Movement disorders 2

PP4102

Occipital cortex alpha activity lateralization correlates with L-dopa motor response in de novo Parkinson’s disease

Department GF Ingrassia, Section of Neurosciences, University of Catania, Catania, Italy

Introduction: In Parkinson’s disease (PD), L-dopa may modulate topographically-defined cortical-subcortical oscillatory networks detectable using quantitative electroencephalography (EEG).

Methods: We retrospectively selected N=34 L-dopa untreated PD patients who performed a standardized EEG assessment. N=18 subjects matched by age, sex and hand dominance with a normal EEG study and no parkinsonism and/or cognitive decline were selected as control group. For all patients, EEG signals were recorded from homologous pairs of electrodes over each hemisphere. A Welch’s periodogram was applied to artefacts-free detrended signals epochs selected off-line from continuous EEG recordings during eyes-closed and eyes-open tasks. An Index of Lateralization (IL) was then obtained as the absolute value of the EEG asymmetry index, computed by subtracting left from right sided log power spectral density for each homologous site and frequency band. A standardized L-dopa acute challenge test was performed to all PD patients.

Results: In mid/lateral frontal regions of PD patients, we obtained higher IL for the beta band (p=0.015) whereas lower IL for the theta band (p=0.036) compared to controls. Both parameters correlated with Hoehn-Yahr stage (respectively: r=0.428, p=0.012; r=-0.464; p=0.006). In occipital region of PD patients, we obtained instead lower IL for the alpha band compared to controls (p=0.024). Such parameter correlated with L-dopa motor response magnitude (r=0.456; p=0.007).

Conclusions: Lateralization of occipital cortex alpha activity may correlate with L-dopa motor response in de novo PD.

Disclosure: Nothing to disclose

PP4103

PANDAS in the structure of tic disorders

S.E. Munasipova1, Z.A. Zalyalova2
1Department of Neurology and Rehabilitation, The Republic Centre of Movement Disorders and Botulinum Therapy, Kazan State Medical University, 2The Republic Centre of Movement Disorders and Botulinum Therapy, Department of Neurology and Rehabilitation of GBOU VPO of Kazan State Medical University, Kazan, Russian Federation

Introduction: Most of hyperkinetic syndromes that occur during childhood and adolescence are autoimmunely caused by sensitization of the β-hemolytic streptococcus group A (BGSGA) and known as PANDAS (“children autoimmune neuropsychiatric disorders associated with streptococcal infection”).

Methods: We examined 69 patients with tics in age from 6 to 29 years. In the history of heredity was traced in 4 patients (5.8%), chronic source of infection in 28 people (40, 6%). The study’s design included a comparison of clinical and laboratory findings included ASL-O, RF, C-reactive protein; swab from the nasopharynx to the BGSGA, circulating immune complexes, ANA, JgA, JgM, JgG;CD4, CD8 - lymphocytes.

Results: ASL-O 42.3% was higher than normal levels of 2-4 times in 42.3% of patients; BGSGA was detected in 11.5% of patients. Significant differences of severity of tic were identified in patients with a positive BGSGA (10.33±1.11 and 6.22±4.19, p<0.01); with reduced performance CD4 – lymphocytes (13.67±3.56 and 25.17±6.33, p<0.03); with reduced performance of JgA (9.75±1, 31, u5, 33±4.37, p<0.03; 27.75±3.38 and 22.11±7.35, p<0.04).

Conclusions: In 34.5% of the patients with tics an elevated level ASL-O and identified BGSGA. BGSGA, CD4-lymphocytes, Jg A – according to our study are reliable diagnostic value in the differentiation of idiopathic tics and autoimmune nature. In 40.6% of patients had the presence of chronic foci of infection. These characteristics can meet PANDAS.

Disclosure: Nothing to disclose
**PP4104**

**Treatment of essential tremor with Pramipexole**

M.A. Nikitina¹, I.A. Zhukova¹, N.G. Zhukova¹, O.P. Izhboldina², V.M. Alifirova¹, A.E. Agasheva², M.A. Titova¹

¹Department of Neurology and Neurosurgery, Siberian State Medical University, ²Hospital 2, Tomsk, Russian Federation

**Introduction:** To investigate the influence of Pramipexole at the dose of 1.0mg per day in patients with essential tremor (ET).

**Methods:** 28 patients with ET (12 males, 16 females) were included and observed. Mean age was 51.0±19.6 years, mean age at onset was 23.6±18 (range 12-66 years). Previous medication with either anticholinergics or b-blockers was continued. The core criteria for patients with ET include: bilateral action tremor of the hands and forearms (but not rest tremor) or isolated head tremor; absence of other neurologic signs, with the exception of the cowheel phenomenon; long duration (>4 years); positive family history; beneficial response to alcohol. Standardized clinical examination were performed twice: at the first visit (before starting Pramipexole) and after 3 months. Sweet Scale was also used. The patients’ life quality was estimated with the help of “The Short Form(36) Health Survey” (The SF-36).

**Results:** At the first visit the average severity of ET was 301.3±2.4 points according to the Sweet Scale. After 3 months of regular usage of Pramipexole 1.0mg per day severity of ET was 221±2.2. There was a statistically significant difference in decreased severity of action tremor of the hands and forearms in 46% patients among all (n=13) according to the Sweet Scale, p<0.01. At the second visit the SF-36 showed that life quality was higher by item: General Health, Vitality, Social Functioning, Role Emotional, Mental Health, p<0.01.

**Conclusions:** The using of Pramipexole at the dose of 1.0mg per day effectively reduces ET and improves quality of life.

**Disclosure:** Nothing to disclose

**PP4105**

**Impact of motor and non-motor fluctuations on quality of life in patients affected by Parkinson’s disease**

G. Orofino, P. Solla, A. Cannas, M.M. Mascia

Movement Disorders Center, Department of Neurology, Institute of Neurology, University of Cagliari, Monserrato, Italy

**Introduction:** Parkinson’s disease (PD) is characterized not only by motor dysfunctions, but also by non-motor symptoms (NMS), which often affect strongly the disability of parkinsonian patients and their quality of life (QoL). Moreover, the definite impact of motor and non-motor fluctuations (NMF) on QoL is not clearly definite. Our objective was to examine the presence of motor and NMF in a population of PD patients and to assess their relation with QoL.

**Methods:** Consecutive PD outpatients from the Movement Disorders Center of the University of Cagliari were included in the study. Motor disability was assessed with the Modified Hoehn & Yahr (HY) staging and the UPDRS part-III: Motor fluctuations and NMF were evaluated with the Wearing-Off Questionnaire a 19 items (WOQ-19). The PDQ-8 was used for the Qol. assessment.

**Results:** One hundred and two PD (59 male and 43 female) patients were enrolled. Mean age at enrollment±standard deviation was 67.2±16.7 years, with mean PD duration of 6.2±4.0 years. At UPDRS-IV evaluation, patients with motor fluctuations were 33 (32.4%), while dyskinesias were present in 20 patients (9.8%). The correlation study between the number of motor and NMF relieved at WOQ 19 with PDQ-8 scores showed a significant correlation for NMF and reduced QoL (r=0.241; p<0.02), while this correlation was lower in patients with both types of fluctuations (r=0.226; p<0.03).

**Conclusions:** Our results showed that presence of NMF significantly impairs QoL in PD patients, with a greater effect in comparison to the simple presence of motor fluctuations.

