Poster Session 1, Sunday 26 August

Cerebrovascular diseases

P1001
SEEKING EMERGENCY CARE AFTER A TRANSIENT FOCAL NEUROLOGICAL SYMPTOM: DATA FROM A POPULATION-BASED STUDY IN RURAL AND URBAN NORTHERN PORTUGAL
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Background and aims: Efforts are needed to improve patients’ awareness for seeking care after specific neurological symptoms, since these may carry an increased risk of stroke in a few days. This study analyses the neurological symptoms associated to emergency attendance and time from symptom onset to admission.

Methods: All patients with a transient neurological focal symptom registered in a population-based study were included (545 urban, 109 rural). Demographic characteristics, neurological signs/symptoms and details of medical assistance were recorded.

Results: Overall 89% of the patients sought emergency care, 93% in urban and 68% in rural areas (chi-square=56, df=1, p<0.001). The more commonly reported symptoms were vertigo (91%) and disturbance of consciousness (90%). The attendance rate for patients with visual disturbances (77%), speech/language disturbances (79%) and hemi-sensitive/motor deficit (79%) was lower than the overall expected. In urban area low attendance rates were also found in patients with perceived altered memory function (74%) and hemi-motor deficit (85%) and a high rate when vertigo was the complaint (96%). Among the 512 patients using emergency services, 206 (40%) arrived within 3 hours, independently of residential area, gender and age. The presence of altered consciousness or hemi-motor deficit shortened the delay to admission, 53% and 62% respectively arrived within 3 hours; vertigo on the other hand reduced this proportion to 31%.

Conclusion: Urban and rural populations use and value emergency care differently. Specific public education on focal neurological symptoms is needed to reduce delay in seeking medical care to improve diagnosis/prognosis.

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P1002
DVD-BASED OBSERVATIONAL LEARNING FOR IMPROVING STROKE OUTCOMES: A NEW APPROACH TO STROKE EDUCATION
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Background and objective: Adequate understanding and appropriate use of various aspects of stroke prevention and care by stroke patients and their caregivers is crucial for reducing stroke burden. However, the perception of verbal and written stroke educational information is often poor and there is a lack of effective learning tools to help stroke survivors and their caregivers to cope with stroke aftermath. We aimed to develop a culturally appropriate theory-driven educational strategy for stroke survivors and their informal caregivers.

Methods: This project will be carried out in three consecutive phases: (1) research into the educational needs of stroke survivors and their informal caregivers; (2) development of culturally appropriate observational learning tools; and (3) clinical testing of the observational learning tools. In this presentation, the first two phases of the research will be presented.

Results: The three observational learning DVDs cover the most common aspects of stroke care and rehabilitation, including understanding the brain and stroke, stroke risk factors and their control, principles of acute stroke management, possible stroke outcomes, post-stroke care and management. Qualitative analysis of responses from stroke survivors and their family caregivers as well as from health professionals indicate highly positive appraisal of the DVDs.

Conclusions: DVD-based role modelling developed for stroke survivors and their family caregivers are the novel theory-grounded educational strategy which is likely to be effective in improving stroke outcomes. A randomised controlled trial is warranted to evaluate the efficacy and effectiveness of the intervention.

P1003
RELATIONS TO MITRAL ANNULAR CALCIFICATION, AORTIC VALVE SCLEROSIS, AND CAROTID INTIMA-MEDIA THICKNESS IN ACUTE ISCHEMIC STROKE IN ADULTS FREE OF CLINICAL CARDIOVASCULAR DISEASE
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Background and aims: Mitral annular calcification (MAC) and aortic valve (AV) sclerosis has been documented to be an independent predictor of atherosclerosis and an increased carotid intima-media thickness (IMT) is a strong predictor of ischemic stroke. We prospectively evaluated whether MAC and AV sclerosis were related to increased carotid IMT in acute ischemic stroke in adults free of clinical cardiovascular disease.

Methods: Acute ischemic stroke was classified by TOAST classification; large artery disease (LAD), small vessel occlusion (SVO), cardioembolic (CE), and others. LAD and SVO were included, and CE and others were excluded. MAC and AV sclerosis were determined by transthoracic or transoesophageal echocardiogram. Carotid IMT was determined by carotid Doppler. The relations to these valve abnormalities and carotid IMT in each stroke subtype were analyzed.

Results: In total 653 patients with acute ischemic stroke were studied, and 182 patients were included. Among 182, there were 97 LAD and 85 SVO. In LAD, valve abnormalities were 26 (27.8%), and mean carotid IMT was 0.955 mm. In SVO, valve abnormalities were 19 (22.3%), and mean carotid IMT was 0.908 mm. In LAD, relations of MAC was significant (p=0.034), and in
SVO it was not (p=0.235). There were statistically no significant differences in the relations of AV sclerosis and increased carotid IMT in both groups.

**Conclusions:** MAC seemed to be associated with increased carotid IMT in LAD rather than SVO. No significant differences, however, were observed in the relations of AV sclerosis and increased carotid IMT in both stroke subtypes.

