challenges associated with neurodegenerative disease. Objective: This review aims to identify the effectiveness of MBI on cognitive functions, stress, anxiety and depression symptoms, quality of life and neurobiological variables in patients with neurodegenerative disease, especially with multiple sclerosis (MS). Method: PubMed and LILACS were searched from 2014 to 2019, using the following terms mindfulness-based intervention, mindfulness, multiple sclerosis, neurodegenerative disease. Inclusion criteria were quantitative and experimental studies with two or more comparisons groups (control and intervention), assessment of at least one of these variables: cognitive functions, depression, anxiety, stress, fatigue and/or quality of life and also clinical and neurobiological. Results: When combined the terms in PUbMed: MBI and multiple sclerosis 6 studies were found and only 1 was selected. However, when MBI was combined with neurodegenerative disease 20 articles were found and 10 were selected. No articles were found in the engine searches LILACS and SciELO, except for a review of the literature with focused on amyotrophic lateral sclerosis. Six of the studies included in this review were randomized control trials. Four investigated the effect of MBI on Alzheimer, three on Parkinson's disease, two on mild cognitive impairment, one on amyotrophic lateral sclerosis and one in multiple sclerosis. The duration of the interventions varied from eight months to two years. Different MBI interventions were used. The most investigated was mindfulness-based stress reduction. Most groups of patients with neurodegenerative disease, when compared with control or other groups with different interventions had positive benefits regarding anxiety, depression, stress symptoms and quality of life. Two studies reported stability on cognitive functions and functionality of mild to moderate Alzheimer during the two years of interventions. At last, three studies reported positive neurobiological effects and an increase in structural brain gray matter density after MBI. Conclusion: Although these results are promising, it needs to be cautious, because more robust evaluations are required to determine the effectiveness of MBI on depression, anxiety and stress symptoms, quality of life, clinical and neurobiological variables in patients with neurodegenerative diseases. There are some methodological issues that need to be improved. Evidence for the effectiveness of MBI in neurodegenerative disease is limited, especially regarding multiple sclerosis.

Poster: 65 (85114)

Title: ANXIETY AND DEPRESSION IN PEOPLE WITH MULTIPLE SCLEROSIS: COMPARISON BETWEEN SEX, EDSS AND PHYSICAL ACTIVITY

Authors: Gabriela Alves Dos Santos; Gabriela Alves dos Santos; Heloísa Galdino Gumiero Ribeiro; Karina Perez Porto; Michelle Moreira Abujamra Fillis; Vinícius Aparecido Yoshio Ossada; Viviane Souza Pinho Costa;

Institution: UNIFIL

Abstract: Introduction: Multiple sclerosis is an autoimmune disease, demyelinating and progressive, which affects the central nervous system, often causing major changes in the quality of life, such as anxiety and depression. It is known that some factors can influence positive and negatively this psychological variable, such as physical activity, or yet, their organic dysfunctions and inability. Objectives: Identify whether anxiety and depression can present influence by sex, physical activity and edss levels. Methods: It was a cross-sectional study in individuals with multiple sclerosis from the ALPEM (Associação londrinese de Esclerose Múltipla). The analysis of anxiety and depression was performed by the questionnaire The Hospital and Anxiety Depression Scale. Data relating to sex and physical activity was observed through a previous registration. The evaluation by Expanded Disability Status Scale was performed to identify the mild and moderate groups. Normality analysis was performed using the Student's T-test, Mann- Whitney for comparison between groups and Sperman for correlations. Results: Were evaluated 21 people with multiple sclerosis, of which: 43% were men, mean age of 42,2 (±10,59)years; average height of 1,66 (±0,09) meters; weight of 74, 8 (±18,8) kilograms; time of diagnosis of 9,3 (±5,5) years; all of them with relapsing remitting multiple sclerosis ; and 52% of the evaluated practiced physical activity. When evaluating the variables, we found in the anxiety aspect overall average of 6,95 (±4,74) and in depression with medium 5 (0-18). In the comparison between the mild and moderate EDSS, no difference was found between the values of anxiety or depression ($p = 0.1$ and $p = 0.3$ respectively). No differences were also found between the sexes when assessing anxiety and depression ($p=0,1$ e $p=0,2$). When doing correlation analysis, the depression aspect correlated moderately with the physical activity aspect ($r=0,461$, $p=0,02$). Conclusion: The evaluation of anxiety and depression by The Hospital and Anxiety Depression Scale did not identify changes between the levels of EDSS or genders. The correlation between reported physical activity and depression give evidence that those who practice such activity can benefit not only physically, as well as psychologically.

Poster: 66 (85119)

Title: RELATIONSHIP BETWEEN COGNITIVE PERFORMANCE AND WORK ACTIVITY IN PEOPLE WITH MULTIPLE SCLEROSIS

Authors: Mauricio Ossamu Bando; Ana Maria Canzonieri; Alice Estevo Dias; Talita Dias Da Sila; Marcelo Massa;

Institution: ABEM

Abstract: Introduction: Multiple sclerosis (MS) is a degenerative, autoimmune and chronic disease of the central nervous system. In addition to the symptoms of fatigue, spasticity, muscle weakness, imbalance, numbness, among others, complaints of changes in cognitive functions are very frequent. In view of the limits imposed by this pathology, many people move away from their work activities. Objective: To verify and analyze the risks and the occurrence of association between cognitive performance and work activity in people with MS. Method: A quantitative study was performed with 41 people diagnosed with relapsing-remitting multiple sclerosis (RRMS), aged between 23 and 58 years (Mean = 42.70, SD=10.62 years), 14 men (34.1%) and 27 women (65.9%), with EDSS from 0 to 6.5. In this group, 15 people (36.6%) were working and 26 (63.4%) were not working (retired, sickness leave or unemployed). For evaluation, an interview and a battery of cognitive tests was applied to each patient. It was used the chi-squared test for statistical hypothesis test. Results: It was observed that 48.8% of the patients presented alteration of sustained attention (ST), 70.7% of alternating attention (AA), 63.4% of divided attention (DA), 75.6% of processing speed (PS), 46.3% of immediate visual memory (VM) and 41.5% of visuoconstructional / visuoperception (VCP). The prevalence of the alterations was higher in the group of patients who were not working in relation to those who were working, with the following relative risks (RR) and p-values: ST (RR=2.31, p=0.031), AA (RR=1.51, p=0.063), DA (RR=1.57, p=0.091), PS (RR=1.21, p=0.311), VM (RR=3.08, p=0.010) and VCP (RR=4.33, p=0.005). Conclusion: Considering the relative risks and the significant associations observed in some cognitive functions, it is concluded that the absence of labor stimulation can lead people with MS to a greater cognitive alteration in relation to those that are working.

Poster: 67 (85120)

Title: CORRELATION BETWEEN SLEEP QUALITY AND FATIGUE IN PEOPLE WITH MULTIPLE SCLEROSIS

Authors: Ana Caroline Mamédio Do Nascimento; Heloísa Galdino Gumieiro Ribeiro; Christian Hiroshi Omai; Michelle Moreira Abujamra Fillis; Viviane De Souza Pinho Costa;

Institution: UNOPAR

Abstract: Introduction: Fatigue is characterized by the sensation of deep physical tiredness, exhaustion and loss of energy, usually associated with autoimmune, neoplastic, inflammatory and infectious phenomena. Sleep disorders are one of the main factors that can influence fatigue, because they interfere directly in the organism, causing in physiological alterations. In people with multiple sclerosis, fatigue presents as one of the main symptoms, often chronic and incapacitating, negatively reverberate daily life activities. Objective: To correlate sleep quality and fatigue in people with multiple sclerosis. Methodology: A cross-sectional study was carried out with participants from the Associação Londrinense de Portadores de Esclerose Múltipla (ALPEM). Were used as assessment instruments Pittsburgh Sleep Quality Index Questionnaire (PSQI) and the Modified Fatigue Impact Scale (M-FIS). Results: 25 participants were evaluated, of which 56% were women and 44% were men, with a mean age of 42 (± 10.5) years; height of 1.66 (± 0.09) m; weight of 74.8 (± 18.8) kg; time of diagnosis of 9.3 (± 5.5) years and the classification of the disease in the population was the appellant remittent. The participants were subdivided into two groups, in which 16 people presented the Expanded Disability Status Scale (EDSS) as mild and 09 people with moderate scores. The Mann Whitney test was used for the comparison between the groups and the Spearman correlation coefficient for the correlations. In the comparisons of the groups with mild and moderate EDSS, no statistical differences were found in fatigue variables such as physical MFIS (p=0.08), psychosocial MFIS (p=0.10), cognitive MFIS (p= 0.10), Total MFIS (p=0.07) and PSQI sleep quality (p=0.10). When analyzing the sample by the group with and without sleep disorder, statistical differences were found in the total MFIS variables (p=0.001), and cognitive aspects (p= 0.001), psychosocial (p=0.002) and physical (p=0.006). The correlations were moderate between EDSS and physical aspect of the MFIS (r=0.450, p=0.02), EDSS and total MFIS (r=0.423, p=0.03), PSQI and total MFIS (r=0.716, (r= 0.662, p <0.0001), PSQI and psychosocial aspect of MFIS (r=0.597, p=0.002), PSQI and physical aspect of MFIS (r=0.645, p=0.001). Conclusion: The EDSS was not associated with sleep and fatigue disorders in this population. However, correlations may suggest that EDSS is possibly influenced by physical aspects of fatigue. It has also been observed that sleep correlates directly with all aspects of fatigue evaluated, therefore, people worse quality sleep quality manifest symptoms of fatigue.

Poster: 68 (85126)

Title: BRAZILIAN VALIDATION OF THE MULTIPLE SCLEROSIS RELAPSE ASSESSMENT (ARMS) QUESTIONNAIRE: A PILOT STUDY

Authors: Marco Aurélio Gralha De Caneda; Marco Aurélio Gralha De Caneda; Deise Renner; Maria Cecília Aragon De Vecino;

Institution: HMV

Abstract: Introduction: About 80% of Multiple Sclerosis (MS) patients present Relapsing-Remitting phenotype (RRMS). Relapses are cardinal features in MS and half of the patients will show some residual deficits. Current guidelines suggest that MS patients should have rapid access to care teams when a relapse is suspected, given that early diagnosis is essential for success of the therapeutics. Therefore, use of valid tools to facilitate identification, assessment of severity and treatment efficacy, qualifies the attendance to this intercurrence. The ARMS (Multiple Sclerosis Relapse Assessment) questionnaire is an instrument that assesses these issues. Objectives: To describe the findings of the ARMS questionnaire applied to RRMS patients with new relapses and treated with intravenous corticosteroids at high doses, evaluating their correlation with cognitive, mental and fatigue performances. Methodology: The ARMS questionnaire, the BICAMS (Brief International Cognitive Assessment for MS) battery, the BDI and the BAI (Beck Depression and Anxiety Inventory) and MFIS (Modified Fatigue Impact Scale) were applied to patients included. We assess the correlation coefficients (ρ) between: (1) the ARMS items that evaluate the impact on Daily Living Activities (ADL), (2) the composite scores of these variables, (3) the recovery after treatment, (4) the return to baseline status, and (5) the late improvement after relapses, with the results of BICAMS, BDI, BAI and MFIS. The α Cronbach coefficient was calculated among the interrelated components of ARMS. Results: The frequency of symptoms in the sixteen subjects included was 4/patient. The most common were paresis of limbs (15%), worsening of fatigue (12.5%), and impairment of walking and cognition (11%). The relapses significantly affected the AVD' performance in >50% of patients. During the treatment, 75% of them have suffered side effects (SE), with a mean of 3/patient. The most common were fatigue, sleep disturbance and headache, 40%, and mental alterations, 33%. At follow-up, all participants reported SE, with a mean of 2.75/patient. The most frequent were sleep disturbances (62%) and headache (37%). There was a significant correlation between information processing speed (IPS) and anxiety with the perception of symptoms recovery (ρ = 0.70 and - 0.68, $p<0.05$), and of the prejudice on AVD with fatigue after the treatment (ρ = 0.68, $p<0.05$). The calculated α coefficient was 0.68, suggesting a clinically acceptable internal consistency of interrelated items. Conclusions: Relapses have a significant negative impact on ADL in MS patients. The SE of corticosteroids often remain long after administration. Anxiety, fatigue, and IPS are negatively associated with the perception of improvement of symptoms, return to baseline and performance of ADL. The ARMS questionnaire is useful to assess relapses, stimulating the patient-team dialogue about the therapeutics options, and approximates their perceptions about outcomes.

Poster: 69 (85132)

Title: INSPECTIONS ON PHYSICAL AND MENTAL HEALTH THROUGH THE MSQOL-54 QUESTIONNAIRE IN A PATIENT WITH MS.