**Disclosure:** Nothing to disclose
PP4106

Clinical phenotype (motor and neuropsychological presentation) and neuroimaging in Sardinian patients affected by atypical parkinsonism, carriers of 20-22 repeats of C9ORF72 hexanucleotide expansion

G. Orofino1, A. Cannas1, P. Solla1, M.M. Mascia1, M.R. Murru2

1Movement Disorders Center, Department of Neurology, Institute of Neurology, University of Cagliari, Monserrato, 2Laboratorio Centro Sclerosi Multipla, Ospedale Binaghi, University of Cagliari, Cagliari, Italy

Introduction: Expansions of more than 30 hexanucleotide repetitions (long expansions) in the first intron of the C9ORF72 gene are a recognized cause of amyotrophic lateral sclerosis and motor neuron disease (ALS and MND) and frontotemporal dementia (FTD). In some studies the range of 20-22 mutation patterns also have been related to dementia cognitive deterioration. Based on our previous finding of the p.A382T of TARDBP in patients with concomitant parkinsonism in the Sardinian population, we hypothesized that also the C9ORF72 repeat expansions gene may underlie classical atypical parkinsonism or other forms of degenerative parkinsonism on this Mediterranean island.

Methods: We screened for the C9ORF72 repeat expansions. a cohort of 67 patients with primary degenerative parkinsonism different from the classic form of Parkinson’s disease. Of these 67 patients, 55 were in accordance with the criteria for a diagnosis of classical form of atypical Parkinsonism (MSA-P, MSA-C, LBD, CBD, PSP), while 12 presented a clinical picture quite different from classical atypical parkinsonism. The C9ORF72 repeat short expansions was identified in 3 patients with degenerative primary parkinsonism, anybody had the C9ORF72 repeat long expansions. Surprisingly these 3 patients were all within the 12 patients who had a peculiar clinical presentation quite different from classical atypical parkinsonism (4.5 of all parkinsonism investigated, 25% of atypical parkinsonism).

Results: The C9ORF72 repeat short expansions was identified in 3 patients with degenerative primary parkinsonism, anybody had the C9ORF72 repeat long expansions. Surprisingly these 3 patients were all within the 12 patients who had a peculiar clinical presentation quite different from classical atypical parkinsonism (4.5 of all parkinsonism investigated, 25% of atypical parkinsonism).

Conclusions: Our findings suggest that the clinical presentation of the C9ORF72 repeat short expansions may include forms of parkinsonism different from the classic form of Parkinson’s disease and/or of classical atypical parkinsonism, with peculiar extrapyramidal signs.

Disclosure: Nothing to disclose

PP4107

Rotigotine-related severe reversible off-dystonia: report of two cases

G. Papadimitropoulos, M. Stamolou, C. Zombola, R. Antonelou, L. Stefanis

University of Athens, Medical School, Attikon University Hospital, Athens, Greece

Background: Severe fluctuations induced by dopamine agonists in Parkinson’s disease (PD) patients have been rarely described. We describe two PD patients who developed severe, reversible off-dystonia on rotigotine treatment, which resolved after discontinuation of rotigotine.

Methods and results: Case 1: A 56-year-old woman developed right-sided hypokinetic-rigid syndrome at the age of 51 and was started on rasagiline. At age 53 she was started on rotigotine up to 8mg with partial improvement and shortly thereafter levodopa up to 200mg, which was discontinued two weeks later due to side effects. Rotigotine was increased to 14 mg, and amantadine 200mg was added. One year later, she developed severe painful dystonic episodes, which improved after cessation of rotigotine and the re-introduction of levodopa.

Case 2: A 48-year-old man developed PD at the age of 40 and was started on pramipexole (0.18mg x3) and levodopa 200mg. One year later he was switched to rotigotine (8mg), due to side effects. Two months on 8mg rotigotine he developed severe off-dystonia on his right side and cranio-cervical region. Rotigotine was discontinued and the episodes resolved.

Conclusion: This is the first report of an association between Rotigotine and reversible severe, painful, off-dystonias. Continuous D2 stimulation achieved by rotigotine may set the stage or lower the threshold for dystonia to occur. The cases were either primed or on levodopa when the dystonia started. It is important to highlight these cases, as apparent off-dystonia would have prompted to increase rather than decrease treatment in these patients.

Disclosure: Nothing to disclose
PP4108

Reduction of thalamic tremor with deep brain stimulation performed for post stroke chronic central pain

E. Papuç1, K. Obszańska2, T. Trojanowski3, Z. Stelmasiak1, H. Szczepańska-Szerej1, K. Rejdak1
1Department of Neurology, 2Medical University of Lublin, 3Department of Neurosurgery, Medical University of Lublin, Lublin, Poland

Introduction: Deep brain stimulation (DBS) of the sensory thalamus and the periventricular/ peri-aqueductal grey area complex may be applied for treatment of intractable chronic neuropathic pain syndrome.

Methods: We present a patient who experienced ischemic stroke within the posterolateral part of left hypothalamus with subsequent severe burning pain localized in right upper limb, predominantly within the hand and thalamic tremor which occurred 4 months after stroke. After 2 years of ineffective pain treatment the patient was offered deep brain stimulation with implantation of electrodes to the periventricular grey matter (PVG)/ periaqueductal grey matter (PAG) as well as implantation an electrode to ventroposterolateral thalamic nucleus (VPL). Correct target localization within the VPL was confirmed when an intraoperative 50Hz stimulation elicited paresthesia in the contralateral limb. Once the physiological targets have been defined with stimulation, permanent electrodes were introduced, and the leads were externalized through a stab wound in the scalp for trial stimulation.

Results: Soon after starting permanent simultaneous PAG/ PVG and PVL stimulation we observed not only alleviation of the patient’s pain but also significant reduction of the patient’s thalamic tremor in the hand, which persisted over subsequent months. In this case study we discuss possible mechanism underlying tremor suppression in our patient, probably at the level of cerebellar outflow pathways.

Conclusions: The study highlights the fact that DBS provide more insight into the functional anatomy of the thalamus, which used to be available from animal studies only.

Disclosure: Nothing to disclose

PP4109

An acoustic analysis of diadochokinésis in patients with Parkinson’s disease

H. Park, H. Lee, H. Chang
Wonkwang University School of Medicine, Iksan, Korea, Republic of

Introduction: Parkinson’s disease (PD) shows not only the cardinal symptoms of tremor, rigidity, and bradykinesia, but also the features of hypokinetic dysarthria. In speech-language pathology, diadochokinésis (DDK) is used to assess the rate and regularity of repetitive movements of the oral articulators, and the acoustic analysis of DDK has been used to evaluate dysarthria. However, there has not been an automatic method to evaluate dysarthria. The aim of this study was to introduce a new automated program to measure DDK tasks and to apply this to clinical patients with idiopathic Parkinson’s disease (IPD).

Methods: 47 patients with IPD and a healthy control group of 20 participants were selected with every DDK task and run three times respectively. 25 acoustic parameters in the program were developed. The relevant parameters were times of DDK, pitch related parameters, intensity parameters which were analyzed by 2-way ANOVA.

Results: Significant differences between the groups were found in the times of DDK, pitch related parameters, and intensity parameters. The findings indicated that the pitch of control group was more stable than that of the IPD.

Conclusions: Even though the patients with IPD had a higher intensity value, this phenomenon was caused by the weakness of the IPD group who could not control their speech with a breath. Autonomic acoustic analysis of DDK has the potential to evaluate the status or severity of hypokinetic dysarthria in patients with PD. Our results provide the necessity of assessment for describing and monitoring changes in acoustic characteristics following therapeutic intervention.

