

SRml were documented ($EO 14.81 \pm 5.38$ mm and 20.29 ± 13.3 in PD and control, respectively, and increased in EC to 15.39 ± 6.57 mm (control) and 26.39 ± 16.7 mm (PD). The SRml strongly correlated with the stage of the disease.

Conclusions: Gradual increase of postural instability with progress of PD could be documented. In contrast to the normal subjects, PD patients seem to depend more on vision in control of posture. Majority of sway parameters did not correlate with patients' age, which is probably due to other PD motor symptoms and pharmacological treatment; thus, posturography cannot be applied directly for evaluation of the PD stage.

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Efficacy and safety of weak electromagnetic fields in Parkinson's disease patients

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Background: An idea of effect of external magnetic fields is based on that appropriate external stimuli can result in the mobilisation of regenerative processes. Magnetic fields improve the interneuron conductivity and modulation of neuron activity. It can be assumed that transcranial application of weak electromagnetic fields can help to restore a functional equilibrium in dopaminergic pathway.

Aim: To assess the therapeutic effect of transcranial application of weak electromagnetic fields with Viofor JPS in PD patients.

Materials and methods: 40 patients, aged 30–80, diagnosed with idiopathic PD, scoring 1–3 stage in Hoehn Yahr Staging were included into the study. 22 PD patients had motor fluctuations and/or dyskinesias. The control group consisted of 18 PD patients free of motor fluctuations and/or dyskinesias. All PD patients were randomized into treatment or placebo group. The weak electromagnetic fields were generated utilizing ionic cyclotron resonance with constant intensity and were applied with Viofor JPS (MedLife, Poland). The magnetic treatment was applied daily during 14 days. Clinical assessment was done by neurologists specialized in movement disorders who was blinded to randomization. It consisted of Modified Hoehn Yahr Staging, Unified Parkinson's Disease Rating Scale (UPDRS), Goetz Dyskinesia Scale, and Clinical Global Impression Scale. All PD patients noted the duration of ON and OFF time in the diary and they all underwent close medical and laboratory safety analysis.

Results: There was no effect of magnetic fields on motor complications in PD patients. The duration of ON/OFF time, the presence and the intensity of dyskinesias were not changed during the study. The progression of the PD according to UPDRS III was higher in PD patients with dyskinesias in the placebo group than in the treatment group ($P < 0.05$). No side effects accompanied to the magnetic treatment were observed.

Conclusion: Transcranial application of weak electromagnetic fields was a safe procedure with no effect on motor complications in PD. It is possible that weak electromagnetic fields can reduce the progression of parkinsonian symptoms, which need to be confirmed in further studies.

P332

Pain in Parkinson's disease

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Objective and Background: Pain is reported by nearly half of patients with Parkinson's disease (PD). In some patients, it can be severe or intractable and more distressing than the motor symptoms. There have been few studies assessing the frequency and nature of pain in PD. We assessed the prevalence of pain and potential underlying causes in patients with PD.

Methods: A total of 96 patients with PD (42 female, 54 men) participated. The mean age was 62.3 ± 11.7 (25–84) years and the mean duration of illness was 5.5 ± 4.2 (1–24) years. UPDRS, Hoehn-Yahr, Leeds pain scale, anxiety scales (STAI- TX 1 and 2) were administered to all patients. Depression was assessed with geriatric depression scale and Beck's depression scale.

Results: Pain as the first symptom of PD was seen in 3 (2.8%) of patients. 63 (64.9%) out of 96 patients with PD, reported pain. Pain types included the musculoskeletal type of different etiologies (osteoarthritis,

frozen shoulder, rotatuar cuff rupture, scoliosis, abnormalities of posture, post-traumatic): 25 patients (39.7%), radicular or neuropathic pain: 6 patients (9.5%), pain secondary to dystonia: 12 patients (19%), central pain: 7 patients (11.1%), and unclassified type: 5 patients (7.9%); 8 patients (12.7%) described more than one type of pain. Pain did not correlate with sex, duration of disease, depression, anxiety, sleep disturbances, fatigue, age at onset of PD or history of disease in first-degree relatives. Akathisia seemed to be correlated with presence of pain ($P < 0.02$).

Conclusions: Our results suggest that pain is one of the most common non-motor symptoms in patients with PD. In order to identify the appropriate treatment strategy, it is essential to identify the underlying etiology.