Authors: Beatriz Maciel Sodré;

Institution: ABEM

Abstract: INTRODUCTION: Multiple sclerosis (MS) is a chronic autoimmune disease that affects the central nervous system, affecting the young adult, causing destruction of the myelin, leading to the appearance of various physical and mental symptoms, causing difficulties that interfere with the quality of life of the patient. OBJECTIVES: To analyze the perception of the quality of life of people with MS on mental and physical health, according to data obtained through the application of the MSQOL-54 questionnaire. METHOD: The survey took place from January to December, 2018, during the Reception (time of arrival at the Institution) in Civil Social Organization in São Paulo Capital, in which MS patients answered the MSQOL-54 Questionnaire and signed the free and informed consent. RESULTS: 71 patients, aged between 14 and 61 years, 64% female and 34% male, with recurrent relapsing MS 23%, primary progressive 1%, progressive secondary 3% and 73% did not know how to report , because it was not discriminated in the medical report. The same pattern of ignorance related to the disease occurred in the EDSS, whose results indicated that 68% of the patients did not know to inform, being discriminated in the medical report, 30% had EDSS between 0 and 4, 1% between 4.5 and 6, 5, 3% between 7 and 9. Regarding the data obtained from the MSQOL-54 Questionnaire, in what concerns physical health, 45% of patients were below average, 23% on average and 32% above average. In relation to mental health, 35% were below average, 28% on average and 37% above average. It is worth mentioning that above-average data correspond to a better quality of life in physical and mental health. CONCLUSION: In general, the patients presented an alarming concentration of below average physical and mental health quality of life. This suggests the need for rehabilitation programs that involve several health professionals, both physically and mentally, in order to provide treatment for the various symptoms resulting from Multiple Sclerosis that hinder the quality of life.

Poster: 70 (85141)

Title: CORRELATION BETWEEN MANOVACUOMETRY AND THE SIX MINUTE WALKING TEST IN PATIENTS WITH MULTIPLE SCLEROSIS

Authors: Vanessa Tizziani; Heloísa Ribeiro;

Institution: UNIFIL

Abstract: INTRODUCTION: Multiple sclerosis is a progressive demyelinating disease that affects the central nervous system. It affects young adults, and it presents motor and respiratory alterations, being very common these patients present weakness in the muscles of the respiration, and reduction of the functional capacity, diminishing the quality of life. OBJECTIVE: To identify THE POSSIBLE correlation of respiratory muscle strength with the functional capacity of the patient. METHODS: It was a cross-sectional study in individuals with multiple sclerosis from the ALPEM (Associação londrinese de Esclerose Múltipla).Methods: The analysis of respiratory muscle strength was performed through the Manovacuometry test, evaluating PIMAX and PEMAX, while the functional capacity was performed by THE SIX MINUTE WALKING TEST. Student‘s t-test was used for normality analysis, T-test for independent samples for the comparison between the groups and Pearson‘s correlation coefficient for the correlations.. RESULTS: The sample consisted of 16 individuals with a diagnosis of Multiple Sclerosis, with the relapsing remitting multiple sclerosis mean age of 44 (± 10.9) years, of which 10 were mild EDSS (colocar por extenso) AND 6 MODERATE edss, AND 61.5% were female. The mean of time of diagnosis was 11.2 (± 5.8) years; The following values were find in the evaluated population: mean MIP of 65.4 (± 25.5) cmH2O 65.8 (± 27.5)PERCENTEGE OF PREDICTED, MEP with a mean of 73.1 ± 28.9) cmH2O of 72 (± 27.6) PERCENTEGE OF PREDICTED, distance walked at 6MWT 452 (± 101) m, 78.9 (16.5) PERCENTEGE OF PREDICTED. When comparing the variables between the mild and moderate levels of EDSS, we found PERCENTAGE of predicted MIP of 74.9% in the mild group and 50.8% in the moderate group; PERCENTAGE of predicted distance from 6MWT of 82.3% in the mild group, and 73.4% in the moderate group. The statistically significant difference was found only in the PERCENTAGE OF predicted OF MEP ($p = 0.04$), with 5 of the MILD EDSS level of 82.7% and moderate with 54.1%. In the correlations, we COULD find moderate correlation between EDSS and Distance of the 6MWT ($r = -0.515$, $p = 0.04$), between PImax and PEmax ($r = 0.538$, $p = 0.03$). CONCLUSION Patients with multiple sclerosis present the loss of respiratory muscle strength, Expiratory muscle strength was adequate only in mild EDSS patients, evidencing an important respiratory muscle weakness in the other evaluations. The SIX MINUTE ALKING TEST WAS a negative correlation with the EDSS, showing that the lower the dysfunction, the better the functional performance of the walk in submaximal conditions.

Poster: 71 (85142)

Title: CORRELATION BETWEEN BALANCE AND WALKING CAPACITY IN PATIENTS WITH MULTIPLE SCLEROSIS

Authors: Vanessa Tizziani; Heloísa Ribeiro;

Institution: UNIFIL

Abstract: Introduction: Multiple sclerosis is an autoimmune, inflammatory and demyelinating disease that affects the central nervous system, causing disability and changes in the patient's quality of life. One of the symptoms mentioned is altered balance and walking ability, which may or may not occur early in the disease, even in poorly compromised patients. OBJECTIVE: to identify THE POSSIBLE correlation between balance and walking ability in patients with multiple sclerosis. METHODS: It was a cross-sectional study in individuals with multiple sclerosis from the ALPEM (Associação londrinese de Esclerose Múltipla). The walk analysis was PERFOMED by the six-minute walking TEST and multiple sclerosis walking scale, while BALANCE by the TUG (timed get up and go test) and Timed 25-foot walk tests. Student's t-test was used for normality analysis, T-test for independent samples and Mann Whitney test for comparison between groups, Spearman's correlation coefficient for the correlations. Results: The sample consisted of 16 individuals with a diagnosis of Multiple Sclerosis, with the relapsing remitting multiple sclerosis mean age of 44 (± 10.9) years, of which 10 were mild Expanded Disability Status Scale (EDSS) and 6 MODERATE edss, AND 61.5% were female. The mean of time of diagnosis was 11.2 (± 5.8) years; The following means and medians were found in the evaluated population: time up and go of 9.17 (6.29 - 10.21) seconds, T25 of 6.87 (6.03 - 9.07) seconds, multiple sclerosis walking scale 12 score of 35 (± 23), Distance walked on the six minute walking test was 444 (± 100) meters, 76 (± 15) percentage of predicted. In the comparison between groups by The Expanded Disability Status Scale mild and moderate, no statistically significant difference was found. In the correlations, a strong negative correlation was find between time up and go and distance from the 6 ($r = -0.829$, $p < 0.0001$), and moderate between the time up and go and predicted percentage of the 6MWT ($r = -0.765$, $p = 0.001$), TUG ($r = -0.612$, $p = 0.0001$), and the mean of the 6-month follow-up ($r = -0.612$, $p = 0.06$), and sclerosis multiple walking scale 12 ($R = 0.670$, $p = 0.02$), distance from the 6MWT and MSWS-12 ($r = -0.629$, $p = 0.03$), EDSS and distance from the 6MWT 0,485, $p = 0,05$). Conclusion: It follows that people with Multiple Sclerosis walked a short distance when compared to the predicted for the healthy population and that the higher the staging greater functional impairment of exercise capacity, although the group with mild EDSS presenting better results on objective walking (6MWT) compared to the other group, no statistical difference was found in the evaluations. There was a strong negative correlation between TUG and distance walked by the 6MWT, suggesting that the balance deficit influences walking. It was possible to observe that balance in general can interfere with the walking itself or in its perception, even the MSWS-12 questionnaire does not correlate strongly with the 6MWT.

Poster: 72 (85143)

Title: CORRELATION BETWEEN DYNAMIC BALANCE AND RESPIRATORY MUSCLE STRENGTH IN PEOPLE WITH MULTIPLE SCLEROSIS

Authors: Heloisa Galdino Gumieiro Ribeiro; Heloisa Galdino Gumieiro Ribeiro; Vinicius Aparecido Yoshio Ossada; Viviane de Souza Pinho Costa; Michelle Moreira Abujamra Fillis;

Institution: UNIFIL

Abstract: Introduction: It is known that multiple sclerosis is a demyelinating disease, which generates several differences and can directly affect motor control and balance. Such changes may manifest as a muscle activity relevant to the activities of daily living, those that become a little more effort. It is known that the response to maintaining balance depends on some factors, such as the trunk musculature. Objective: To evaluate and correlate aspects of respiratory muscle strength and dynamic balance, trying to understand if there is a relationship between these variables. Methodology: Evaluated people with multiple sclerosis participating in the Londrina's Multiple Sclerosis Association between 2018 and 2019. Research participants could not be less than 18 years old, had multiple sclerosis diagnosed within 6 months and able to carry out all the proposed evaluations. Manovacuometry was used to analyze respiratory muscle strength, and the variables analyzed were: Maximum Inspiratory Pressure (PImax), Percent Inspiratory Pressure Prediction (% PImax), Maximum Expiratory Pressure (PEmax) and Expiratory Pressure Prediction Percentage (% PEmax). The dynamic balance was evaluated by Time Up and Go (TUG) and Timed 25-Foot Walk (T25). An Expanded Disability Status Scale (EDSS) was used for the comparisons between the EDSS and moderate EDSS groups. Student's t-test was used for the analysis of normality; Mann Whitney test for comparison between groups, Spearman's correlation coefficient for the correlations. RESULTS: Twenty-three patients with sclerosis were evaluated, of whom 9 were men, with a mean height of 1.66 (± 0.09) meters, weight of 74.6 (± 19.2) kilograms, mean diagnosis time of 9.9 ± 5.5), with fifteen people with mild EDSS and eight with moderate EDSS. In the comparisons of the groups with mild and moderate EDSS, there was a significant difference in TUG (p=0,01), T25 (p=0,02), PImax (p=0,003), %PImax (p=0,005), PEmax (p=0,004) and %PEmax (p=0,003). It was possible to find a strong correlation between TUG and T25 (r = 0.936, p <0.0001), followed by moderate correlations between EDSS and TUG (r=0,567, P=0,006), EDSS and T25 (r=0,546, p=0,009), EDSS and PImax (r= -0,504, p=0,01), EDSS and %PImax (r= -0,475, p=0,02), EDSS and PEmax (r= -0,484, p=0,01), EDSS and %PEmax (r= -0,524, p= 0,01), TUG and PImax (r= -0,548, p=0,008), TUG and %PImax (r= -0,497, p=0,01), TUG and PEmax (r= -0,465, p=0,02), T25 and PImax (r= -0,455, p=0,03). Conclusion: Respiratory muscle strength and dynamic balance are influenced by the EDSS, with the level slightly less changes. It is suggested that the respiratory musculature of people with multiple sclerosis is a possible participant in the equilibrium conditions, since it acts on trunk control during orthostatism and gait.

Poster: 73 (85144)

Title: CORRELATION BETWEEN SLEEP AND QUALITY OF LIFE IN PATIENTS WITH MULTIPLE SCLEROSIS

Authors: Renan Augusto Rodrigues; Renan Augusto Rodrigues; Heloísa Galdino Gumieiro Ribeiro; Michelle Moreira Abujamra Fillis; Viviane de Souza Pinho Costa; Aline Silva de Almeida;

Institution: UNIFIL

Abstract: Introduction: Multiple Sclerosis is an autoimmune, inflammatory, demyelinating and chronic disease, most common in young people, with an unpredictable, complex and heterogeneous evolution due to the involvement of several pathophysiological processes. Among those who may be affected with patients, sleep disorders are always more frequent, compromising the quality of their life. Objective: the objective was to evaluate a quality of sleep and be possible with quality of life in people with multiple sclerosis. Methods: this is a cross-sectional study composed of 21 individuals with medical diagnosis of multiple sclerosis. Patients were assessed through sociodemographic questionnaires, disease staging, sleep quality and quality of life by the following instruments: Expanded Disability Status Scale, Pittsburgh Sleep Quality Index AND Multiple Sclerosis Impact Scale (MSIS-29). Results: a total of 21 patients with a diagnosis of Multiple Sclerosis were analyzed: 11 women (52.4%), 17 (81%) with relapsing remitting multiple sclerosis, 81% used immunomodulatory/ immunosuppressive medication, and 52.4% retirees due to Multiple Sclerosis. Of these 38.1% performed physiotherapy treatment and 47.6% had regular physical activity. Mean age was 39.95 ± 12.12 years, diagnosis time was 8 ± 5.31 years. The mean of the Expanded Disability Status Scale was 3.17 ± 1.19, the median of the Pittsburgh Sleep Quality Index was 8 (1° Q = 3.0 and 2° Q= 11, other 6 (28, 9%) presented a bad sleep quality and 6 (28.6%) disturbing sleep. the median of MSIS-29 scale was 56 (1° Q=40 and 2° Q=84,50). There was a positive and moderate correlation between the Pittsburgh Sleep Quality Index and MSIS-29, r= 0,541, p value= 0,11 Conclusion: sleep disturbances are more common in multiple sclerosis patients than in the general population and limit these patients‘ quality of life.