Disclosure: Nothing to disclose
Prevalence and phenomenology of psychotic symptoms in Huntington’s disease

J. Pérez-Pérez1,2, S. Martinez-Horta1, M. Carceller3, J. Pagonabarraga1, R. Fernández de Bobadilla1, A. Campolongo1, J. Kulisevsky1,2

1Neurology, Hospital de la Santa Creu i de Sant Pau, 2University Autónoma de Barcelona, 3Psychiatry, Hospital de la Santa Creu i de Sant Pau, 4Institut de Recerca del Hospital de la Santa Creu i de Sant Pau, Barcelona, Spain

Introduction: Neuropsychiatric features are characteristic symptoms in Huntington’s disease (HD). Compelling evidence proved high prevalence of alterations on mood and affect. However, little is known about psychotic symptoms in HD.

Objective: Describe the characteristics and phenomenology of psychotic symptoms in a Spanish cohort of Huntington’s disease patients.

Methods: From the Spanish Registry cohort, genetically positive patients with psychiatric, cognitive and motor assessment were included. We analyzed demographic, genetic and clinical data. Cognitive and motor functions were measured with Unified Huntington Disease Rating Scale (UHDRS), psychiatric disturbances with the Problem Behavior Assessment Scale (PBA-S) and function with the total functional capacity (TFC).

Results: 264 patients were included (46.2% males; mean age of 45.2±12.5y; disease duration 5.5±5.5y and mean CAG 44.1±4.7). Delusions were present in the 10.2% of the patients and hallucinations in 4.5%. Visual hallucinations were the more frequent 3.4% followed by auditory 1.9%. UHDRS cognitive score (p=0.05) and TFC (p=0.01) were more impaired in patients with psychotic symptoms. No other differences or correlations between delusions/hallucinations and cognitive, motor or functional scores were found.

Formal diagnosis of schizoaffective disorder was present in two patients, previous acute psychotic episode in one, dementia in one and young HD in one.

Conclusions: Psychotic symptoms are infrequent in HD. Delusions are more frequent than hallucinations being the visual ones the more recurrent. Despite not found correlation, patients presenting psychosis/hallucinations are significantly more impaired on cognition and functional capacity.

Disclosure: Nothing to disclose

Adaptive deep brain stimulation (aDBS) in Parkinson’s disease: a case report

A. Priori1,2, M. Arlotti1, M. Rosa1, F. Cortese1, L. Rossi1, S. Marceglia2, F. Cogiamanian1, G. Ardolino1, M. Locatelli3, G. Carrabba3, P.M. Rampini3

1Centro Clinico per la Neurostimolazione, le Neurotecnologie ed i Disordini del Movimento, Fondazione IRCCS Ca’ Granda Ospedale Maggiore Policlinico, 2Università degli Studi di Milano, 3Newronika S.r.l, 4Dipartimento di Elettronica, Informazione e Bioingegneria, Politecnico di Milano, 5Dipartimento di Neurochirurgia, Fondazione IRCCS Ca’ Granda Ospedale Maggiore Policlinico, Milan, Italy

Introduction: Because the conventional DBS (cDBS) only partially controls motor fluctuations in Parkinson’s disease (PD), this treatment could be optimized by adapting the stimulation to the patient’s clinical state (i.e. adaptive Deep Brain Stimulation or aDBS). An aDBS device is a closed-loop system able to record and analyze a control signal, and to adapt stimulation parameters. Local field potentials (LFPs, i.e the sum of the pre and post-synaptic neural activity around the DBS electrode) correlate with the patient’s clinical state and can be a reliable control signal for aDBS. We developed an external portable aDBS device controlled by LFPs and we present its clinical assessment in a freely moving PD patient.

Methods: The 5th and the 6th day after the DBS electrodes implant in the subthalamic nucleus, the patient, after the standard antiparkinsonian medication, underwent two hours of cDBS and two hours of aDBS, respectively. The patient was not aware of the DBS type. The motor state was evaluated by a blinded neurologist through the Unified Parkinson’s Disease Rating Scale (UPDRS III), and the Rush Dyskinesias Rating Scale (DRS).

Results: Whereas the UPDRS III score was the same during aDBS (12/108) and cDBS (12/108), the dyskinesias were less severe during aDBS (4/28) than cDBS (14/28).

Conclusions: The aDBS device controlled better the motor fluctuations than cDBS, reducing dyskinesias. Our portable device unlocks new opportunities to study aDBS in PD patients during their daily activities providing new insights into the impact of this novel technology on their quality of life.

Disclosure: Lorenzo Rossi, Sara Marceglia, Alberto Priori, Marco Locatelli, Paolo Maria Rampini and Filippo Cogiamanian are stakeholders of the Newronika s.r.l, a spin-off company of the Fondazione IRCCS Ca’ Granda Ospedale Maggiore Policlinico and of the Università degli Studi di Milano.
PP4112

Hypokinetic movement disorders in childhood
I. Rebai, H. Ben Rhouma, I. Kraoua, H. Klaa, A. Ben Mahmoud, A. Rouissi, N. Gouider-Khouja, I. Ben Youssef-Turki
Department of Child and Adolescent Neurology, National Institute Mongi Ben Hamida of Neurology, Tunis, Tunisia

Introduction: Hypokinetic movement disorders (HMD) are uncommon and usually misdiagnosed in childhood. The aims of our study were to determine clinical and radiological characteristics and to identify etiologies and the outcome of HMD in childhood.

Methods: A retrospective study (2004-2013) included children with HMD. Clinical and radiological findings, treatment and outcome were recorded and analyzed.

Results: Twelve children (6 males, 6 females) were included. Mean age of onset was 3 years (3 months - 11 years). The onset was insidious in 7/12 cases and acute in 5/12 cases. All patients had bradykinesia associated to cogwheel rigidity (8/12), rest tremor (7/12) and dystonia (8/12). Main brain MRI abnormalities corresponded to involvement of substantia nigra (6/12), striatum (1/12) or both (1/12). Etiologies were classified into inborn errors of metabolism (7/12) and acquired causes (5/12) with predominance of postencephalitic parkinsonism (4/12). Several anti-parkinsonian drugs were used: levodopa (7/12), bromocriptine (4/12) and selegeline (2/12). A good response was obtained in patients with acquired parkinsonism (5/12) with full recovery (4/12). Fluctuations and dyskinesia were noticed in one patient with chronic dopatherapy.

Conclusions: Few studies focused on HMD in childhood. Etiologies correspond to inherited degenerative and metabolic disorders and acquired causes with predominance of neuroleptic intake or cerebral infections as in our series. Brain MRI is a useful tool to detect involvement of dopaminergic pathways. Anti-parkinsonian drugs, particularly levodopa, seem to be more efficient in acquired causes of HMD and to shorten the clinical course.

Disclosure: Nothing to disclose

PP4113

Nicotine as adjunct therapy to relieve levodopa-induced dyskinesias
M. Relja, V. Miletić, K. Blažina
Neurology, University Hospital Center Zagreb, Zagreb, Croatia

Introduction: Although levodopa is one of the best treatments for PD, its use is limited because of the development of motor fluctuations. Epidemiological studies show that smoking is associated with lower incidence of PD while studies in non-humane primate show that nicotine could reduce motor complications as dyskinesias. Objective of this study is to investigate whether nicotine as an adjunct therapy could reduce levodopa-induced dyskinesias in Parkinson’s disease (PD).

Methods: Patients with a clinical diagnosis of idiopathic PD who developed levodopa-induced dyskinesias (LID) were included in open-label 12 weeks duration study after signed informed consent was obtained. Nicorette (transdermal invisipatch, 23.6mg nicotine) was administered as transdermal patch every 12 hours in each patient without any change of levodopa and/or other medication. Patients took their own diary recording time of medication, time with and/or without dyskinesias.