P333

Sialorrhea: Validation of a method for objective measurement and a clinical scale in Parkinson's disease patients

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Background Objective: at least 70% of Idiopathic Parkinson's Disease (IPD) patients complain about sialorrhea. The objective of this study was to validate a new instrument for the measurement of the content of saliva in the mouth and for the evaluation of patient subjective perception of excessive saliva secretion by means of a clinical scale.

Methods: Pooling of saliva in the mouth was measured by placing dental cotton rolls under the tongue, and subjective perception was classified according to a score provided by a 7-item retrospective self-administered survey (range: 0 to 21 points). The study was divided in three phases.

Phase 1: The content of saliva in the mouth was measured in 19 healthy young volunteers twice, 7 days apart. Intra- and interobserver agreement was checked with Spearman's correlation.

Phase 2: The survey was given to 39 IPD patients. Reliability of the survey was checked by employing Chronbach test.

Phase 3: The content of saliva in the mouth was measured and the survey was given to 47 additional IPD patients.

Results: The relationship between pooling of saliva, perception, and characteristics of the patients was analyzed. The correlation between salivation in the healthy subjects measured on the two occasions was 0.83 ($P < 0.001$). When the measurements were performed by the same person the correlation was 0.90; however, when it was performed by a different investigator the correlation changed to 0.81. Standardized Cronbach alfa, a measure of reliability was 0.78 (a value between 0.7 and 0.8 is acceptable). Average inter-item correlation was 0.35. Of the 47 patients recruited for the last phase, 62% complained of sialorrhea. The subjective score for these patients correlated significantly with the content of saliva in the mouth ($r = 0.42$, $P = 0.03$). Patients without sialorrhea complaints had a lower subjective score and less salivation, but only the subjective score difference was statistically significant.

Conclusion: Our method for measuring the content of saliva in the mouth and subjective perception of sialorrhea was reasonably reliable and showed excellent intra- and interobserver agreement. The use of validated methods is critical for the appropriate evaluation of current and future therapeutical interventions for sialorrhea.

P334

Handwriting graphometric analysis in idiopathic Parkinson's disease and parkinsonism

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Background: Micrographia is a well-known feature of Idiopathic Parkinson's disease (IPD). Diminished amplitude and velocity of stroke have been described in Secondary Parkinsonism (SP); but whether this impairment is different from that found in IPD is unclear.

Objective: To assess handwriting characteristics in IPD patients, and compare them with those found in SP. To analyze the evolution of handwriting impairment in terms of disease stage, and search for differences in writing when IPD patients were evaluated in ON vs. OFF state.

POSTER SESSION 2

Monday, March 7, 2005

8:30 AM–5:00 PM

Poster numbers 188–383

Authors present: 12:30 PM–2:15 PM

OTHER CLINICAL

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Prophylactic treatment of migraine with botulinum toxin A in Koreans: An open-label study

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Background: The prevalence rate of migraine is 10% in women and 3% in men in general population of Korea. However, more people suffer from migraine without getting precise diagnosis. Prophylactic and abortive therapeutic regimens for migraine have limitations in their efficacy and have many side effects. But botulinum toxin may be effective in the prevention of migraine for a long term period.

Objectives: To evaluate prospectively the effect of botulinum toxin type A injection on the frequency and severity of migraine in Koreans.

Methods: Nineteen patients (12 women, 7 men) with migraine (8 migraine with aura, 11 migraine without aura) according to HIS criteria were enrolled in the study.

The frequency (number of migraine per month) and intensity (recorded on an analog scale of 1 to 10, 10 being most severe) of headache and subjective GAI scale (global assessment of improvement) were recorded before and after treatment.

Forty-eight units of Botox® were injected into bilateral corrugator supercilii, temporalis, and frontalis muscles.

Results: At 1 month, 14 (74%) of 19 patients experienced significant improvement of GAI scale (more than 50%, $P < 0.05$, duration 6.0 months). Four patients (21%) reported complete elimination of headache ($P < 0.05$, duration, 5.5 months). Two patients (10%) did not notice a change in headache. Overall, headache frequency decreased from 19 to 10 per month on average ($P < 0.05$), and the intensity decreased from 10 to 4 ($P < 0.001$). Six patients (75%) reported complete elimination of aura. Eleven patients (58%) experienced complete elimination of associated gastrointestinal symptoms and 8 patients (42%) reported significant improvement of associated gastrointestinal symptoms ($P < 0.001$). Two patients (10%) reported minor side effects. The duration of efficacy of botulinum toxin type A injections was 5.7 ± 1.4 months on average.