Poster: 74 (85145)

Title: QUALITY OF LIFE AND PAIN IN MULTIPLE SCLEROSIS

Authors: Renan Augusto Rodrigues; Renan Augusto Rodrigues; Heloísa Galdino Gumieiro Ribeiro; Vinicius Aparecido Yoshio Ossada; Michelle Moreira Abujamra Fillis; Beatriz Yukari Yokoyama;

Institution: UNIFIL

Abstract: Introduction: Multiple Sclerosis is a chronic neurological inflammatory idiopathic disease that affects the central nervous system, with involvement in young adults, which influences the quality of life of people by the physical, psychological and social. Objective (s): to evaluate the quality of life in people with Multiple Sclerosis. Methods: this is a cross-sectional study, developed with 21 individuals with diagnosis of Multiple Sclerosis, from Associação Londrinense dos Portadores de Esclerose Múltipla, which evaluated the staging of the pathology through the Expanded Scale of the Disability State and life capacity assessment instruments, the Functional Determination of Quality of Life , the Impact Scale Multiple Sclerosis and pain by visual analog Scale and DN4 pain. Results: a total of 21 patients with a diagnosis of Multiple Sclerosis were analyzed: 11 women (52,4%), 17 (81%) with relapsing remitting multiple sclerosis, 81% used immunomodulatory / immunosuppressive medication, and 52,4% retirees due to Multiple Sclerosis. Of these, 38,1% performed physiotherapy treatment and 47,6% had regular physical activity. Mean age was 39,95 (± 12.12) years, diagnosis time was 8 (± 5.31) years. The mean Expanded Scale of the Disability State was 3.17 ± 1.19, these 42.9% are considered mild (0-3), 52.4% moderate (3.5-5.5) and severe (over 6). Impact Scale Multiple Sclerosis was 62.76 ± 24.47 and EVA was 2.26 ± 1.33 and DN4 .14.3% reported nociceptive pain and neuropathic pain 28.6%. there was association between EDSS and MSIS-29, p <0.001. The EDSS was dichotomized into mild (<3.5) or moderate/severe (>3.5). The mild Expanded Scale of the Disability State group, mean Impact Scale Multiple Sclerosis WAS 53,89±20,60 and the moderate and severe Expanded Scale of the Disability State group of 69,42±25,83 P=0,281. There was a correlation between quality of life and pain R= 0.467 p= 0.025 and between EVA and DN4 R= 0.523 p= 0.015. Conclusion: patients with greater severity of the disease have a greater impact on quality of life. Patients with pain, worse quality of life.

Poster: 75 (85148)

Title: PHYSIOTHERAPY ASSOCIATED WITH THE SHIATSU IN MULTIPLE SCLEROSIS - PILOT STUDY

Authors: Renan Augusto Rodrigues; Renan Augusto Rodrigues; Michelle Moreira Abujamra Fillis; Beatriz Yukari Yokoyama; Roseli Nicio; Roberto Toshio Nicio;

Institution: UNIFIL

Abstract: Introduction: Multiple Sclerosis is a chronic neurological inflammatory idiopathic disease that affects the central nervous system, with involvement in young adults, which influences the quality of life of people by the physical, psychological and social. Shiatsu is a traditional Chinese medicine technique whose focus on the recovery and maintenance of the quality of life of the people, because the concepts of health and disease constitute processes known as continuum, which are related to aspects economic, social and cultural, as well as being linked to personal experience and the style of life of each individual. Objectives: the objective of this study was to evaluate the effect of physical therapy associated with the Shiatsu on pain and fatigue in people with multiple sclerosis – pilot project. Methods: case study-pilot, with a patient diagnosed with multiple sclerosis, EDSS 3 female, 54 years, evaluated for pain questionnaire DN4, EVA and MFIS subject to 8 sessions associated with the Shiatsu with an average duration of 60 minutes. Results: initially the patient presented neuropathic pain (DN4 = 4), complaining of fatigue (MFIS = 73) and after the end of the intervention, no complaint of pain (DN4 = 0) and complaints of fatigue improved (MFIS = 61), and from the third session the patient did not present more pain, maintaining to the end of the 8 sessions of pain (DN4 = 0). Regarding the complaint of the patient before and after each 60-minute session, there was no difference between complaining of fatigue before the start of the mean session = 5.00 ± 2.67 and the average final = 1.38 ± 1.84, p = 0.001 valued. Conclusion: concluded within this pilot project, the Shiatsu combined with physiotherapy, showed a certain potential for treatment of patients with MS, when related to pain and fatigue. So, all these processes, from planning to analysis of pilot data, added in order to contribute to the final data collection to occur properly.

Poster: 76 (85150)

Title: INFLUENCE OF CEREBELLAR FUNCTION ON NEUROMOTOR TESTS IN PATIENTS WITH MULTIPLE SCLEROSIS

Authors: João Marcos Brandet; Heloísa Galdino Gumieiro Ribeiro; Vinícius Aparecido Yoshio Ossada; Michelle Moreira Abujamra Fillis; Viviane de Souza Pinho Costa;

Institution: UNIFIL

Abstract: Introduction: The presence of demyelination plaques in various parts of the central nervous system and formation of glial scars are characteristic of the pathophysiology of multiple sclerosis (MS). The cerebellum is a prevalent site of MS disease pathology and there is considerable evidence of cerebellar involvement in MS based on clinical, histopathological as well as structural and functional magnetic resonance imaging (MRI) studies. Furthermore, cerebellar manifestations in MS are predictors of progression and disability. Objective: To identify the possible correlations between the disability of the multiple sclerosis patient with the balance and functional capacity. Method: Cross-sectional study with intentional sampling consisting of 21 patients with multiple sclerosis of ALPEM (Associação Londrinense de Portadores de Esclerose Múltipla). Patients were assessed by: expanded disability status scale (EDSS), Timed Up and Go (TUG), Timed 25-Foot Walk (T25-FW), 6-minute walk test (6MWT) and Romberg's test. The Shapiro-Wilk multivariate normality test was used to describe measures of central tendency and dispersion, using means and standard deviation for normal and median data, minimum and maximum for non-normal data. The Spearman correlation was used for the analysis of the non-parametric variables and the Pearson correlation for the parametric variables. Results: 71% of the patients had alterations in the cerebellar functions and all the patients with these dysfunctions in the cerebellum showed more significant alterations in the neurological tests when compared with the patients without cerebellar disorders. Patients with cerebellar dysfunctions demonstrated a significantly slower Timed Up and Go Test (TUG), decreased quantitative mobility and leg function performance in the Timed 25-Foot Walk (T25-FW), reduced walking ability and balance in the 6-minute walk test (6MWT) and Romberg's test compared to patients with preserved functions. Strong-modest significant correlation scores were found between the cerebellar dysfunction and neuromotor tests. Conclusion: These results suggest that balance control is reduced and is associated with total EDSS scores in people with MS with moderate disability. Cerebellar dysfunction was identified as the EDSS domain most strongly associated with increased sway, and sensory loss was associated with a relatively greater dependence on vision for balance control.

Poster: 77 (85152)

Title: CORRELATION BETWEEN THE WALK AND THE FATIGUE IN PEOPLE WITH MULTIPLE SCLEROSIS

Authors: Christian Hiroshi Omai; Christian Hiroshi Omai; Heloísa Galdino Gumieiro Ribeiro; Ana Caroline Mamedio do Nascimento; Michelle Moreira Abujamra Fillis; Vinícius Aparecido Yoshio Ossada; Viviane de Souza Pinho Costa;

Institution: UNOPAR

Abstract: Introduction : Multiple sclerosis is a disease that affects the central nervous system, being characterized by degeneration of the myelin sheath; essential protein in nerve impulse transmission, this process can be present both in brain areas, as in spinal cord; considered an inflammatory disease and possibly autoimmune. Often the neurological deficits are multiples so that the game of signs and symptoms can be endless. The studies, fatigue is very evident in people with multiple sclerosis and that there may be differences in surveys conducted before the subjective test. Objective: To correlate the modified scale of fatigue impact with the 12 questionnaires of the multiple sclerosis walking scale and 6-minute walk test. Methodology: Cross-sectional study, conducted with participants in the Associação Londrinense de Portadores de Esclerose Múltipla (ALPEM). Sixteen patients with multiple sclerosis participated in the study, who answered the 12 multiple sclerosis (MSWS-12); modified fatigue impact scale (MFIS) questionnaires and underwent the 6-minute walk test (6MWT).Results: the volunteers were divided into 2 groups according to the expanded Disability Status Scale (EDSS): as mild with 10 participants and moderate type containing 6 participants. Among these groups are women and 10 06 men aged 45 media (± 8.4) years; height of 1.70 (± 0.06) metres; 81.6 weight (± 19.7) kg; the time of diagnosis with 10.2 (5.7 ±) years; and the type of disease classified into Remitting recurring. The Mann Whitney test was used for a comparison between the groups and the Spearman correlation coefficient for the correlations. The MSWS-12 score of 25.3 (± 30.8), total MFIS score of 34.4 (± 30), non-TC6 run of 460.4 (± 99.3) meters, as a percentage of predicted TC6 of 80 (± 16.9)%. Comparisons between EDSS groups are moderate, and are among the fatigue-free and non-fatiguing groups ($p = 0.4$), which were not statistically significant in the 6MWT variables ($p = 0.2$) and MSWS-12 ($p = 0.2$). As correlations are moderate, presenting between MSWS-12 and MSC-6 ($r = 0.629$, $p = 0.03$), MSWS-12 and psychological MFIS ($r = 0.629$, $p = 0.03$). Conclusion: it was noted that the EDSS is not limiting for the ability to walk and not homogeneous with respect to fatigue. The same can be said for the comparison of the perception of walking and results of 6mwt, which showed no difference between the groups with and without fatigue. It is suggested that the subjective evaluation of the perception of walking and fatigue of this population does not reflect the results obtained in the evaluation of performance of submaximal.

Poster: 78 (85153)

Title: CORRELATION BETWEEN FUNCTIONAL ASSESSMENT OF POSTURAL BALANCE AND QUALITY OF LIFE IN PEOPLE WITH MULTIPLE SCLEROSIS

Authors: Christian Hiroshi Omai; Christian Hiroshi Omai; Heloísa Galdino Gumieiro Ribeiro; Ana Caroline Mamedio do Nascimento; Michelle Moreira Abujamra Fillis; Vinícius Aparecido Yoshio Ossada; Viviane de Souza Pinho Costa;

Institution: UNOPAR

Abstract: Introduction: multiple sclerosis is a disease that affects the central nervous system, being characterized by degeneration of the myelin sheath; essential protein in nerve impulse transmission, this process can be present both in brain areas, such as the spinal cord; considered an inflammatory disease and possibly autoimmune. Often the neurological deficits are multiples so that the range of signs and symptoms can be endless. Motor symptoms, the change of balance presents steadily, reflecting negatively on the quality of life of people with multiple sclerosis. Objective: to correlate the functional evaluation of quality of life and the postural balance in people with multiple sclerosis. Methodology: Cross-sectional study, conducted with participants in the Associação Londrinense de Portadores de Esclerose Múltipla (ALPEM). The participants were submitted to the questionnaire of the multiple sclerosis impact Scale (MSIS) and the tests of postural balance and mobility Team Up and Go (TUG) and 25 Foot Walk Test (T-25). Results: 22 people were evaluated of which 59% women and 41% men, these were divided into two groups; Classifieds in expanded Disability Status Scale (EDSS) as mild, containing 14 participants and moderate EDSS containing 08 participants. The average age of this population was 43 (± 10.7) years, with a height of 1.66 (± 0.09) m; 74.6 weight (± 19.2) kg; time of diagnosis of 9.9 (± 5.5) years, and the classification of the M.S. in Remitting recurring. The Mann Whitney test was used for comparison between the groups and the Spearman correlation coefficient for correlations. Found the following averages and medians in the population evaluated: median TUG of 7.34 (6.0 -9.7) seconds; T-25 with 6.21 (5.5-8.56) seconds, physical 41 MSIS score (23-66), psychological MSIS score 22.89 (± 10.10) and total 69.11 MSIS (± 29.11). In the analysis of the comparisons were found significant differences between the groups of EDSS and TUG ($p = 0.01$) and EDSS and T25 ($p = 0.02$). Evaluating the correlations, there was a strong correlation between TUG and T25 ($r = p, 0.936 < 0.0001$), moderate correlation between EDSS and TUG ($r = 0.567$, $p = 0.006$), EDSS and T25 ($r = 0.546$, $p = 0.009$), TUG and physical MSIS ($r = 0.520$, $p = 0.01$), T25 and physical ($r = 0.436$ MSIS , $p = 0.04$), TUG and MSIS ($r = 0.474$, $p = 0.02$). Conclusion: The postural balance and mobility tests were similar in your proposal evaluation. It was noted that the worse the EDSS worse the postural balance and mobility. It is suggested so that changes of postural balance and mobility may influence the functional evaluation for physical multiple sclerosis Impact scale (MSIS).

Poster: 79 (85158)

Title: THE INFLUENCE OF AGE ON THE FATIGUE OF PATIENTS WITH MULTIPLE SCLEROSIS UNDERGOING PHYSICALTHERAPY

Authors: Juliana Aparecida Rhein Telles; Juliana Aparecida Rhein Telles; Thiago Henrique Silva; Alice Estevan Dias;

Institution: USP

Abstract: Introduction: Multiple sclerosis (MS) can occur at any age, but most commonly affects people between the ages of 20 and 40. Usually, 70% of the diagnoses are made in this age group. The fatigue presented in MS can manifest at any moment and can be present in all the evolutionary forms of the disease, which induce to a great impact on the activities of daily living. Objectives: To evaluate the influence of age on the fatigue of patients submitted to physical therapy. Method: A prospective cross-sectional study, conducted over four months, totaling 16 sessions of physical therapy, in the Brazilian Multiple Sclerosis Association. The scores of the Modified Fatigue Impact Scale (MFIS) were extracted. Spearman correlation analysis was performed to verify the degree of relationship between age and the variables of therapeutic outcomes. Results: A total of 22 patients was evaluated, which 18 were females (81.8%) and 4 were males (18,2%). In general, the relationships studied were statistically non-significant. The relationship between age and the psychosocial domain has a correlation coefficient equal to -0.624 and significance of 0.002, it is possible to conclude that the higher of age values is related to the lower values of clinical improvement in the psychosocial domain, and the smaller age values is related with the higher the values of clinical improvement in the psychosocial domain. Conclusion: Age has an influence on the fatigue improvement of MS patients after physiotherapy considering psychosocial aspects, and younger individuals have more significant gains.