Results: Total of 13 PD patients were enrolled in the study (7 males, 6 females; mean age 57.4 years; mean disease duration 7.5 years, mean H&Y scale 3.5). Only 2 patients drop-out from the study (1 after first Nicorette application because of unpleasant sensation in his legs, 2 patient 5 days after Nicorette application without any change in motor complications score). Other 11 patients finished 12-week study with significant reduction of recorded dyskinesia. Only mild vomiting was observed in one patient during first day of treatment.

Conclusions: This preliminary data suggest that combined treatment with nicotine, or preferably nicotinic agonists that selectively stimulate nACh receptor subtypes, could improve LID. Prospective, controlled study is needed.

Disclosure: Nothing to disclose
**PP4114**  
**Impulse control disorder and olfaction in Parkinson’s disease**  
A. Gonçalves¹,²,³, A. Mendes¹,²,⁴, N. Vila-Chã¹,²,³, A. Rua¹, I. Moreira¹, A. Bastos Lima¹, S. Cavaco¹,²,⁴  
¹Biomedical Investigation Multidisciplinary Centre, ICBAS-Universidade do Porto, ²Department of Neurology, Centro Hospitalar Porto – Hospital Santo António, ³Faculdade de Medicina da Universidade do Porto, ⁴Instituto de Ciências Biomédicas Abel Salazar (ICBAS), Universidade do Porto, Portugal  

**Introduction:** Impulse control disorder (ICD) and olfactory dysfunction (OD) are two non-motor symptoms of Parkinson’s disease (PD) that have been linked to orbitofrontal functioning. The relationship between ICD and OD in PD is still unknown.  

**Methods:** One hundred and thirty one consecutive patients with idiopathic PD stage 1-3 Hoehn & Yahr (52% men; mean age=66.8, sd=10.9; mean education=6.5y, sd=3.9; mean disease duration=6.9y, sd=4.5; mean levodopa equivalent dose=713 mg, sd=469) were included. Unified Parkinson’s Disease Rating Scale-III (UPDRS-III; mean=29.7, sd=9.2) was applied after 12 hours without antiparkinsonian medication. The Questionnaire for Impulsive-Compulsive Disorders in Parkinson’s Disease (QUIP-Current-Short) and the Brief Smell Identification Test (B-SIT) were applied after the effect of the usual medication of the patient. Mann-Whitney test and multiple logistic regression analysis were used for data analyses.  

**Results:** ICD (i.e., ≥1 positive answer on the QUIP-Current-Short) and OD (i.e., B-SIT ≤8) were found respectively in 17% and 78% of patients. Patients with ICD had better performance on B-SIT (p=0.011) than patients without ICD (mean=8.09, s.d.=1.77 vs. mean=6.77, s.d.=2.03). The odds of having ICD increased with better scores on the B-SIT, even while adjusting for covariates sex, age at onset, disease duration, and levodopa equivalent dose (ORadj=1.486; p=0.009; 95%CI: 1.104-2.001).  

**Conclusion:** OD is more common than ICD in PD. Surprisingly; this exploratory study revealed that the risk of having ICD was higher in patients with better olfactory functioning. This result suggests that ICD and OD in PD result from distinct pathophysiological processes and raises the possibility of competitive neural circuits.  

**Disclosure:** Nothing to disclose  

**PP4115**  
**Non-motor features in young patients with essential tremor; sleep quality, excessive daytime sleepiness, anxiety, depression, cognitive functions: a case comparison study**  
Y. Şengül¹, H.S. Şengül², S. Yücel³, S. Kural Yücekaya⁴, B. Bakım³, A.B. Almaz²  
¹Department of Neurology, ²Department of Psychology, Erzurum Regional Research and Training Hospital, Erzurum, ³Department of Neurology, Kütahya Dumlupinar University Evliya Çelebi Research and Training Hospital, Kütahya, ⁴Department of Neurology, Lütfiye Nuri Burat State Hospital, Istanbul, 5Department of Psychiatry, 18 March University Hospital, Çanakkale, Turkey  

**Introduction:** The classical knowledge about Essential Tremor(ET) as a monosymptomatic, slowly progressing, benign, pure motor system disease has been questioned in last years. There is increasing evidence to suggest that apart from motor features, patients with ET may have significant nonmotor features such as mild cognitive deficits, neuropsychiatric symptoms( anxiety, depression, specific personality traits...), sleep disorders, fatigue. The goal of this study was to evaluate the nonmotor features in young patients with ET.  

**Methods:** 30 patients (23.83±5.83-years-old) with ET and 15 healthy controls were evaluated using Pittsburgh Sleep Quality Index (PSQI), Epworth Sleppines Scale (ESS), Beck Depression Scale (BDS), Beck Anxiety Scale (BAS), Fatigue Severity Scale (FSS). We ruled out the other possible causes of tremor. Cognitive functions were evaluated using Montreal Cognitive Assessment Battery (MoCA) by a neuropsychologist. Tremor was evaluated using Fahn Tolosa Marin Tremor Rating Scale (FTM-TRS).  

**Results:** In patients group; 63.3% had poor sleep quality, 56.7% fatigue, 23.3% moderate and 50% severe anxiety levels, 23.3% moderate and 13.3% severe depression. PSQI, ESS, BDS, BAS,FSS scores in ET group were significantly higher than the controls. Total MoCA scores and subscores were lower than the controls. 13.3% had excessive daytime sleepiness. But these results were not statistically significant.  

**Conclusions:** ET has canonically been viewed as a motor disorder, there is now a growing interest in nonmotor features of ET. The aim of this study was to contribute this new concept. Further studies of these nonmotor features will go a long way in understanding and comprehensively treating ET.  

**Disclosure:** Nothing to disclose
PP4116
Non-motor features in essential tremor: a comparison with Parkinson’s disease
Y. Şengül1, H.S. Şengül2, S. Yücel1, S. Kural Yücekaya1, B. Bakım3
1Department of Neurology, 2Department of Psychology, Erzurum Regional Research and Training Hospital, Erzurum, 3Department of Neurology, Kütahya Dumlupınar University Evliya Çelebi Research and Training Hospital, Kütahya.
Introduction: Essential Tremor (ET) is the most common movement disorder and the cause of functional disability. ET is increasingly thought to involve a heterogeneous group of patients with some also exhibiting ataxia, postural instability, resting tremor, and cognitive deficits. Some ET patients of motor signs also found in Parkinson’s disease. The goal of this study to evaluate existence of nonmotor features in ET patients.
Methods: 22 patients with ET and 21 patients with PD (Age: 61.95±7.57, 66.80±9.70) were evaluated by using Nonmotor Symptoms Questionnaire(NMSQ) and Montreal Cognitive Assessment(MoCA) to determine nonmotor features. To rate of illness we used Fahn Tolosa Marin Tremor Rating Scale(FTM-TRS) for patients with ET and The Unified Parkinson’s Disease Rating Scale (UPDRS) and Hoehn and Yahr scale for patients with PD.
Results: In ET group; most common nonmotor features were 'feeling sad, low or blue (72.7%), getting up regularly at night to pass urine(68.2%), a sense of urgency to pass urine (63.6%). NMSQ total score means were 8.59±4.43 in ET patients, 14.66±4.62 in PD patients (p value<0.05). Except 7 items of NMSQ, one by one comparison of other items had no statistical difference. MoCA total scores were 18.31±4.32 in ET patients, 16.85±3.96 in PD patients. There was no statistical significant difference MoCA total scores (p value 0.25) and subscores.
Conclusions: The emerging view of ET is that it may be a neurological disease characterized by a number of motor and non-motor features. Future studies with large sample size are needed. This study contributes some evidence for this new concept.
Disclosure: Nothing to disclose