Conclusions: Prophylactic treatment for migraine using botulinum toxin type A is safe and effective to reduce frequency and severity of paroxysmal migraine attacks and associated symptoms in Koreans.

P189

Paroxysmal nonkinesigenic dyskinesia responsive to a gluten-free diet

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Objective: To describe paroxysmal nonkinesigenic dyskinesia (PNKD) responsive to a gluten-free diet in a child with biopsy proven celiac disease.

Background: Neurological signs and symptoms associated with celiac disease have been recently described in the literature and encompass a wide range of movement disorders, including cerebellar ataxia, myoclonus, and chorea. PNKD has not previously been reported in association with celiac disease.

Methods: A child with PNKD was followed for 6 years by pediatric neurologists and movement disorder specialists.

Results: The episodes began at the age of 6 months are described as twisting of her upper body to one side with an outstretched arm and a

flexed position of the left leg. The episodes would occur 10–20 times per day and would wax and wane in frequency. She was treated with carbamazepine, gabapentin, acetazolamide, phenytoin, clonazepam, and levodopa/carbidopa without relief of her symptoms. At the age of 8, she had an acute gastrointestinal illness and IgA antigliadin antibodies were positive. The patient was referred to gastroenterology and bowel biopsy was performed, showing evidence of celiac disease. After starting a gluten-free diet, the episodes decreased in frequency, and she has now been without symptoms for 6 months.

Conclusions: PNKD may be another movement disorder that is associated with celiac disease. Celiac disease is thought to be autoimmune due to the presence of several different immunoglobulin A antibodies in affected patients. Neurological syndromes, including cerebellar ataxia, hypotonia, developmental delay, and headache, have an incidence of 10% in children with celiac disease and usually do not improve on a gluten-free diet. Linkage studies of families with PNKD have shown a locus on 2q that may be responsible for classical PNKD and the disorder has been described to improve as children get older. Although it may be difficult to reconcile the likely genetic basis of PNKD with autoimmune celiac disease, the improvement of this child's episodes were temporally related to the initiation of a gluten-free diet. The case report suggests additional studies may be warranted looking at the association of these two disorders and response to a gluten-free diet in other children.

P190

Management of the extrapyramidal syndrome in acquired chronic hepatocerebral degeneration (ACHD)

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Objectives: To describe the clinical characteristics and therapeutic interventions in a case of Acquired Chronic Hepatocerebral Degeneration (ACHD).

Background: ACHD was first described in 1965 by Victor et al., who intended to make a clear distinction from the "familial type" seen in Wilson disease. The clinical spectrum of ACHD is well defined and includes a predominantly hyperkinetic extrapyramidal syndrome, neuropsychiatric symptoms, or both. Although some evidence about the pathophysiology of ACHD has derived from neuropathological and neuroradiological studies many questions about the current treatment options remain unanswered.

Methods: We describe the clinical characteristics and therapeutic interventions in a patient, who developed ACHD secondary to end-stage liver disease from Hepatitis C. The patient was diagnosed and followed up in the Department of Neurology, University of Miami, School of Medicine.

Results: A 69-year-old female was referred to our Department for the first time 8 years ago for evaluation of her oro-bucco-lingual (OBL) dyskinesias in the setting of hepatic failure caused by Hepatitis C. The OBL dyskinesias have appeared briefly before the patient received a successful liver transplantation. The involuntary movements disappeared post-transplantation only to reappear 3 months later.

Neurological examination revealed, moderate OBL dyskinesias, mild bilateral symmetrical postural hand tremor, asymmetrical (right > left) mild limb and neck rigidity, bradykinesia and postural instability. The patient could only ambulate with assistance. There were no signs of pyramidal, sensory or cerebellar dysfunction.

After trials with haloperidol and benztropine (discontinued due to adverse effects), the patient was gradually started on tetrabenazine (75 mg/day), with almost complete suppression of the OBL dyskinesias. Parkinsonian symptoms caused by tetrabenazine were successfully managed with the addition of a dopamine agonist (DA) (ropinirole 1 mg/day). The patient has remained stable on this combination for the past 2.5 years, with no OBL involuntary movements, and only mild bradykinesia and limb rigidity bilaterally.

Conclusions: We report for the first time the successful combination of tetrabenazine and a DA in the treatment of an extrapyramidal syndrome of hyperkinetic and parkinsonian features caused by ACHD.