Poster: 80 (85177)

Title: FREQUENCY OF SPEECH-LANGUAGE COMPLAINTS IN PATIENTS WITH MULTIPLE SCLEROSIS

Authors: Bianca Etelvina Santos De Oliveira; Gabriela Beatriz Andrade Silva Ximenes; Beatriz Do Nascimento Luna Barbosa; Luciana Souza Dos Santos; Lindinalva Ferreira Souza; Tania Maria Guimaraes De Lima Albuquerque; Fernando De Paiva Melo Neto; Davi Veloso Guerra; Hedenia Teotonio De Farias; Adriana Conceição Silva;

Institution: FUNAD

Abstract: Introduction: Multiple sclerosis is a demyelinating and inflammatory disease that affects the central nervous system in order to result in several neurological and consequently speech-language pathological signs and symptoms. Objective: The purpose of this study was to verify the frequency of complaints related to speech - language pathologies such as swallowing, speech, language, voice and hearing in patients with multiple sclerosis that was attended in the Multiple Sclerosis Reference Center of Paraiba (CREMPB). Method: A cross-sectional study was performed through the randomized analysis of 50 medical records with multiple sclerosis who were attended at the service between February / 2019 and May / 2019. The records of medical evolution were analyzed, where complaints related to speech articulation, mastigatory efficiency, and difficulty in swallowing liquids, pasty or solids, frequent gagging, ability to formulate speech, unilateral and bilateral auditory function, and vocal quality aspects. Patients who reported such complaints were referred to the speech and language pathology evaluation, complementary exams and speech therapy, if necessary. Results: On the amount of cases, were found 34 (68%) women and 16 (32%) men, aged between 21 and 78 years, mean age 49 years. The Expanded Disability Status Scale (EDSS) ranged from zero to 7.5, with an average of 3.5. Furthermore, were found that 32% of the patients in the sample presented some speech-language complaints. In the anamnesis, 12% (06 patients) of the participants reported some complaint related to speech articulation (indicating dysarthria), 10% (05 patients) reported complaints of chewing, being the bite of the innermost mouth. 10% (05 patients) reported swallowing complaints for at least one mentioned consistency, (suggesting dysphasia) 6% (03 patients) with difficulty in formulating speech (aspects of cognitive alteration, pointing to language disorder), 4% with unilateral or bilateral hearing loss, and 2% (01 patient) reported problems with vocal aspects, with hoarseness being their complaint. Conclusion: The presence of complaints in patients with Multiple Sclerosis points out the need of the professional Speech Therapist as a member of the team that evaluates points out diagnosis and rehabilitates this population, aiming to provide a better quality of life to them.

Poster: 81 (85178)

Title: PERCEPTION ON PHYSICAL AND MENTAL HEALTH THROUGH THE QUESTIONNAIRE MSQOL-54 IN PATIENT WITH MULTIPLE SCLEROSIS

Authors: ALICE ESTEVO DIAS; Alice Estevo Dias; Beatriz Maciel Sodré; Jislaine Oliveira da Silva;

Institution: ABEM

Abstract: Introduction: Multiple Sclerosis (MS) is a chronic autoimmune disease that affects the central nervous system and affects the young adult, causing destruction of the myelin, leading to the appearance of several physical and mental symptoms, causing difficulties that interfere with quality of life of the patient. Objective: To analyze the perception of the quality of life of people with MS on mental and physical health, according to data obtained through the application of the MSQOL-54 questionnaire. Method: The survey took place from January to December, 2018, during the Reception (time of arrival at the Institution) in Civil Social Organization in Sao Paulo, Brazil, in which MS patients answered the MSQOL-54 Questionnaire and signed the Free and Informed Consent Form. Results: 71 patients, aged between 14 and 61 years, 64% female and 34% male, with recurrent relapsing MS 23%, primary progressive 1%, progressive secondary 3% and 73% did not know how to report , because it was not discriminated in the medical report. The same pattern of ignorance related to the disease occurred in the EDSS, whose results indicated that 68% of the patients did not know to inform, being discriminated in the medical report, 30% had EDSS between 0 and 4, 1% between 4.5 and 6, 5, 3% between 7 and 9. Regarding the data obtained from the MSQOL-54 Questionnaire, in what concerns physical health, 45% of patients were below average, 23% on average and 32% above average. In relation to mental health, 35% were below average, 28% on average and 37% above average. It is worth mentioning that above-average data correspond to a better quality of life in physical and mental health. Conclusion: In general, the patients presented an alarming concentration of below average physical and mental health quality of life. This suggests the need for rehabilitation programs that involve several health professionals, both physically and mentally, in order to provide treatment for the various symptoms resulting from MS that hinder the quality of life.

Poster: 82 (85179)

Title: SPEECH THERAPY IN PATIENTS WITH MULTIPLE SCLEROSIS: CASE REPORT

Authors: Bianca Etelvina Santos De Oliveira; Gabriela Beatriz Andrade Silva Ximenes,; Beatriz Luna Barbosa; Lindinalva Ferreira De Souza; Luciana Souza Dos Santos,; Tania Maria Guimaraes De Lima Albuquerque; Davi Veloso Guerra; Adriana Conceição Silva,; Fernando De Paiva Melo Neto; Thaís Teixeira De Vasconcelos Araújo;

Institution: FUNAD

Abstract: Case Presentation: 49 years old, female, dark-skinned, married, retired, with relapsing Multiple Sclerosis (MS), diagnosed about six years ago, current EDSS of 6.0. Had a severe relapse on November of 2017, when the patient presented speech complaints. The patient underwent weekly speech therapy for a period of one year, in that time her initial complaints were related to the difficulty of swallowing with choking for liquid consistency and speech difficulties. At the initial clinical examination, there were noisy signs of fluid swallowing in cervical auscultation, oral and facial muscles effort at swallowing, multiple chokes, right unilateral chewing, and cracking in the right oral joint. To the objective evaluation of the speech, it presented slowness and inaccuracy speech, slight fatigue during discourse and light caught joint. Defining, as a diagnostic hypothesis, speech, Myofunctional Oral, facial and Cervical Disorders, characterized by Dysphagia and Dysarthria. During the therapeutic process, there was an indication of the use of thickener in liquid foods, associated to mobility exercises and tonicity in oral and facial musculature, orientations about alimentary volume, posture during meals, among others. After one year of follow-up, he was discharged with speech-language pathology without complaints of gagging, suspension of thickener use, unrestricted feeding, and efficient chewing alternately and bilaterally. she is going through follow-up and guidance regarding the appearance of new symptoms. Discussion: The case reported and the publications raised bring to light the discussion of the necessary therapy in the process of rehabilitation of the person with multiple sclerosis, under the vision of a complex situation that is the disease in question. It is noticed that speech therapy in cases in which patients present with dysphagia and dysarthria as a consequence of MS, is able to obtain satisfactory and long-lasting results regarding symptomatic relief and improvement of the quality of life. Final comments: This case and the literature shows that multidisciplinary programs are important and have good answers in the treatment and rehabilitation of MS patients. we hope to invest in expanding towards more multidisciplinary and longitudinal data collection.

Poster: 83 (85217)

Title: FUNCTIONAL EVALUATION OF QUALITY OF LIFE AND WALKING

Authors: Karina Perez Porto ; Karina Perez Porto; Heloísa Galdino Gumiero Ribeiro; Michelle Moreira Abujamra Fillis; Vinicius Aparecido Yoshio Ossada Ossada; Viviane Souza Pinho;

Institution: UNIFIL

Abstract: Introduction:Multiple sclerosis is an autoimmune disease, demyelinating and progressive, which affects the central nervous system, often causing major changes in the quality of life,such as muscle weaknes,fatigue, spasticity,sensory deficit and balance that are usually altered,gait ends up being impaired as well.Objective:To analyze the impact of the disease on functionality,quality of life and walking, to analyze the correlation of the impact of multiple sclerosis on daily life activities,aerobic capacity and degree of independence.Methods:The study has a transversal character,in which people with MS from the London Association of Multiple Sclerosis Patients were evaluated.These were questionnaires applied in 16 patients with a mild EDSS group containing 10 people and another moderate group:containing 6,type of sclerosis:recurrent sender.The analysis of normality was done through the Shapiro-Wilk test.The groups were compared using the Student's T test or the Mann Whitney test.The Spearman/Pearson correlation coefficients were used for correlation analysis.Results:16 patients with MS,37.5%,aged 45(±8.4)years,a diagnosis time of 10.2(±5.7)years,were evaluated.The results were:Multiple Sclerosis Walking Scale of 25.3(±30.8);Multiple Sclerosis Impact Scale total of 61(33-103);Multiple Sclerosis Impact Scale physical appearance of 46(±22);Multiple Sclerosis Walking Scale psychological aspect of 14(12-37);distance traveled in the 6MWT of 460.4(±99.3)meters;percentage of predicted walking test of 6mim 80(±16.9)%.There was no significant difference between the mild and moderate EDSS group in the 6-min walk test comparisons,both in distance(p=0.2)and predicted percentage(p=0.5),Multiple Sclerosis Walking Scale(p=0.2)and Multiple Sclerosis Impact Scale(p=0.8)and its physical(p=0.6)and psychological aspects(p=8).There were strong correlations between Multiple Sclerosis Walking Scale and Multiple Sclerosis Walking Scale(r=0.8,p=0.003),Multiple Sclerosis Walking Scale,and physical appearance of Multiple Sclerosis Impact Scale(r=8.46;p=0.001)and moderate negative correlations between EDSS and 6min walk test(r=-0.515,p=0.04),Multiple Sclerosis Walking Scale and 6min walk test(r=-0.630; p=0.03), Multiple Sclerosis Walking Scale and predicted percentage of the 6min walk test(r=-0.606; p=0.04).Conclusion:There was no difference between the mild and moderate EDSS group in the objective assessment of the gait by the 6-min walking test,walking perception by the Multiple Sclerosis Walking Scale and functional evaluation of the quality of life,independent of the individual analysis of the aspects that comprise it.Correlations suggest that gait perception is more sensitive to the functional assessment of quality of life.When analyzing the actual walking,it can be indicated that those that present more walk limitation by the Multiple Sclerosis Walking Scale are those that present worse performance in the walk test of 6min.

Poster: 84 (85220)

Title: OBJECTIVE ASSESSMENT OF DYSPHAGIA IN MULTIPLE SCLEROSIS

Authors: Margarete de Jesus Carvalho; Roberta Ismael Dias Garcia; Beatriz Villano Krentz; Mauricio Terci de Abreu; Luiz Felipe Lopes Honorato; Mayra Taú Martinez; Priscila Bogar; Alice Estevo Dias; Margarete de Jesus Carvalho;

Institution: FMABC

Abstract: Introduction: Dysphagia is a disorder of sensorimotor functions of swallowing capable of causing health problems and decreased quality of life. Multiple Sclerosis (MS) is a demyelinating disease that can promote dysphagia varying degrees. Objective: To evaluate swallowing of patients with MS through videolaryngoscopic swallowing examination (VSE) demonstrating the importance of examination for early diagnosis of dysphagia in asymptomatic patients. Method: Twenty patients with diagnosis of MS were evaluated through VSE. Structural evaluation of pharynx and larynx was performed. Swallowing was assessed by functional examination with administration of foods stained with blue dye for contrast. Consistencies offered were pasty, thickened liquid, fine liquid and solid. Mode of presentation of food was in 5 ml spoon or free glasses. Parameters evaluated were: oral control, reflex of pharyngeal phase of deglutition, presence of residuals after spontaneous swallowing, laryngeal penetration and laryngotracheal aspiration. Results: 20 patients were evaluated, 2 males, 18 females. 19 patients had complete velopharyngeal mechanism. All patients showed preserved laryngeal sensitivity. 11 showed no alterations in laryngeal region and 8 hyperemia of arytenoid or interarithenoid region, 1 salivary stasis, 1 pachydermia and 1 subglottic stenosis. 12 patients did not show any alteration, being classified as patients with functionals swallowing; 4 patients mild dysphagia, 4 patients having severe dysphagia. Conclusion: VSE was important in detecting early changes in swallowing, especially in asymptomatic patients with low neurological impairment, which may impact not only on morbidity and mortality reduction, but also increase quality of life of patients with MS.

Poster: 85 (85221)

Title: VISUAL REHABILITATION IN MULTIPLE SCLEROSIS

Authors: Marcia Cristina Baptista Dias ; Marcia Cristina Baptista Dias; Alice Estevo Dias;

Institution: ABEM

Abstract: Introduction: Imbalance is among the most debilitating symptoms in Multiple Sclerosis (MS), causing falls and reflecting, to a large extent, the dysfunctional integration of visual sensory signals. Objective: This preliminary study aimed to show the effects of visual rehabilitation on balance in a small group of people with MS. Method: Three people with MS presented signs and symptoms of body imbalance. All were evaluated before and after visual rehabilitation by specialized optometrist, from ocular motility, cover test and stereoscopy, as well as chromatic and pupil analysis. Rehabilitation consisted of 7 sessions involving balance exercises associated with vision. Results: In the initial evaluations, participants presented the same pattern of body imbalance. After visual rehabilitation, improvements in body posture, static and dynamic balance, and overall physical performance were observed in all participants. Conclusion: The data obtained revealed that visual function contributes positively to the postural control system and suggests that visual rehabilitation may be an advantageous option for the treatment of imbalance in MS, since it involves ocular exercises capable of producing physical and mental stimuli that, as they improve vision, make it possible to decrease the rates of falls and consequent impairment of functional capacity.