PP4118
The FAB fails to discriminate PSP from FTD and to capture disease progression in frontal disorders
M. Stamelou1,2, J. Diehl-Schmidt3, D. Kontaxopoulou1, A. Hapfelmeier4, K. Bhatia5, W. Oertel2, L. Stefanis1, S. Papageorgiou1, G. Hoeglinger2,6
1University of Athens, Medical School, Attikon University Hospital, Athens, Greece, 2Philipps-University of Marburg, Marburg, 3Department of Psychiatry, 4Department of Medical Statistics and Epidemiology, Technische Universität München, Munich, Germany, 5UCL Institute of Neurology, London, United Kingdom, 6Department of Neurology, Technische Universität München, Munich, Germany
Introduction: The frontal assessment battery (FAB) has been suggested as a useful tool in the differential diagnosis of progressive supranuclear palsy (PSP) from Parkinson’s disease (PD) and multiple system atrophy with parkinsonism (MSA-P). However, the utility of the FAB in the differential diagnosis of PSP from frontotemporal dementia (FTD) phenotypes is still under research.
Methods: We performed the FAB, in a large multi-centre cohort of probable PSP (N=70), FTD (N=76 behavioral variant FTD, N=10 semantic dementia, N=9 progressive non-fluent aphasia), as well as PD (N=26) and MSA-P (N=11) patients, according to established criteria. Patients were also rated with the mini mental state examination and motor scales.
Results: The FAB total score and subscores failed to discriminate PSP from bvFTD and PNFA patients. Moreover, the FAB did not correlate with disease duration and was insufficient to capture disease progression in these disorders. In contrast, we confirmed that the FAB was useful in differentiating PSP from PD and MSA-P. In fact, two FAB subscores together (verbal fluency and Luria motor series) were sufficient and better than the total score in differentiating PSP from PD and MSA-P.
Conclusions: The FAB can neither differentiate PSP from FTD related disorders, nor can capture disease progression in PSP and FTD. This should be taken into consideration in clinical practice but also in planning clinical trials. When used to differentiate PSP from PD and MSA-P, verbal fluency and motor series are sufficient and the total score is redundant.
Disclosure: Nothing to disclose
PP4119
Clinical and genetic characteristics of dopa-responsive dystonia in a Serbian population
M. Svetel, V. Dobricic, I. Novakovic, N. Dragasevic, I. Petrovic, V.S. Kostic
Movement Disorders Department, Genetic Laboratory, Clinic of Neurology, Faculty of Medicine, University of Belgrade, Belgrade, Serbia

Introduction: Dopa-responsive dystonia (DRD) is neurometabolic disorders inherited in 2 ways: autosomal-dominant (AD) with heterozygous mutations in GPT-cyclohydrolase 1 gene (GCH1-DYT5a) and autosomal-recessive (AR) with homozygous or compound heterozygous mutations in genes for thyrosin-hydrolase (TH) or sepiapterin-reductase (SPR) (DYT5b). AD form is characterized by reduced penetrance and excellent and permanent response to levodopa, while AR form is more severe, with developmental delay and cognitive impairment. The aim was to assess genetic and clinical characteristics of DYT5a mutations carriers in patients with dystonia-plus syndrome in Serbia.

Methods: Study comprised 66 patients with dystonia-plus syndrome and 60 healthy controls. Genetical analysis was performed by method of direct sequencing of coding exones of GCH1 gene. Clinical characteristics of patients were evaluated using standardized rating scales for assessment of dystonia and parkinsonism.

Results: We found 5 mutations of GCH1 gene (L157P, 209delA, c.C08G>A , c.558c>T, ex+1G>C) in 10 carriers. The most frequent mutation (L157P) was demonstrated in a family with 5 affected members, all with spastic paraparesis as initial presentation and excellent levodopa responsiveness. Phenotype spectrum was wide in our group of patients, from lower extremities dystonia to hemiparkinsonim, dystonia-parkinsonism complex and spastic paraparesis. All patients were on continuous levodopa treatment. DAT was normal in all patients, while 2 of them had pathological finding on TCS.

Conclusions: Our results showed GCH1 mutations in 15% of patients with dystonia-plus syndrome. It is important to stress phenotypic heterogeneity of the disease with wide spectrum of clinical expressions in forms of dystonia, parkinsonism and spastic paraparesis.

Disclosure: Nothing to disclose

PP4120
Frequency of non-motor symptoms in patients with Parkinson’s disease
K. Tanveer, I. Attique, W. Sadiq, F. Rao, A. Ahmed
Shifa College of Medicine, Shifa Tameer-e-Millat University. Shifa Int Hospital, Islamabad, Pakistan

Introduction: In multiple studies around the globe, non-motor symptoms have been identified as a source of immense disability in patients of Parkinson’s disease. However there is scarcity of data from Asia. This is the first study from Pakistan assessing the impact of non-motor symptoms on patients with Parkinson’s disease.

Objectives: To investigate the frequency of non-motor symptoms of Parkinson’s disease in Pakistani population and compare it with the Western data.

Methods: In this cross-sectional survey, data was retrospectively collected from Shifa International Hospital Neurology database. This study comprised of 97 patients at different stages of Parkinson’s disease who were questioned at neurology OPD or through telephonic interviews. Disease severity was assessed using ’Hoehn & Yahr’s staging’ while ‘NMS Quest’ was employed to identify the non-motor symptoms present. Medical records were reviewed for demographic data and recent treatment history.

Results: The mean age was 67.33 years (adult onset=76.3%, young onset=23.7%). No correlation was found between the disease duration and the disease stage. The most frequent non-motor symptoms were nocturia (77.3%), urinary urgency (61.9%), constipation (59.8%), forgetfulness (58.8%), insomnia (52.6%) and orthostatic hypotension (52.6%). The earliest manifestations of non-motor symptoms were nocturia, forgetfulness, low mood and orthostatic hypotension. Sleep abnormalities, falling episodes & hallucinations are prevalent amongst patients of advanced disease.

Conclusion: There is a direct correlation between disease progression and number of non-motor symptoms present.

Disclosure: Nothing to disclose
PP4121

Parkinsonism, myoclonus and focal signs in non-ketotic hyperglycemic chorea

T. Teodoro¹,², J. Ferreira¹, P. Pita Lobo¹,², R. Peralta¹, L. Albuquerque¹, J.J. Ferreira¹,²
¹Department of Neurology, Hospital de Santa Maria, ²Clinical Pharmacology Unit, Instituto de Medicina Molecular, Lisboa, Portugal

Introduction: Nonketotic hyperglycemia may be complicated by chorea. However, other movement disorders have not been reported.

Methods: We describe a patient which developed parkinsonism and myoclonus while recovering from nonketotic hyperglycemic chorea.

Results: A 68-year-old woman with complicated diabetes mellitus, treated with oral antidiabetics, associated with sensory motor polyneuropathy and with degenerative spine disease, was admitted due to generalized chorea (2 weeks of evolution). Neurological examination revealed generalized chorea (left>right hemibody), left hemiparesis and central facial paresis, algic, tactile and proprioceptive hypoesthesia with socks-pattern distribution and gait instability due to chorea and mild ataxia. Laboratorial analysis revealed glucose 500mg/dL and A1cHb of 15.8%. CT-scan showed bilateral hyperdensity of corpus striatum (right>left). Cranial MRI, performed 9 days after admission, revealed T1-hyperintensity of the right corpus striatum, associated with mild diffusion-restriction on DWI/ADC map. A nonketotic hyperglycemic chorea was diagnosed. While chorea slowly resolved, with improvement of glycemic control, the patient developed severe myoclonus, involving trunk and limbs, in association with treatment with CBZ 600mg/d. Myoclonus regressed after withdrawal of CBZ but recurred with amitriptyline. In parallel, she developed parkinsonism, with generalized bradykinesia.