Poster: 86 (85242)

Title: PREGNANCY OUTCOMES FROM THE GLOBAL PHARMACOVIGILANCE DATABASE ON INTERFERON BETA-1B EXPOSURE

Authors: Kerstin Hellwig; Fernando Duarte Caron; Eva-Maria Wicklein; Aasia Bhatti; Alessandra Adamo;

Institution: Department of Neurology, St. Joseph and St. Elisabeth Hospital, Ruhr University, Bochum, Germany

Abstract: Introduction: Multiple Sclerosis predominantly affects women of fertile age. Thus information on drug exposure during pregnancy is crucial. Randomized trials are not possible. Therefore pharmacovigilance safety data can provide crucial data sets for decision making around family planning while on treatment. Objectives: To review pregnancy outcomes of patients who are exposed to interferon beta-1b during pregnancy. Method: Pregnancy cases with exposure to interferon beta-1b reported prospectively up to February 2018 were retrieved from Bayer HealthCare's pharmacovigilance database. Congenital malformations were classified according to ICD-10. Pregnancy outcomes were compared with reference rates of abnormal pregnancy outcomes from the general population. Results: As of February 2018, 2581 pregnancies exposed to interferon beta-1b from 2548 individual case safety reports were retrieved. A total of 1348 pregnancies had documented outcomes. The majority of the outcomes were live births (82.0%), 91.3% of which were healthy babies with no congenital anomalies. The rates of congenital malformations (1.4%) and spontaneous abortions (11.9%) were comparable to the estimated rates for the general population worldwide. Conclusions: This is the largest sample of exposure to interferon beta-1b during pregnancy. Pregnancies exposed to interferon beta-1b were not at a higher risk for spontaneous abortion or congenital anomalies when compared with the expected rates in the general population.

Poster: 87 (85246)

Title: STRATEGIES TO MITIGATE FATIGUE IN MULTIPLE SCLEROSIS: A GUIDELINE FOR PATIENTS FOCUSING ON SELF-MANAGEMENT

Authors: Carlos Alberto Artner; Maria Luisa Pereira de Melo; Patrícia Chagas Rocha D'Almeida; Nair Assunta Antônia Corso Câmara; Amene Cidrão Lima; Melyssa Brandão Mota Gonçalves; Carla Welch da Silva; Lucas Silvestre Mendes; Milena Sales Pitombeira; Gabriela Joca Martins; José Artur Costa D'Almeida; Keyla Rejane Frutuoso de Morais;

Institution: HGF

Abstract: Introduction: Fatigue is one of the most common patient's complaints in multiple sclerosis (MS) outpatient clinics. Although it is highly reported, the pathophysiological mechanisms of fatigue are poorly understood, and its most likely a multifactorial condition. As pharmacological therapy usually fails to control the symptoms, the use of non-pharmacological strategies is essential to restore and maintain the quality of life of these patients. One of the main strategies to control fatigue is through the techniques of energy conservation in Daily Life Activities (ADLs) and Instrumental Activities of Daily Living (AIVD's). Objective: to develop a guidance material as a form of intervention to control fatigue through self-management for patients with MS. Method: The elaboration of the booklet "Multiple Sclerosis: Guidelines for Fatigue Control" occurred according to the following steps: bibliographic research, drafting of the script, creation of graphic images, discussion of the material among the multidisciplinary team, revision of the final version. Results: The guideline contains strategies for performing daily tasks, encompassing ADLs and AIVDs, related to breathing control, priority setting, time management, workspace organization, and physical activity practice. A character was designed to demonstrate the instructions presented in order to facilitate understanding, regardless of socio-cultural level or cognitive decline, ensuring that the main message is transmitted. Conclusion: We propose a guidance material for patients as a model of self-education and energy management, involving changes in simple activities that may reduce the impact of fatigue in daily life. Future directions are to apply this material to our MS patients as a printed booklet and/or e-book and measure whether they adhere to the recommendations and how this impacts on their perception of fatigue.

Poster: 88 (85248)

Title: OLFACTORY DYSFUNCTION IN PATIENTS WITH MULTIPLE SCLEROSIS

Authors: Margarete de Jesus Carvalho; Henrique de Moraes Bernal; Alice Estevo Dias; Margarete de Jesus Carvalho;

Institution: FMABC

Abstract: Introduction: Multiple Sclerosis (MS) is a chronic inflammatory disease demyelinating of the Central Nervous System, without any apparent cause. Although underdiagnosed and undervalued, olfactory dysfunction has been documented and described in the disease. Objective: To evaluate the relationship between MS and olfactory function in patients followed at the outpatient clinic of demyelinating diseases. Method: It is a cross-sectional study using data obtained from medical records of patients. The explanatory variables were age, sex, educational level, tobacco use, subjective perception of smell, Mini-Mental State Examination (MMSE), time of disease, drug treatment and Expanded Disability Status Scale (EDSS). The outcome variable for olfaction evaluation was the Sniffin' Sticks odor identification test (SS-16, Burghart Messtechnik GmbH, Wedel, Germany), consisting of 16 numbered pens, and to each tested smell were given four options. Hysposmia was typified when score obtained in SS-16 odor test was less than or equal to 11 points. Results: It was recorded correct responses ranging from 5 to 15 (11.25 ± 2.48) in the SS-16 odor identification. Regarding the complaint of decreased olfactory perception, only 18.75% patients replied positively. However, according to the SS-16 test, 43.75% obtained results compatible with hyposmia. In these patients, SS-16 score ranged from 5 to 11. Comparing results of the SS-16 with the EDSS scale, MMSE and disease time, it was verified that there was no correlation for any of these variables. Positive correlation trend was identified in the comparison between SS-16 and schooling. Conclusion: The results of this study suggest that the duration and incapacities of disease do not interfere with the olfactory function. It is also possible that in MS, the people show hyposmia and higher level of schooling, they are more likely to discriminate and identify odors. Therefore, prospective studies may be important in the analysis of olfactory function in MS patients.

Poster: 89 (85260)

Title: REAL LIFE DECISIONS IN MS – FROM EUTHANASIA TO LIFE… A STORY OUTSIDE THE CLINICAL TRIALS.

Authors: João Marcos Campos Ferreira; Barbara Fernandes Diniz Vianna; Rafael Prudêncio de Lemos; Paola Teixeira Soria; Leonardo Alves Araujo; Luiz Guilherme Diniz; Henrique S. R. Cal; Osvaldo J. M. Nascimento;

Institution: UFF

Abstract: A 49-year-old female, a lawyer, with no prior comorbidities, diagnosed in 1999 with multiple sclerosis in the remitting-recurrent form. She evolved with significant worsening of the strength in upper and lower limbs when, in 2010, it progressed to the secondarily progressive form of the disease. Over the course of 19 years, she has used azathioprine, beta interferon, vitamin D in high doses and Fingolimod. All these medications resulted in therapeutic failure. Patient evolved with plegic lower and left upper limbs, requiring electric wheelchair for locomotion. In February 2018, she presented a new relapse in the right upper limb, becoming tetraplegic, impairing her autonomy and making her daily, work and recreative activities impossible. At this time EDSS was 8. There was no cognitive impairment. She was unresponsive to pulsetherapy with methylprednisolone and severe physical disability. Facing her severe physical disability, she did a dramatic choise: leave Brazil for euthanasia. Treatment with natalizumab was not possible due to high serum JC virus levels. In a decision shared with the patient alemtuzumab was prescribed, although this monoclonal is more adequate in an other scenarios. During alemtuzumab infusion, it presented mild cutaneous rash and tracheobronchitis, being treated properly for both. After infusion of Alemtuzumab, the patient evolved with grade 2 strength in the left upper limb (formerly plegic) and strength 4 in the right upper limb. With EDSS = 7.5, the patient returned to autonomy, independence to handle her wheelchair, returned to work activities and gave up euthanasia. Discussion: This report aims to discuss the individualization of treatment in addition to clinical trials. The patient in question, even with all previous restriction due to the last relapse, had a significant improvement with Alemtuzumab in her right hand, and she was able to manipulate her wheelchair, to turn the pages of her digital book reader, to write and to have sufficient autonomy to act in her profession. Faced with this tragic picture, in which the treatment options were scarce and the patient decided by her death, we chose to use Alemtuzumab, even without formal indication for multiple sclerosis secondarily progressive form. After using the medication and being able to move her right hand again, the patient gave up euthanasia and returned to work. Today, without any compensation, she provides advice to patients in the outpatient clinic of demyelinating diseases who need expensive medications. Final Comments: The description of this case shows a real-life experiences facing problems so dramatic that no clinical trial can predict. Aspects related to quality of life should also be a goal, although they are not always considered as outcomes in clinical trials To this patient, life had gained new meaning by the simply ability to move the right hand again, changing only 0.5 points in the EDSS.

NMO, ADEM and CIS

Poster: 90 (82127)

Title: TOCILIZUMAB VERSUS AZATHIOPRINE IN HIGHLY RELAPSING NEUROMYELITIS OPTICA SPECTRUM DISORDERS (TANGO): A HEAD-TO-HEAD COMPARATIVE STUDY

Authors: FU DONG SHI; Chao Zhang; Meini Zhang; Wei Qiu; Hongshan Ma; Fu-Dong Shi;

Institution: National Clinical Research Center for Neurological Diseases of China, Center for Neuroinflammation, Beijing Tiantan Hospital, Capital Medical University, Beijing, China

Abstract: Background: Tocilizumab, a humanised anti-IL-6R monoclonal antibody, reduced disease progression of neuromyelitis optica spectrum disorders (NMOSD) in previous non-randomised case series studies. We aim to compare the safety and efficacy of tocilizumab and azathioprine in patients with highly relapsing NMOSD. Methods: In the ongoing, investigator-initiated, randomised, open-label, parallel-group study (TANGO), NMOSD patients aged 18-65 years with at least two attacks in the preceding year or three attacks in the previous 2 years were enrolled. Patients were randomly assigned 1:1 to receive 8 mg/kg intravenous tocilizumab monthly or 2-3 mg/kg oral azathioprine daily. Treatment was administered in conjunction with gradual discontinuation of the previous treatments, followed by monotherapy for 12 months. The primary endpoint was set at the first relapse following beginning of study participation. Secondary endpoints were determined through disability measured by expanded disability status scale , visual acuity test, as well as new spinal cord and/or brain lesions measured by MRI. Complete neurological examination was undertaken and adverse events were recorded upon follow-up visits. This trial is registered on ClinicalTrials.gov, number NCT03350633. Findings: Between Oct, 2017 and Aug, 2018, we screened 198 patients and enrolled 118 as potential participants across six centers throughout China. Random assortment of these patients assigned 59 to receive tocilizumab and 59 were assigned to receive azathioprine. After a mean observation period of 48 weeks (in the interim), the proportion of relapse-free was 91.5% in the tocilizumab group and 67.8% in the azathioprine group (hazard ratio [HR]=0.32, 95%CI 0.14-0.70, p=0.004). Sustained reduction in disability was more likely among patients treated with tocilizumab than patients with azathioprine (HR=0.34, 95% CI 0.13-0.90, p=0.03). Serum levels of anti-AQP4-ab were reduced significantly by 42% with tocilizumab compared to 15% with azathioprine (p=0.03). Treatment-associated adverse events were reported in 20 patients (34%) receiving tocilizumab including fatigue, skin rash, leukopenia or elevated liver enzyme. 33 patients (56%) receiving azathioprine presented with leukopenia, liver dysfunction, or upper respiratory tract infection. Three patients receiving azathioprine had severe adverse events that led to withdrawal from study. Interpretation: TANGO interim results show that tocilizumab had a significant risk reduction and a favorable safety profile as compared with azathioprine for highly relapsing NMOSD. It is expected that the final trial outcomes will be announced in September 2019.

Poster: 91 (84051)

Title: ASSOCIATION OF NEUROMYELITIS OPTICA SPECTRUM DISORDERS WITH AUTOANTIBODIES FOR SISTEMIC LUPUS ERYTHEMATOSUS

Authors: Luciane Filla; Carlos Alexandre Twardowschy; Alice Virgínia Rodrigues Leão; Rafaela Dos Santos Miravalhes; Wellington De Araújo;

Institution: PUCPR

Abstract: Case report: EMS, 39 years old, female, sudden amaurosis in the right eye in 2007 during gestation, with no other symptoms and no definite diagnosis at the time. A previous miscarriage. In August of 2018, in another pregnancy, visual turbidity and vertigo with demyelinating disease in skull MRI, being submitted to pulse therapy with methylprednisolone for 5 days and improvement of the condition. After 2 months, a sudden onset of dyschromatopsia and reduction of visual acuity, but only sought medical help several days later and was submitted to new pulse therapy, but without significant improvement.Analysis, isometric midriatic pupils with photomotor reflex absent on the right and slow on the left, without any alterations.In the laboratory tests, proteinuria , FAN with cross-linked dotted cytoplasmic pattern (1/320), anti-mitochondrial Reagent Greater than 1/80, Anti-DNA double helix reagent 1/40, Anti-AQP4 1/80, no other findings. Skull / Orbit MRI with Optic Neuritis left with no other demyelinating lesions and CSF with absence of oligoclonal bands. Received NMOSD diagnosis and is being followed up with rheumatology by possibility of future overlap with lupus, since it has proteinuria and anti-DNA positive. It is using azathioprine (2mg / kg / day), prednisone 20mg daily in gradual reduction, vitamin D and calcium. Discussion: Optic neuromyelitis (NMO) is an inflammatory autoimmune disease that occurs more in women (9-10: 1) between the 3rd and 4th decades of life. The characterization of the IgG antibody against the channels of Aquaporin 4 (Anti-AQP4) that exhibits predilection for astrocytes of the optic nerve and spinal cord has contributed to the differentiation of the phenotypes described in the Spectrum of NMO (NMOSD), since many patients did not meet criteria for NMO and also had other concomitant autoimmune diseases. There are reports of the association of NMOSD and other autoimmune diseases (30%), in most cases Sjogren's syndrome and systemic lupus erythematosus (SLE), the pathogenesis is still unclear. It is not yet known whether it is due to a related genetic predisposition HLA in some populations or if systemic immune diseases, such as vasculitis, weaken the blood-brain barrier and favor the appearance and penetration of Anti AQP4. Up to 50% of patients with NMOSD can produce other autoantibodies even without clinical evidence of other diseases, such as FAN, anticardiolipin, antiphospholipids, antiDNA, antimitochondria, among others. Our patient, besides the NMOSD clinic, shows positivity for other autoantibodies. thus, we will continue the follow-up to elucidate whether it has the concomitance of autoantibodies only or whether there is overlap of NMOSD and SLE. Final comments: Cases like this are important for the construction of new evidence regarding the course of autoimmune diseases concomitant with NMOSD, as it is not yet clear whether this changes the prognosis or whether the response to treatment is different.