Conclusions: Chorea is a rare but classical complication of nonketotic hyperglycemia. We describe a patient with parkinsonism, myoclonus and hemiparesis in the setting of nonketotic hyperglycemic chorea. This suggests that nonketotic hyperglycemia brain damage is more widespread than classically thought. Myoclonus was associated to drug administration. Damage by hyperglycemia might have lowered the threshold to drug side-effects.

Disclosure: Nothing to disclose

PP4122

Task specific spasmodic dysphonia

E. Tokucoglu¹, I.I. Denizoglu²
¹Neurology Clinic, Izmir Tepecik Education and Research Hospital, ²Ear Nose Throat Surgery Clinic, Izmir Ataturk Education and Research Hospital, Izmir, Turkey

Introduction: Spasmodic dysphonia is a voice disorder resulting from involuntary movements (or spasms) of the vocal muscles. These spasms interrupt normal phonation with a strained, strangled voice (adductor type), or with breathy, soundless voice (abductor type). Clinically, Spasmodic dysphonia is a type of dystonia; the cause is unknown, there is no specific tests for diagnosis and resultantly, there is no known cure; but treatment can and does improve symptoms. Botulinum toxin injections into muscles of phonation can alleviate symptoms - although relief is only temporary and treatments are usually repeated according to symptomatic exacerbations. A professional (or occupational) voice user is anyone whose voice is essential to their job. Among different professional voice users, priests (who are named as imams in Islam) are in a specific condition. During Islamic acts of worship, Turkish imams use their voices in a wide vocal range with a non vernacular language (Arabic). These special occasions which demand high intensities and high pitches may trigger stressful processes for the neuromuscular system.

Methods: Three cases are considered in this study. They are all imams and have adductor type spasmodic dysphonia. They are evaluated clinically and by laryngeal EMG and voice analysis.

Results: All three cases' voice analysis showed interruptions and elevated fundamental frequency. After botulinum toxin injection, the Fo values have decreased and jitter and shimmer are shown to be better.

Conclusions: Spasmodic dysphonia may be related to use of voice, language and psychological factors. Patients may benefit from botulinum toxin injections and rehabilitation.

Disclosure: Nothing to disclose
PP4123
Effects of amantadine on postural instability in Parkinson’s disease
B. Topcular1, A. Altinkaya1, A. Yabalak1, A. Kaymaz1, B. Altunrende1, Z. Matur1, O. Gungor1, E. Altindag2, G. Akman-Demir1
1Department of Neurology, Istanbul Bilim University Medical Faculty, 2Department of Neurology, Florence Nightingale Hospital, Istanbul, Turkey

Introduction: Amantadine is a NMDA antagonist that has antiparkinson properties. Although it is widely used for treatment of l-dopa related dyskinesias some case reports also mention its effect on postural instability in Parkinson’s Disease.

Methods: Parkinson’s disease patients treated with amantadine for postural instability in 2013 in our Movement Disorders Clinic were evaluated retrospectively. Patients were evaluated with UPDRS motor score. Only patients under steady dopaminergic treatment were included in the analysis. Amantadine was started as 2x50 per day and increased up to 500 per day when needed.

Results: There were 21 patients. Male to female ratio was 16/5. Mean age of the group was 72.5. Mean disease duration was 6.4 years. Mean Amantadine dose was 390.48/day. Mean UPDRS motor score were 34.2. All except two patients reported benefit from amantadine. The mean fall score of the UPDRS motor scale was 2.48 before amantadine and 2.00 under amantadine treatment.

Conclusions: Our study results show that amantadine might have a modest effect on postural instability in Parkinson’s Disease.

Disclosure: Nothing to disclose

PP4124
An atypical Stiff-Person Syndrome associated with type 3 autoimmune polyglandular syndrome
P. Viana1, L. Abreu1, V.R. Fonseca2, M. Cortes2, D. Neutel1, P. Pita Lobo1, L. Albuquerque1
1Neurology, 2Internal Medicine, Hospital de Santa Maria, University of Lisbon, Lisboa, Portugal

Introduction: Stiff-Person Syndrome (SPS) is strongly associated with other autoimmune diseases. Autoimmune Polyglandular Syndrome (APS) is characterized by the coexistence of at least two glandular autoimmune diseases.

Methods: Case report.

Results: A 74-year-old female patient with a past history of hypertension, diabetes mellitus, hypothyroidism, atrophic gastritis and depression, presented with an 18-month history of progressive stiffness and gait problems, associated with painful abdominal and lower limb spasms that caused major disability. She had a recent exploratory laparotomy for unexplained abdominal pain, and was admitted due to recurrence of severe abdominal pain and lower limb spasms. Examination revealed a “mask-like” facies, left and right gaze-evoked upbeat nystagmus and partial left gaze paresis; bradykynesia and rigidity of the four limbs, generalized hyperreflexia, a small stepped gait with freezing and retropulsion, and clusters of painful abdominal and lower limb tonic spasms, which were aggravated by tactile stimuli. Neuraxis MRI and CSF examination were unremarkable, and electromyography was normal, although it was made after clinical improvement. Serum GAD-65 antibodies were positive, along with anti-insulin, Langerhans cells, intrinsic factor and thyroid peroxidase antibodies. Investigation for an occult tumor revealed negative. Treatment with diazepam and baclofen improved the muscle spasms, and intravenous immunoglobulin improved limb rigidity and gait.

Conclusions: We report a case of atypical SPS with prominent features of brainstem, cerebellar dysfunction and parkinsonism, and with a distinctive association with multiple autoimmune diseases, comprising APS type 3. This case alerts also for SPS to be considered in the differential diagnosis of atypical parkinsonian syndrome.

Disclosure: Nothing to disclose
PP4125

Pain in Parkinson’s disease: treatment and patient satisfaction

N. Vila Cha1,2,3, A. Gonçalves1,4, A. Mendes1,2,5, J. Martins2, I. Moreira1, A. Bastos Lima1, S. Cavaco1,2,5, J. Castro-Lopes6

1Biomedical Investigation Multidisciplinary Centre, ICBAS - Universidade do Porto, 2Department of Neurology, Centro Hospitalar Porto - Hospital Santo António, 3Centre for Research in Health Technologies and Information Systems (CINTESIS), University of Porto, 4Faculdade de Medicina da Universidade do Porto, 5Instituto de Ciências Biomédicas Abel Salazar (ICBAS), Universidade do Porto, 6Department of Experimental Biology, Faculdade Medicina - Universidade do Porto, Porto, Portugal

Introduction: Patients with Parkinson’s disease (PD) frequently suffer from pain. Few studies have reported pain management in PD using pharmacological and non-pharmacological therapies; and patient satisfaction regarding pain management has been seldomly assessed.

Methods: One hundred and seventeen consecutive patients with idiopathic PD underwent a neurological examination and a structured interview for registration of pain characteristics. UPDRS-III and Hoehn and Yahr Scale were applied after 12 hours without antiparkinsonian medication.