Poster: 92 (85104)

Title: CHANGES IN GLUTAMATERGIC METABOLISM OF ASTROCYTES EXPOSED TO AQUAPORIN-4 IGG ARE DOSE-DEPENDENT

Authors: Ana Paula Bornes da Silva; Débora Guerini Souza; Ana Cristina Laydner Joly de Oliveira; Christian Limberger; Giovanna Bortoluzzi Salles; Diogo Onofre Souza; Amanda Marchionatti; Denise Cantarelli Machado; Douglas Kazutoshi Sato;

Institution: PUCRS

Abstract: Introduction: Neuromyelitis optica spectrum disorders (NMOSD) is an inflammatory Central Nervous System (CNS) disease mediated by immune-humoral responses promoting lesions preferentially in the spinal cord, optic nerves and area postrema. The majority of the NMOSD patients is positive to immunoglobulin G (IgG) subclass 1 antibodies against aquaporin-4 (AQP4) which is richly expressed in astrocytes. In vitro studies reported deleterious effects in astrocyte cultures exposed to AQP4-IgG from patients with NMOSD. Glutamate uptake in the CNS is mainly performed by astrocytes, so AQP4-IgG may trigger a glutamatergic excitotoxicity process secondary to astrocyte dysfunction. Objective: To evaluate the effects of AQP4-IgG in glutamate uptake in astrocytes cultures from adult rats. Methodology: Astrocytes were isolated from small slices of rat cortex. The tissues were mechanically and enzymatically dissociated with 0.05% trypsin, 40U papain/ml, 1mg cysteine and 0.2mg DNAse and cultivated with DMEM/F12 culture medium (supplemented with 10% FBS, 1% fungizone and 0.5% gentamycin) in 24-well plates coated with Poly-L-Lysine. Cells were maintained in an incubator at humidity of 37°C and 5% CO2. After three weeks in culture, the cultured cells were characterized as astrocytes using immunocytochemistry staining for the proteins S100β, AQP4, GLT-1 and Phalloidin. The astrocyte cultures were exposed to purified IgG (50, 100 and 200 μg/ml) from AQP4-IgG+ NMOSD patients for 24, 48 and 72 hours. The astrocytes ability to capture glutamate was evaluated by the L- [2,3-3 H] glutamate assay over a period of 7 minutes at 37°C for each IgG concentration/time. Results: Astrocytes exposed to purified IgG from NMOSD have reduced ability to capture glutamate when compared to the control group. At concentrations of 50 and 100 μg/ml of IgG, the astrocytes presented a loss of glutamate uptake in 24 and 48 hours. However, after 72 hours, the astrocytes increased the glutamate uptake, suggesting that low IgG concentrations were not effective in promoting glutamate excitotoxicity. Nevertheless, glutamate uptake by astrocytes exposed to IgG in 200 μg/ml declined progressively as the exposure time was increased. Conclusion: The astrocytes exposed to AQP4-IgG showed a time-dependent reversible disruption in glutamate uptake at lower doses, but not at the high concentration. Early treatment of NMOSD attacks may avoid high levels of AQP4-IgG in the CNS required to disrupt irreversibly the glutamatergic homeostasis by astrocytes, reducing neuronal and oligodendroglial death.

Poster: 93 (85136)

Title: NMOSD IN A CHILD PRESENTING AS AREA POSTREMA SYNDROME, MYELITIS AND DISAUTONOMIA: A CASE REPORT.

Authors: Sara Rogério Brandão De Araújo; Mariana David Cangussu Fernandes Ribeiro; Luiz Otávio Sales Pimenta; Euldes Mendes Junior; Maurício Teixeira Xavier; Samuel da Silva Gomes; Renato Sobral Monteiro Júnior; Débora Gonçalves Pereira Guimarães; Thaís da Silva Sá;

Institution: UNIMONTES

Abstract: Case Presentation: A 12 year old female patient presented uncontrollable vomiting history, through period of 8 days, followed by dizziness, altered mental state, excessive sleepiness, dysphagia, gait disturbance and nystagmus. She also presented persistent tachycardia, fever, tachypnea and leukocytosis without infectious evidence. The neurological examination showed encephalopathy, multidirectional nystagmus with upbeat, tetraparesis, trunk ataxia, sialorrhea, facial diparesis, unable to protrude tongue, hyporeflexia lower limbs. CSF analysis showed 3 cells with 100% mononuclear, glucose 101mg/dl, proteins 33mg/dl. ADA was non-reative. Brain MRI showed typical demyelinating lesions: Hyperintense lesions in T2 / FLAIR in hypothalamic region and posterior portion of IV ventricle in area postrema topography. At spinal cord MRI: T2 showed hyperintense lesion with a slight contrast enhancement, located in the posterior portion of the cervical cord at the C4 and C5 levels. These features are typical of neuromyelitis optica spectrum disorders (NMOSD). She started a five day course of methylprednisolone , followed by IV immunoglobulin 0,4g/kg/d for 5 days, 500mg/m2 of cyclophosphamide and 5 sessions of plasma exchange in ten days. The patient has shown good response to immunotherapy. She has received medical discharge with residual ataxia and azathioprine 3mg/kg maintenance plus prednisone 1mg/kg per day. Discussion: Optic Neuromyelitis is an inflammatory demyelinating autoimmune disease of CNS which has ample spectrum of signs and symptoms. The prevalence is higher in women and the median age of onset is 32 to 41 years. The disease is characterized by the formation of antibodies against aquaporin 4, the most abundant water channel of the CNS. Optic neuritis (ON) and longitudinally extensive transverse myelitis (LETM) are clinical phenotype of the spectrum. Patients with IgG AQP 4 who present with brainstem syndromes, narcolepsy, recurrent vomiting, uncontrollable hiccups or hypothalamic endocrine syndromes are also included in the NMOSD. The treatment involves intravenous glucocorticoids, human immunoglobulin, plasma exchange and systemic immunosuppression. In Children, firm conclusions are limited by small numbers of patients. We report a case of a young patient previously healthy who developed typical sings and symptoms of NMOSD and has presented good response to immunotherapy. Final Comments: The development of NMSOD on women under 18 years is very unusual. Our patient presented typical symptoms of area postrema syndrome, transverse myelitis and acute brainstem syndrome with disautonomic features. In Brain MRI and spinal cord presented typical lesions that met the spatial diagnostic criteria for NMOSD with unknown result of antiAQP4 (that was asked). She has had a good response to treatment.

Poster: 94 (85176)

Title: NEUROMYELITIS OPTICA SPECTRUM DISORDER IN A REFERENCE CENTER OF MULTIPLE SCLEROSIS IN JOÃO PESSOA, PARAÍBA, BRAZIL

Authors: Fernando De Paiva Melo Neto; Bianca Etelvina Santos de Oliveira; Davi Veloso Guerra; Victória Karolynna Torres Guerra; Beatriz Beniz Alves Caldeira; Vithória Miranda de Souza Vieira; Ana Beatriz Onias Alves da Silva; Bianca Vieira Araújo Correia de Sá; Gabriella Thalya Guedes; Adriana da Conceição Silva;

Institution: UNIPÊ

Abstract: Introduction: The Neuromyelitis Optica Spectrum Disorder (NMOSD) is a rare inflammatory disease that affects 65 in 100.000 people worldwide, was long considered a clinical variant of Multiple Sclerosis (MS). In 1894, Eugene Devic, a French doctor, described by the first time a case of myelitis with severe amaurosis bilateral. As well, NMOSD is a chronic immune-mediated disease of the central nervous system, that commonly affects the optic nerve and spinal cord. Also, NMOSD is associated with an antibody called aquaporin-4 immunoglobulin G (AQP4-IgG). Therefore, seropositive patients for AQP4-IgG consist of the spectrum of the disease with limited forms, such as longitudinally extensive transverse myelitis (LETM), bilateral neuritis or typical lesions in the brain, diencephalon and brainstem. Objectives: Quantify the number and identify the clinical profile of Neuromyelitis Optica (NMO) Spectrum Disorder in a Reference Center of MS in João Pessoa, Paraiba, Brazil. Methods: Study fulfilled with evaluation of 528 medical records from a Reference Center of Multiple Sclerosis in João Pessoa, Paraiba, Brazil, searching for the quantity of patients with NMOSD, looking for results in each sex, age and origin city. Furthermore, was developed a research in articles in English and Portuguese in the databases Biblioteca Virtual em Saúde (BVS), National Center of Biotechnology Information, BMC Neurology, SpringerLink and Google Acadêmico. Results: In the amount of 528 medical records, were evaluated 140 with no MS, 38 (27,14%) was classified as NMOSD. The age average of the NMOSD involvement was 37,13 years old, 32 (84,21%) women between 13 and 71 years old and 6 (15,79%) men between 28 and 60 years old. The origin city of patients diversifies between capitals and countryside, 9 people from João Pessoa and 22 cases from countryside. Furthermore, was verified that 5 cases were from another states, as São Paulo, Rio Grande do Norte, Distrito Federal, Amazonas and Pernambuco. Conclusion: The age group of the sample studied corresponds to what is observed in other studies, predominantly cases of Neuromyelitis Optica associated with females. Among the cases studied, there was a higher prevalence of patients coming from the countryside of the state of Paraiba. Moreover, was reiterated the need to complete the diagnostic criteria in conjunction with the evaluation of the clinical condition so that other differential diagnoses can be excluded.

Poster: 95 (85192)

Title: THE PREVALENCE OF NEUROMYELITIS OPTICA SPECTRUM DISORDER IN BELO HORIZONTE, SOUTHEAST BRAZIL

Authors: Jessica Marques Macedo; Natalia C. Talim; Juliana S. Amaral; Rodrigo Kleinpaul; Marco A. Lana-Peixoto;

Institution: UFMG

Abstract: Introduction – Neuromyelitis spectrum disorder (NMOSD) is an immune-mediated disabling disease of the central nervous system with a worldwide distribution. Although the prevalence of NMOSD has been assessed in different countries, no epidemiological study has yet been carried out in Brazil. Objectives - To study the prevalence of NMOSD in Belo Horizonte, Southeast Brazil. To compare the demographic characteristics of a cohort of NMOSD with those of a cohort of multiple sclerosis patients, who live in Belo Horizonte. Methods - We reviewed all medical records of NMOSD and MS patients who lived in the city of Belo Horizonte and were seen at CIEM MS Center between January 2000 and February 2019. We selected patients who were alive and met either McDonald's 2010 diagnostic criteria for MS, or the 2015 International criteria for NMOSD. Assessed data included age at disease onset, gender, race and Expanded Disability Status Scale (EDSS) at last examination. Rates of aquaporin 4-IgG (AQP4-IgG) serostatus were determined in NMOSD patients. The prevalence rate of MS in Belo Horizonte was considered as previously determined. Results – There were 280 MS and 69 NMOSD patients who fulfilled the inclusion criteria for the study. NMOSD patients comprised 60 women (87%), 25 (36%) Whites, with median age at disease onset of 39 years. Isolated acute transverse myelitis was the inaugural symptom in 25 (36%), isolated optic neuritis in 16 (23%), isolated brainstem symptoms in 2 (3%) and area postrema in 2 (3%) patients. Association of symptoms occurred at disease onset in 24 (35%) patients. AQP4-IgG was identified in 67% of all NMOSD patients. MS patients comprised 211 (75%) women, 176 (63%) Whites, with mean age of 37 years at disease onset. As compared with the known prevalence rate of MS of 18.1/100.000, the calculated NMOSD prevalence rate in Belo Horizonte is 4.46/100.000 inhabitants. Conclusions – The prevalence rate of NMOSD varies widely in different countries and populations. In Belo Horizonte it is similar to that found in Olmsted County (USA), and Japan.