Results: Pain was reported by 88 (75%) patients [39% men; mean age=68.2y, sd=11.8; mean education=5.3y, sd=3.8; mean disease duration=8.8y, sd=5.7; mean levodopa equivalent dose=893 mg, sd=505; UPDRS-III: mean=34.9, sd=11.9; HY stage 1-3: 68 (77.3%); HY stage 4-5: 20 (23%)]. Musculoskeletal pain was reported by 54%, musculoskeletal and dystonic pain by 14%, central neuropathic pain by 13%, dystonic pain by 11%, radicular-neuropathic pain by 7% and central neuropathic and dystonic pain by 1%. Fifteen percent of the patients reported two different types of pain. Fifty five percent had therapies for pain relief (69% pharmacological therapy, 25% pharmacological and non-pharmacological therapies and 6% only non-pharmacological therapy). Of those, 33 patients responded to the satisfaction questionnaire and 16 (49%) were quite or very unsatisfied with the current pain treatment.

Conclusions: Our study confirms that pain is a frequent symptom in PD patients and demonstrates that PD patients with pain are inadequately treated in many cases. Half of the patients are unsatisfied with the current pain management. Neurologists and general practitioners should be more alert to the symptoms of pain in PD patients.

Disclosure: Nothing to disclose

PP4126

A case with autosomal recessive hypermanganesemia: clinical and MRI findings

Z. Yapici1, P. Tekturk1, K. Tuschl2, M. Eraksoy1, M. Barlas1, H. Ozcan1

1Neurology, Istanbul University, Medical School, Istanbul, Turkey, 2Clinical and Molecular Genetics Unit, UCL Institute of Child Health, London, United Kingdom

Introduction: Early-onset generalized dystonia with brain manganese accumulation has recently been identified. Mutations in the SLC30A10 gene, encoding a manganese transporter, cause a syndrome of hepatic cirrhosis, dystonia, polycythemia, and hypermanganesemia.

Methods: We present the clinical and MRI features of a 22-year-old girl with autosomal recessive hypermanganesemia.

Results: The case was born from a healthy first-cousin marriage. At the age of 1.5 years, she developed walking difficulty, progressing in time. Her first neurological examination revealed generalized dystonia prominent in the lower extremities when she was 3. She could not stand or walk without support. Mild hyperbilirubinemia, polycytemia, iron storage disorder and liver dysfunction were detected in the blood analysis. Metabolic screening for inborn error was negative, and copper-zinc metabolism as well as organic acids were all within normal limits. However, elevated blood manganese levels were almost 10 times as high as the normal limits. T1-sequences in MRI showed hyperintensities in the basal ganglia (caudate and lentiform nuclei) and dentate nuclei, characteristic of manganese deposition.

Conclusions: Worsening of dystonia, and hyperintensities more prominent in T1 MRI are evidence enough to search hypermanganesemia. Resulting from autosomal recessive inheritance, this condition is commonly encountered in countries where consanguineous marriage is widespread. Of note, our case is the first in Turkey who presented with this condition. It should be kept in mind that hypermanganesemia can be treated by chelation as can other treatable rare neurological disorders.

Disclosure: Nothing to disclose
PP4127

The role of cognitive event-related potentials in the detection of cognitive dysfunctions in essential tremor

S. Yoo, J.-S. Kim

Neurology, Catholic University of Korea, Seoul, Korea, Republic of

Introduction: There is growing evidence that essential tremor (ET) is a multiple-system disorder because of additional motor features (e.g., intention tremor and ataxia) and nonmotor features (mild cognitive deficits and personality changes). Cognitive event-related potential (ERP) can encompass general cognitive processing and efficiency. Among these neuroelectrical markers, P300 component of ERP is most widely studied to assess neurologic and psychiatric cognitive dysfunction. The hypothesis of this study was that cognitive dysfunction of ET may be associated with ERP changes. We compared the results of P300 values between essential tremor patients and normal controls to study the role of ERP in detection of cognitive impairment among ET patients who are seemingly normal.

Methods: Case-control comparisons of 8 patients with ET and 8 age-matched controls were performed. All subjects underwent clinical assessments, neuropsychological tests and auditory and visual cognitive ERP tests.

Results: Among 8 ET patients, 4 had mild cognitive impairment. Group with ET showed prolonged visual P300 latency than control group. Visual P300 latency was associated with frontal executive and visuospatial dysfunction, and visuospatial memory deficit.

Conclusions: This result suggested that visual evoked P300 latency serves as a potent marker in evaluating cognition among essential tremor patients. Longitudinal, prospective study is warranted to assess ERP in terms of screening cognitive deficit and quantifying the degree of impairment.

Disclosure: Nothing to disclose

PP4128

The efficacy of three dimensional accelerometer evaluation of gait in spastic paraplegia patients with intrathecal baclofen therapy


Neurology, Asahikawa Medical Center, Asahikawa, Japan

Introduction: It is clear that the intrathecal baclofen therapy decreases spasticity and improves gait in spastic paraplegia patients. However, it is still controversial about what is an appropriate indicator of evaluating gait in spastic paraplegia patients. We investigated whether three dimensional accelerometer is useful to evaluate gait performance of these patients.

Methods: 6 patients with spastic paraplegia were recruited. They were measured gait parameters with three dimensional accelerometer both before and after bolus intrathecal baclofen. Three patients improved by screening trial of intrathecal baclofen received continuous intrathecal baclofen therapy. They were measured gait parameters per three months when refilling. 25 healthy volunteers were recruited as controls from our hospital coworkers.

Results: Patients with spastic paraplegia showed significant slower walk speed (p<0.001) and smaller step width (p<0.001) than healthy controls. Coefficient of variation (CV) of the amplitude of the vertical (p=0.001) and horizontal (p=0.003) in spastic paraplegia were significant increased relative to those of controls. Step width has increased and CV of the vertical and horizontal has decreased in all three patients after continuous intrathecal baclofen therapy. However, walk speed in patients did not show a significant difference.

Conclusions: We demonstrated that the gait of patients with spastic paraplegia was unsteady and showed highly CV with three dimensional accelerometer. Three dimensional accelerometer is quantitative and able to easily perform repeatedly. Therefore three dimensional accelerometer plays a crucial role in the assessment of gait performance in spastic paraplegia patients treated with intrathecal baclofen therapy.

Disclosure: Nothing to disclose
**PP4129**

**Deep neck muscle involvement in cervical dystonia: diagnostic techniques, treatment and side effects**

M. Zardoni¹, C. Bana², C. Nascimbene², C. Mariani¹,², M. Osio²

¹Università degli Studi di Milano, ²Neurology, Ospedale L. Sacco, Milan, Italy

**Introduction:** Cervical dystonia (CD) is supported by different dystonic patterns, sometimes involving deep neck muscles (scalenes, longus capitis and rectus colli). Injection with Botulinum neurotoxin (BoNT) of these muscles implies more procedural risk and side effects, so usually they are treated secondly or in case of poor response. Clinical evaluation and polygraphic electromyography (poly-EMG) are sometimes insufficient to identify muscles primarily involved in dystonic patterns. Positron emission tomography (PET) could be useful to identify hyperactive muscles.

**Objective:** To evaluate diagnostic techniques, utility and side effects of BoNT treatment of deep neck muscles in CD.

**Methods:** 8 of 23 patients with CD periodically receiving EMG-guided BoNT treatment showed involvement of deep neck muscles at poly-EMG. 2 of them underwent PET after repeated poor effective treatment in order to better identify pathologic muscle activation. In one case PET results confirmed neurophysiological findings, in the other it identified muscles not evaluated at poly-EMG. Deep neck muscle were integrated in the treatment scheme of these patients.

**Results:** The 8 patients reported clinical benefits from deep muscles treatment. PET allowed better identification of target muscles. 3 patients developed dysphagia after BoNT injection and 2 of them had to discontinue deep muscles treatment.