Poster: 96 (85193)

Title: DISSEMINATED MEDULLOBASTOMA MIMICKED NEUROMYELITIS OPTICA SPECTRUM DISORDER IN A YOUNG ADULT

Authors: Barbara Akemy Barbosa Cruz; Josemary Cavalcante; Marcela M Sá; Natalia C Talim; Juliana S Amaral; Rodrigo Kleinpaul; Luiza Zuccheratte; Marco A Lana-Peixoto;

Institution: UFMG

Abstract: Introduction Medulloblastoma (MBL) is a highly malignant central nervous system (CNS) tumor occurring most frequently in children. In adults, medulloblastoma is rare and exhibits distinct features from those occurring in children. Here, we report on a young adult patient who was referred to our MS Center with the possible diagnosis of neuromyelitis optic spectrum disorder (NMOSD) after developing bilateral loss of vision in association with signs of a longitudinally extensive spinal cord lesion. Case report A 20-year old white man was referred with a 9-month history of relapsing attacks of bilateral visual loss, headache, vomiting and decreased consciousness. He had been treated in a local hospital with IV pulses of high doses of steroids and a ventriculoperitoneal shunt following the findings of hydrocephalus with increased intracranial pressure. Cerebrospinal fluid (CSF) examination disclosed 25 leucocytes/mm3 (97% lymphocytes, and 3% of neutrophils), protein content of 89.3 mg% and glucose content of 68 mg%. A month later the patient developed weakness in the four limbs and ataxic gait. A spinal MRI disclosed a gadolinium-enhanced longitudinally extensive lesion from C7 to T3. He observed partial motor improvement following new pulses of IV methylprednisolone. Neurological examination at admission to our hospital disclosed visual acuity of 20/400 in the right eye and no perception of light in the left eye. The optic disks were pale bilaterally. There were a moderate quadriparesis, decreased vibration sense in the lower limbs and a paraparetic ataxic gait. A comprehensive work-up for inflammatory and infectious diseases was unrevealing. Brain MRI showed diffuse leptomeningeal enhancement and hypersignal in T2-sequence in the frontal and temporal lobes. A spinal MRI demonstrated a large intramedullary lesion with associated cord expansion and heterogeneous enhancement, with epicenter at C2 to T3 level, but extending from L2 to L4. A biopsy with histochemical study revealed medulloblastoma. Discussion Medulloblastomas are malignant embryonal tumors of the CNS with a propensity to invade and disseminate in the CSF. They account for 10%–15% of pediatric and 2% of CNS tumors in adults age 20-34 years. They frequently metastasize throughout the brain and spine with nodular or laminar appearance. Patients with MBL are generally treated with surgical resection of the primary mass, followed by craniospinal radiation therapy and chemotherapy. Our patient had bilateral loss of vision in association with clinical and imaging signs of an extensive myelopathy which are frequent symptoms of NMOSD. However, other clinical and imaging characteristics of his disease suggested the presence of an embryonic tumor of the CNS. Biopsy confirmed the diagnosis of disseminated MBL, and the patient was started on chemotherapy and radiotherapy.

Poster: 97 (85194)

Title: INTRAMEDULLARY CAVERNOMA HEMORRHAGE AS A MIMICKER OF LONGITUDINALLY EXTENSIVE TRANSVERSE MYELITIS

Authors: Barbara Akemy Barbosa Cruz; Daiane Barros; Emerson de Paula; Josemary Cavalcante; Natalia C Talim; Juliana S Amaral; Rodrigo Kleinpaul; Ana Paula Costa; Luiza Zuccheratte; Marco A. Lana-Peixoto;

Institution: UFMG

Abstract: Introduction Cavernomas of the spinal cord are rare vascular malformations that may cause severe neurological damage as a result of bleeding or compression. Herein we report a case of a young adult female who developed acute spinal cord symptoms associated with a longitudinally extensive lesion involving cervical and thoracic segments. The patient was referred to our MS Center with a diagnosis of neuromyelitis spectrum disorder (NMOSD). Case Report A 34-YO mulatto female with no significant past medical history developed severe lumbar pain with irradiation to the lower limbs while she was practicing vigorous-intensity physical activity. The symptoms gradually progressed to paraplegia, dysesthesia in the lower limbs and sphincter disturbances in the course of nine days. Neurological examination disclosed flaccid paraplegia, absent deep tendon reflexes and anesthesia caudal to T11-level. A comprehensive serological work-up for inflammatory and infectious diseases, including serum AQP4-IgG testing, was negative. CSF analysis showed 727 blood red cells/mm3, 2 lymphocytes/mm3, and protein content of 127 mg/dL. Spinal MRI showed an intramedullary lesion extending from C6 to the medullary cone. In T10-T11 segments there was a posteriorly-located intramedullary heterogeneous nodular area characterized by T2-weighted hyposignal, irregular contrast enhancement, and hemorrhagic residues, suggestive of intramedullary venous cavernous malformation hemorrhage. Brain MRI was normal. Spinal angiography was unrevealing. Treatment with IV pulses of methylprednisolone for 5 days was of no avail. The patient was referred for microsurgical treatment. Discussion Cavernomas are slow flow venous malformations found in many parts of the body. Involvement of the spinal cord occurs in 3-5% of the cases and may be associated with severe neurological disability due to compression or hemorrhage. The risk of bleeding from spinal cavernomas has been reported as 4.5% per patient-year, with a re-bleeding rate of 66% per patient-year. MRI is the gold standard tool for diagnosis, usually showing a "popcorn" or "berry”-like hyperintense, heterogeneous T1 and T2-weighted images. Cavernomas do not demonstrate shunting of blood and they may be angiographically occult. Microsurgery is the accepted treatment method because the risk of re-bleeding and progressive compression. Our patient started observing signs of a severe acute myelopathy during physical exercises, which were probably the trigger of the spinal hemorrhage. Conclusion This case shows that intramedullary spinal hemorrhage should be included in the differential diagnosis of acute longitudinally extensive transverse myelitis.

Poster: 98 (85223)

Title: ATYPICAL PRESENTATION OF NEUROMIELITE OPTICA: SYMPTOMATIC NARCOLEPSY

Authors: Thiago Medeiros Palmeira de Araujo; Thiago Medeiros Palmeira de Araujo; Paula Virgínia Tavares do Nascimento; Samyra Melo Vital; Herval Ribeiro Soares Neto;

Institution: HSPE-FMO

Abstract: A 34-year-old woman was referred to weakness in the right side and binocular double vision. Complete remission of symptoms after pulse therapy with methylprednisolone. After 1 year she received immunization against H1N1 and 1 month later presented with excessive daytime sleepiness and hyperphagia, without other abnormalities in the neurological exam. In polysomnography with multiple sleep latency test (PSG-MSLT), she was shown to have excessive daytime sleepiness and the latency MSLT was 3 min with 3 SOREMP (Sleep Onset REM Period). Brain MRI showed hypersignal T2 / FLAIR in the hypothalamus bilateral, left lateral portion of the midbrain, without gadolinium enhance. The patient was treated with methylprednisolone pulseteapy started interferon beta-1a, with hypothesis of MS. In complementary investigation the dosage of Aquaporin 4 (AQUA4) was positive by the method of indirect immunofluorescence, confirming hypothesis of NMO. The treatment was modified to azathioprine until reaching 1 mg / kg. After 1 year, the second AQUA4 also by indirect immunofluorescence with negative result. She remained on azathioprine for 3 years and suspended due to gestation, remaining asymptomatic. In the third result of AQUA4, by indirect immunofluorescence with transfected cells, positive result, and azathioprine restarted. It is followed with azathioprine at the dose of 1mg / kg, without new relapses and with normal neurological examination. In control MRI, the patient presented reduction of the hypersignal in hypothalamus and midbrain, without enchance. Traditionally, NMO was considered as a disease of spinal cord and optic nerves. The discovery of aquaporin-4 IgG antibodies specific for NMO has broadened the clinical and neuroimaging spectrum of NMO with increasing recognition of nonopticospinal forms. Patients presenting with symptoms suggestive of narcolepsy, hypersomnolence or hypothalamic dysfunction and ON or myelitis need to be screened for AQP4-IgG. An immune attack on aquaporin 4 in periventricular regions in the hypothalamus may secondarily affect the hypocretin neurons. Narcolepsy can be an immune-mediated condition associated with loss of hypocretin secreting hypothalamic cells, characterised by excessive daytime sleepiness and cataplexy. Since AQP4 is highly expressed in the hypothalamic periventricular regions, an immune attack on AQP4 may be involved. Hypersomnolence can be the initial presentation or signify a relapse in NMO. This case demonstrates the importance of nonopticospinal features in the diagnosis of NMO. This patient did not have classical optic neuritis or longitudinally extensive transverse myelitis but presented with diencephalic syndrome. Serum aquaporin-4 IgG antibody test should be done in patients presenting with nonopticospinal features such as narcolepsy, intractable hiccups, and vomiting. This will help in confirming the diagnosis of NMO and initiating proper treatment to prevent subsequent relapses.

Poster: 99 (85227)

Title: LOW VITAMIN B12 IN AQP4-IGG AND MOG-IGG SEROPOSITIVE NEUROMYELITIS OPTICA

Authors: Pedro R. Silva Junior; Marco A Lana-Peixoto.; Natalia C Talim; Juliana S Amaral; Rodrigo Kleinpaul; Antonio B B Campos;

Institution: UFMG

Abstract: Introduction Neuromyelitis optica spectrum disorder (NMOSD) is most frequently associated with antibodies against the water channel aquaporin-4, most abundantly expressed in the central nervous system, but also present in other structures of the organism. NMOSD patients have a genetic tendency to produce other organ-specific and non-specific autoantibodies, including anti-gastric parietal cell (GPC) antibodies. Low serum levels of vitamin B12 have been reported in NMOSD. We report a series of nine patients with NMOSD phenotype who had low serum levels of vitamin B12. Serum AQP4-IgG was identified in eight patients, and MOG-IgG in one. Methods We studied a series of patients with NMOSD phenotype who tested positive to AQP4-IgG or MOG-IgG and exhibited low serum level of vitamin B12. Levels of vitamin B12 were considered low if they were below 211 pg/mL. Serum AQP4-IgG and MOG-IgG were identified by cell-based assay. Patients were also tested for the presence of GPC antibodies. Patients underwent a gastric endoscopy with biopsy of gastric mucosa. Results Nine patients exhibited NMOSD phenotype and had low serum level of vitamin B12 (7 females; 5 Whites, 3 Mulattos and 1 Black; median age 42 years (range 20 -70)). Serum vitamin B12 ranged from undetectable to 198 (median 172). The EDSS scores at the last follow-up ranged from 0 to 8.0 (median 6.5). Serum GPC-IgG was found in 5 out of 7 (71%) patients in whom it was tested. Endoscopic examination revealed atrophic changes in the gastric mucosa in all patients. The MOG-IgG seropositive patient was a 22 -year old black woman with undetectable levels of serum vitamin B12, negative GPC-IgG, and EDSS 0. Discussion Our series shows that low levels of vitamin B12 occur in some patients with NMOSD phenotype, both in association with antibodies against AQP4 and against MOG. Most of these patients exhibit atrophic gastritis and serum antibodies against GPC. A direct AQP4-IgG attack and the action of GPC antibodies may damage the gastric mucosa and lead to insufficient vitamin B12 absorption. Conclusion Serum levels of vitamin B12 should be measured in all patients who test positive for AQP4-IgG or MOG-IgG. Proper correction of lowered serum level may avoid increased damage to the optic nerves and the spinal cord.

Poster: 100 (85228)

Title: USE OF THE ANTI-IL6 MONOCLONAL ANTIBODY IN THE TREATMENT OF OPTIC NEUROMYELITIS REFRACTORY TO ANTI-CD20 THERAPY

Authors: Samyra Melo Vital; Herval Ribeiro Soares Neto; David Doreto Souza; Camilla Duarte Ribeiro; Lígia Henriques Coronatto; Marcos Benevides Silva; Thiago Medeiros Palmeira de Araújo;

Institution: IAMSPE

Abstract: Optic neuromyelitis (NMO) is an autoimmune disease that predominantly affects the spinal cord and optic nerves, structures with high expression of the target antigen aquaporin 4 (Aq4). It has been described that plasmoblasts, a subpopulation of B cells, increased in the peripheral blood of patients with NMO and are the major sources of anti- Aq4 among peripheral blood B cells. In addition, it has also been reported that interleukin 6 (IL6) promotes survival of plasmoblasts and their production of anti- Aq4 in vitro. In view of the increased levels of IL6 during relapses of NMO, the use of an IL6 receptor blocker has been proposed to reduce the activation of the disease through the inactivation of plasma cells. A humanized anti-IL-6R monoclonal antibody (Tocilizumab), already approved in many countries for the treatment of rheumatoid arthritis, showed benefit in NMO in prospective studies with patients using this drug in a period of 12 to 24 months. This study aims to report the case of a 57-year-old patient and diagnosis of NMO in 2016 with anti-Aq4 positive by indirect immunofluorescence. In October of 2015, she presented his first relapse with longitudinally extensive transverse myelitis (MTLE) and, twelve days after the myelitis, evolved with left optic neuritis. On this occasion, received pulse therapy with methylprednisolone 1g / day for 5 days and plasmapheresis, and maintenance therapy with azathioprine and prednisone. In October 2016, it had its second relapse, an MTLE treated again with pulse therapy and plasmapheresis. At this time, the maintenance therapy was modified to Rituximab. She presented a good evolution and significant improvement, mainly of the motricity, remaining almost free of sequels. He received four cycles of anti-CD20 and in October 2018, ten days after the last infusion, presented his third relapse. The latter was characterized by a change in strenght and proprioception in the left lower limb, as well as hypoaesthesia on the right with a sensory level in T1 confirmed by magnetic resonance imaging, which showed contrast enhancement image, affecting lateral and posterior left columns in the cervical spinal cord. Treated with pulse therapy with Methylprednisolone 1g for 5 days. Because of the relapse using Rituximab, the maintenance treatment was modified to Tocilizumab 8 mg / kg / dose every 4 weeks. After starting Tocilizumab treatment, in December 2018, the patient did not present any relapse, had significant improvement of weakness in the lower left limb and walking without support weeks later, in addition to a significant improvement of neuropathic pain and fatigue. In view of the severity of the disease and the impact on the quality of life of patients with NMO, clinical trials with new therapies are necessary to reduce the number of relapse and stabilize the disease in patients refractory to conventional therapies.

Poster: 101 (85231)

Title: NEUROMYELITIS OPTICA SPECTRUM DISORDER AND GLOMUS JUGULARE PARAGANGLIOMA. A FORTUITOUS ASSOCIATION?

Authors: Josemary Cavalcante Lemos; Bárbara Akemy Barbosa Cruz; Antônio Bernardes Bacilar Campos; Natália Talim; Juliana S. Amaral; Rodrigo G. Kleinpaul; Marco A. Lana-Peixoto.;

Institution: UFMG

Abstract: Introduction :Neuromyelitis optica spectrum disorder (NMOSD) is a severe immune-mediated disease of the central nervous system, often associated with presence of organ-specific and non-organ specific autoantibodies. Paragangliomas are neuroendocrine tumors that arise from neural crest cells and mayoccur anywhere along the paraganglia of the autonomic nervous system. Theymay be related to mutations in genes for succinate dehydrogenase (SDH)which plays a role in the mitochondrial respiratory chain. Paragangliomas have been described in conjunction with thyroid immune diseases.Herein, we report on a patient with NMOSD and multiple autoimmune disorders, including Hashimoto's thyroiditis, who developed glomus jugulareparaganglioma. Case Report: Thirty-four years ago, a previously healthy 25-YO mulatto female presented with sudden ocular pain and decreased visual acuity (VA) in the left eye (LE). After a few days she observed amaurosis in the LE. She was given oral prednisone, and the VA recovered to 20/200. Relapses of optic neuritis in the LE, and in the right eye (RE) occurred 6 months and 2 years following the disease onset. She then developed clinical signs and lab abnormalities meeting diagnostic criteria for systemic lupus erythematosus (SLE). One year later, the patient had a subacute attack of transverse myelitis, characterized by paraparesis, sphincter disturbances, and a sensory level at T6. Brain MRI was normal except for bilateral optic nerve atrophy. Spinal MRI disclosed a gadolinium-enhanced lesion extending from C7 to T7. During the course of the disease she had multiple relapses of myelitis and optic neuritis leading to a current EDSS scoreof 6.5. Search for serum AQP4-IgG yielded a positive result. During the course of the disease the patient developed signs of multiple organ autoimmunity, meeting criteria for myasthenia gravis, Sjögren syndrome and Hashimoto's thyroiditis, in addition to SLE and NMOSD. She has been treated with prednisone, azathioprine, methotrexate and plasma exchange.In January 2019 she observed pulsatile tinnitus and hearing loss in the right ear. Brain MRI, magnetic resonance angiography, and positron-emission tomography revealed a mass lesion in the right jugular fossa, compatible with glomus jugulare paraganglioma. Biopsy with histochemistry confirmed the diagnosis. Conclusion: To our knowledge the association of NMOSD with glomus jugulareparaganglioma had not been previously described. Our patient presents multiple autoimmune diseases in association with NMOSD and jugulareglomus paraganglioma. The pathogenetic relationship between NMOSD with multiple autoimmune disorders and the association of paraganglioma remains to be elucidated.

Poster: 102 (85247)

Title: PRIMARY LYMPHOMA OF THE CENTRAL NERVOUS SYSTEM MIMICKING DEMYELINATING DISEASE: CASE REPORT.

Authors: Danielle Mesquita Torres; Lara Albuquerque de Brito; Igor Bessa Santiago; Milena Sales Pitombeira; Lucas Silvestre Mendes; Daniel Gurgel Fernandes Távora; Gabriela Joca Martins; Fernanda Martins Maia;

Institution: HGF

Abstract: Case presentation: A 29-year-old man was referred to our neurology department in March 2016 after seizures preceded by visual field impairment. He reported paresthesia in hands 20 days prior to hospitalization. At admission, he had no focal deficits nonetheless brain computed tomography (CT) revealed multiple lesions with contrast enhancement. Magnetic resonance imaging (MRI) showed multiple white matter hyperintensities in T2/FLAIR and DWI with incomplete ring contrast enhancement. Infectious and rheumatological workup, as well as cerebrospinal fluid (CSF) analysis, were unremarkable. A diagnose of acute disseminated encephalomyelitis was suspected and the patient was treated with intravenous high-dose methylprednisolone (IVMP) with complete improvement. In July 2018, he presented new right-side weakness. MRI disclosed a new T2-hyperintense lesion in left centrum semiovale with incomplete ring contrast enhancement. Spectroscopy revealed an elevated choline peak, and both, N-acetylaspartate peak and NAA/Creatine relation, were suppressed. Blood and CSF workup, including oligoclonal bands and serum aquaporin-4-IgG, were negative. The image was suggestive of a pseudotumoral demyelinating disorder and partial improvement was observed after a new course of IVMP. In January 2019, he was re-admitted due to new weakness in the left arm. MRI showed right periventricular lesion with contrast enhancement and complete restricted diffusion, with no alteration in sites of previous lesions. A brain biopsy was performed, and histopathological analysis showed atypical lymphoid cells proliferation. As no other organ was involved, the patient was diagnosed with Primary Central Nervous System Lymphoma (PCNSL). Discussion: PCNSL are rare conditions responsible for less than 1% of brain neoplasms, been most cases related to B cell (90%). In PCNSL, lymphoma is restricted to the brain parenchyma, meninges and/or spinal cord, and well-known risk factors include congenital and acquired immunosuppression. Many case reports have demonstrated the existence of sentinel inflammatory demyelinating lesions preceding the confirmation of lymphoma. In our case, such lesions were a confounding factor and PCNSL was diagnosed only by histopathological analysis. Since both Multiple Sclerosis (MS), specially tumefactive forms, and PCNSL may present as incomplete ring contrast-enhanced white matter lesions with remarkable improvement with high-dose corticosteroids, misdiagnosis is likely to occur even in specialized centers. Final Comments: PCNSL and demyelinating tumefactive disorders present several similarities. MRI, CSF analysis and clinical evolution may help in this differentiation. Changes in the pattern of MRI lesions may suggest a lymphoproliferative lesion. Therefore, it is careful to consider precocious brain biopsy for histopathological analysis in unusual demyelinating lesions.

Poster: 103 (85261)

Title: A SEVERE EXTENSIVE LONGITUDINALLY MYELITIS IN A NMOSD PATIENT

Authors: Renan Alves; Maria Ignez Nogueira do Nascimento; Lais Borneo Moreira; Vanessa Gil Humberto dos Santos; Thiago Francisco Almeida de Paula; Felipe Freitas; Letícia Fezer Mansur; Maria Lúcia Pimentel;

Institution: PUC-Rio

Abstract: A 35 years old female presented, acute low back pain followed by paresthesia and paresis of the right leg. She denied trauma or straining exercise. MRI revealed thin hyperintense lesion from D1 to D8 in the central portion of the medulla. In one week, her right leg strength got worse, and a new cavitary, non contrast captaining lesion between D2 and D6 presented itself in a new study. Cranial imaging, as well as laboratorial examination came back normal. The patient was submitted to methylprednisolone pulse therapy 1g daily intravenously, with a 70% improvement of her deficits. She was discharged with unilateral gait support, and asked to enroll in a follow-up, but did not. In two months she presented a new outbreak, with crural paraplegia and urinary incontinence. A thorough radiological and laboratorial evaluation followed, showing positive aquaporin 4 antibodies (IgG-AQP4) and development in the dorsal lesion that now presented necrosis, perilesional edema and contrast captation. A new pulse therapy session was prescribed, but there was no improvement. Discussion The case highlights the importance of a precocious diagnosis in neuromyelitis optica spectrum disorder (NMOSD), as early treatment could prevent developments such as this. In NMOSD, the outbreaks are expected to be more severe, and may lead to incapacitating deficits, as it is not frequently seen in multiple sclerosis (MS). In this case, we see a rapid radiological progression in a short period of time, that will most likely leave permanent strength loss. Neuromyelitis Optica is an autoimmune inflammatory disease that targets the central nervous system with involvement of the optic nerve and spinal cord. The understanding of the physiopathology came with the discovery of IgG-AQP4. The diagnosis were made possible in patients that did not present the classic phenotype - optic neuritis (ON) and extensive longitudinal transverse myelitis (ELTM). The term NMOSD was then created and patients with positive IgG-AQP4 that present ELTM, bilateral ON, brainstem syndromes, narcolepsy, recurrent emesis and untreatable hiccups were now part of this group. In 2015 the diagnostic criteria for NMOSD was established and the presence of IgG-AQP4 was used to stratify. Recently, a new biological marker was found: anti-MOG. It was detected in 25% of patients with negative IgG-AQP4, and has lesser predilection for woman, has a disproportionate involvement of the optic nerve and filum terminale and fewer outbreaks. Final Comments The differentiation between NMOSD and MS is of utmost concern as treatment of the latter has proven ineffective and can even worsen the natural progression of the disease. The new diagnostic criteria has broaden the scope of NMOSD cases including those with only one episode of extensive myelitis as well as ON and some cerebral syndromes. The treatment for NMOSD is yet to be established, but studies shown fewer outbreaks in using azathioprine, mycophenolate and rituximab.

Poster: 104 (85265)

Title: Cognitive-Behavioral Impairment in a young man with Multiple Sclerosis – Tumefactive or pseudotumoral Form – A case Report

Authors: Cejane Domingues Ribeiro; Denise Sisterolli Diniz; Marcos Alexandre Diniz Carneiro; Taysa Gonsalves Ribeiro; Saullo José Silva Rolindo; Isabela Louise Caldeira Silva; Camila Araújo Prudente;

Institution: UFG

Abstract: Black man, 17 years old, marijuana user, high school complete, with diagnosis of multiple sclerosis tumefactive form after investigation with complete hemiparesis E, which evolved with hemiplegia. Partial resolution with pulse therapy. MRI of the brain revealed subcortical expansive lesions to the right, frontal, with extension to the knee of the corpus callosum, perirolandic area, involving the pre and post frontal rotations, with restriction to diffusion and incomplete peripheral contrast enhancement, in horseshoe aspect. The appearance of the image is suggestive of lesions of a demyelinating nature, pseudotumoral, in different phases/ages, and the perirroland region presents signs of acute inflammatory activity and frontal lesions, signs of chronicity. Electroneuromyography compatible with central pattern paresis, impairment of first motor neuron. CSF analysis, with increased IgG index, absent oligoclonal bands. He had regular use of glatiramer for 6 months, when left treatment. Returned to the service, one year later, with daily urinary incontinence, motor and sensory deficit, with hemiparesis and hypoesthesia E with facial paralysis, grade 4 strength. He maintained signs of pyramidal release and preponderant cognitive and behavioral deficit. He presented infantile behavior, uncontained and unmotivated smiles, hyperthymic humor, global attention deficit, compression deficit, little verbal contact with monosyllabic and sometimes incoherent responses. Disoriented in time and space, amnesic deficit, loss of self-consciousness. It presented difficulty in understanding and performing medium complexity commands. Verbal fluency test: zero words. Total inability to test the watch. Mini-mental 9/30. General and infectious screening without changes. Admitted as new outbreak and abandonment of treatment, no response to pulse therapy. 5 sessions of plasmapheresis were performed, with significant improvement of the symptoms. There was total improvement of hemiparesis and hypoesthesia with total recovery of upper cortical functions. In evaluation, he had previous and recent preserved memory, level of preserved attention, verbal fluency, comprehension, coherence and preserved phrase formulation. No degree of aphasia. He maintained discreet facial paralysis, without prejudice to language. Oriented in time and space. Word evoking test: 14. Mini-mental 29/30. Isolated Cognitive-Behavioral Impairment is a incomum and interesting manifestation of relapsing in multiple sclerosis.

Poster: 105 (85267)

Title: Case report: two cases of children’s multiple sclerosis - form tumefactive or pseudotumoral

Authors: Cejane Domingues Ribeiro; Denise Sisterolli Diniz; Marcos Alexandre Diniz Carneiro; Taysa Gonsalves Ribeiro; Saullo José Silva Rolindo; Isabela Louise Caldeira Silva; Camila Araújo Prudente;

Institution: UFG

Abstract: Case of two young patients, aged 15 to 17 years, with motor and sensory deficit with signs of pyramidal release. Both extensive demyelinating, pseudotumoral type, make up heterogeneous, poor response to pulse therapy and good clinical response to plasmapheresis. Case 1, it is young, male, 17 years old, with multiple outbreaks, sensitive, mainly with hemiparesis D and cognitive deficit, in outbreaks. He presented multidirectional nystagmus, gait ataxia, signs of pyramidal release, sleep disturbances, loss of executive functions, reduction of language fluency, attention deficit, hyperthymic mood and temporo-spatial disorientation. The reversed mycosis and exogen of plasma under the phase of persistent with level monoparesia of inferior member. Case 2, treated of young female, 15 years old, with first manifestation of the disease with hemiparesis D and hypoesthesia D. Presenting reagent oligoclonal bands. At the examination, it presented tumefactive lesions, with a heterogeneous contrast contrast, extensive in the left frontal region, and cervical myelopathy. Non-reactive antiaquaporina4. Reversed motor deficit after plasmapheresis. Multiple sclerosis with presentation in children is important, especially in its pseudotumoral form. The number of registration processes is the same as in an event of CNS demyelination are more common. Compared to adults, a more benign and monophasic disease is suggested. And, more recent publication series show that during the clinical period of patients the evolution may not be as benign as for the recurrent character.