**Conclusions:** Deep neck muscles BoNT injection is sometimes the treatment of choice in CD but dysphagia may be quite troublesome. Dysphagia may depend on many variables (site of injection, type of toxin used) so special attention must be paid in the definition of treatment. PET may improve the evaluation of dystonic patterns.

**Disclosure:** Nothing to disclose

---

**PP4130**

**Neuroleptic malignant syndrome in a patient with esophagus cancer: a report of a rare case**

E. Aciman Demirel¹, H.T. Atasoy¹, N.F. Tascilar¹, A. Erdal¹, O. Saracli²

¹Neurology, ²Psychiatry, Bülent Ecevit Üniversitesi Tip Fakültesi, Zonguldak, Turkey

---

**PP4131**

**Postural tremor of the trunk and postural instability in patients with Parkinson’s disease**

E.A. Alexandrova¹, A.V. Gustov¹, E.V. Parshina², S.V. Makushina², E.M. Timanin³, E.V. Eremin¹

¹Neurology, Nizhniy Novgorod State Medical Academy, ²Neurology, Nizhniy Novgorod State Clinical Hospital named by N.A. Semashko, ³Institute of Applied Physics of the Russian Academy of Sciences, Nizhniy Novgorod, Russian Federation

---

**PP4132**

**Blepharospasm revealing lung cancer**

I. Ben Hamouda¹, M.N. Tougouri², S. Belal¹

¹Neurology, Charles Nicolle Hospital, Tunis, ²Internal Medicine, Razi Hospital, Manouba, Tunisia

---

**PP4133**

**Postural correlates of the empathic pain response: influence of perspective**

G. Bucchioni¹,²,³, T. Lelard⁴, B. Montalan⁵, M. La Marle¹, S. Ahmaidi⁴, O. Godefroy¹,⁶, P. Krystkowiak¹,⁶, H. Mouras⁷

¹EA 4559, Laboratoire de Neurosciences Fonctionnelles et Pathologies, UFR de Médecine, ²Structure Fédérative de Recherche en Santé CAP-Santé, Université de Picardie Jules Verne, Amiens, ³Université de Reims-Champagne-Ardennes, Reims, ⁴UFR des Sciences du Sport, Université de Picardie Jules Verne, Amiens, ⁵U.R.D. des Sciences de l’Homme 34 et de la Société, Normandie Université, Mont-Saint-Aignan, ⁶Service de Neurologie, CHU Amiens, ⁷Département de Psychologie CRP-CPO, Université de Picardie Jules Verne, Amiens, France

---

© 2014 EFNS European Journal of Neurology 21 (Suppl. 1), 388–713
PP4134
Movement disorders after stroke in a third level hospital in Marrakech, Morocco
A. Chahidi1,2, M. Chraa2,3, N. Kissani2,3
1ED 268, Sorbonne University, Paris, France, 2University Medical School of Marrakech, Quartier Semlalia, Basic and Clinical Neurosciences Laboratory Research, 3Department of Neurology, University Hospital IBN Tofail, Marrakech, Morocco

PP4135
Palilalia as early red flag in progressive supranuclear palsy
R. Chiperi1, M. Moarcas1, C. Falup-Pecurariu1,2
1Neurology, County Emergency University Hospital Brasov, 2Neurology, Faculty of Medicine, Transilvania University, Brasov, Romania

PP4136
Abstract withdrawn

PP4137
Evaluation of impulsivity in Huntington’s disease with a delay discounting paradigm
J. Doridam1, M. Roussel2, A. Benoist2, M. Tir2, O. Godefroy3, P. Krystkowiak3
1Neurology, 2Neuropsychology, Amiens University Hospital, Amiens, France

PP4138
Is Parkinson’s disease increase the risk to develop a glucose intolerance?
F. Durif1,2, E. Durand1,2, C. Delaigue1, B. Pereira3, B. Debilly1,2, I. Rieu1,2
1Neurology Department, CHU Clermont-Ferrand, 2EA 7280, University Clermont 1, 3Biostatistics Unit, CHU Clermont-Ferrand, Clermont-Ferrand, France

PP4139
Psychometric study of the Persian short-form Parkinson’s disease questionnaire (PDQ-8) to evaluate quality of life: how imprecise is it compared to the long-form version (PDQ-39)?
S.-M. Fereshtehnejad1, N. Naderi2, A. Rahmani2, G.A. Shahidi1, A. Delbari1, J. Lökk1
1Division of Clinical Geriatrics, Department of Neurobiology, Care Sciences & Society (NVS), Karolinska Institutet, Stockholm, Sweden, 2Iran University of Medical Sciences, 3Mental Health Research Center, Tehran Psychiatry Institute, 4Neurology, Iran University of Medical Sciences, Tehran, Iran, Islamic Republic of

PP4140
The clinical syndrome of dystonia with aphonia
C. Ganos, L. Taiwo, M. Stamelou, A. Batla, R. Erro, K.P. Bhatia
Sobell Department of Motor Neuroscience and Movement Disorders, University College London (UCL) Institute of Neurology, London, United Kingdom

PP4141
The relationship between Parkinson’s disease and mean platelet volume (MPV)
S. Geyik1, R. Yiğiter1, G.P. Akgül2, M.A. Elci1, Y.E. Fırat1
1Neurology, Gaziantep University, 2Neurology, DR Ersin Arslan Government Hospital, Gaziantep, Turkey

PP4142
Influence of dopamine on cognitive functions in Parkinson’s disease patients
T. GilmanKuric1, S. Tomić, M. Vladić, M. Petek, S. Jurić, S. Mišević, A. Soldo Koruga, S. Butković Soldo Department of Neurology, Clinical Hospital Centre Osijek, Osijek, Croatia
PP4143

Transcranial sonography is a method of early diagnosis of Parkinson's disease

O. Izhboldina\textsuperscript{1}, I. Zhukova\textsuperscript{1}, M. Nikitina\textsuperscript{1}, N. Zhukova\textsuperscript{1}, V.A. Alifirova\textsuperscript{1}, A. Agasheva\textsuperscript{2}, L. Glotova\textsuperscript{2}, A. Buikina\textsuperscript{2}

\textsuperscript{1}Department of Neurology and Neurosurgery, Sibirian State Medical University, \textsuperscript{2}Hospital No2, Tomsk, Russian Federation

PP4144

Regional distribution of Huntington's disease in Slovenia

K. Jan\textsuperscript{1}, M. Zaletel\textsuperscript{1}, N. Teran\textsuperscript{2}, L. Lovrecic\textsuperscript{2}, B. Peterlin\textsuperscript{2}

\textsuperscript{1}Neurology, \textsuperscript{2}Obstetrics and Gynecology, University Medical Center Ljubljana, Ljubljana, Slovenia

PP4145

Sleep disorders in Parkinson's disease

K. Kracunova, J. Benetin

Department of Neurology, University Hospital Bratislava, Bratislava, Slovakia

PP4146

Reduction of motion disability in migrainous rats with Parkinson's disease

A.A. Lotfinia, B. Khodaie, M. Lotfinia, M. Ahmadi

Shefa Neuroscience Research Center, Tehran, Iran, Islamic Republic of

PP4147

Decreased spreading depression susceptibility in a Parkinson rat model

M. Lotfinia\textsuperscript{1,2}, A.A. Lotfinia\textsuperscript{1}, B. Khodaie\textsuperscript{1}, M. Ahmadi\textsuperscript{1}

\textsuperscript{1}Shefa Neuroscience Research Center, \textsuperscript{2}Shahid Beheshti University of Medical Sciences, Tehran, Iran, Islamic Republic of