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**P1004**

**REASONS FOR EXCLUSION FROM INTRAVENOUS THROMBOLYTIC THERAPY IN PATIENTS WITH ACUTE ISCHEMIC STROKE WITHIN 3 HOURS**


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**Background and aims:** We aimed to investigate the reasons for exclusion from intravenous thrombolysis and to identify factors which can improve the eligibility by improving in-hospital coordination or eligibility criteria.

**Methods:** 101 patients with acute ischismic stroke or TIA were identified as arriving at hospital within 3 hours. The time intervals from onset to door (OD-time), from door to call for neurologist (DC-time), from door to image performance (DI-time), and from door to needling for rt-PA administration (DN-time) were identified by retrospective review.

**Results:** Excluding 12 patients having TIA, 89 patients made up the study population. 18 received thrombolysis. Thrombolysis-treated patients had higher median NIHSS score, shorter OD-time and DI-time. Out of 71 patients who were excluded from thrombolysis, 67 were excluded by the predefined eligibility criteria. The reasons were minor deficit in 28 patients, unclear onset in 27, old age in 12, improving symptoms in 6, consent refusal in 4, seizure in 2, high BP in 1, and others in 11. Of 28 patients who were excluded by minor deficit or improving symptoms, only 5 had poor functional outcome at discharge.

**Conclusions:** In our retrospective review, about one fifth of included patients were treated by thrombolysis. The major reasons for exclusion were minor deficit, uncertainty of onset time, old age, and improving symptoms. Almost one fifth of the patients who were excluded as having minor deficit or improving symptoms had moderate to severe disability at discharge.

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**P1005**

**INTRAVENOUS tPA TREATMENT IN ACUTE ISCHEMIC STROKE RELATED TO INTERNAL CAROTID DISSECTION. TO TREAT OR NOT TO TREAT**

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**Background:** Small series reported the safety of intravenous tPA treatment in acute ischemic stroke (IS) related to extracranial internal carotid dissection (eICAD). However, no studies analysing specifically the possible benefits on outcome are available.

**Methods:** A multicentre, prospective study was conducted in 4 university hospitals. Consecutive IS patients were included. Stroke severity (NIHSS) and 3-months outcome (mRS) were compared: (1) tPA-treated patients with IS related to eICAD vs. tPA-treated patients with other causes of stroke; (2) tPA-treated vs. non-tPA-treated eICAD patients.

**Results:** 265 IS patients received intravenous tPA (7 of them with eICAD). There were no differences in baseline NIHSS between patients with or without eICAD (14.3 vs. 14.3; ns). However, NIHSS scores at 24 h and day 7 were significantly worse in eICAD patients (17 vs. 9.6 and 15.6 vs. 7.3; p<0.05). No eICAD patients improved significantly at 24h (decrease in NIHSS ≥8 points) as compared to 67 (32%) of patients with other IS causes. When comparing tPA-treated eICAD (n=7) with non-treated eICAD patients (n=7), a trend to higher improvement in 24h and day 7 was found in the non-tPA-treated eICAD group (NIHSS 7.6 vs. 17 at 24h; 6.4 vs. 15.6; p=0.205) with no differences in baseline NIHSS. After 3 months, 80% of tPA-treated eICAD and 20% of non-treated eICAD patients were dependent (mRS>2).

**Conclusions:** Although intravenous tPA treatment in IS related to eICAD seems to be safe, the benefit on outcome is significantly minor than in IS of other causes, and possibly worse than in non-tPA-treated eICAD patients.

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**P1006**

**DOSE TITRATION REDUCES THE INCIDENCE OF EXTENDED RELEASE DIPYRIDAMOLE/ASPIRIN RELATED HEADACHES AND IMPROVES COMPLIANCE**

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**Objective:** Extended Release Dipyridamole/ Aspirin has RRR of 23% over aspirin (ASA) in secondary stroke prevention. Use is limited by the high incidence (36–38%) of headaches. Dose escalation instead of bid dosing from onset may reduce this incidence.

**Methods:** 290 patients with AIS were on antithrombotics, including Extended Release Dipyridamole/Aspirin (35.5%), aspirin (asa) 81 mg (40.7%), Clopidogrel (9%) warfarin (25.5%). Extended Release Dipyridamole/ Aspirin was initiated with 1 tablet along with asa 81 mg for 1–2 weeks and then changed to full dose (bid) after stopping asa. For predictive factors associated with headache patients were dichotomized to those experiencing headaches versus those without headaches after starting antithrombotic medications. Univariate analysis included age, gender, antithrombotic agents, vascular risk factors (hypertension, cardiac disease, prior history of headaches, hyperlipidemia, diabetes). Multivariate regression analysis included univariate factors with p<0.5.

**Results:** 15.17% of the 290 patients, (53.5% M, age 65.4 years) developed headaches. 13 on Extended Release Dipyridamole/ Aspirin, 5 on clopidogrel, 22 on ASA and 12 on warfarin. In the multivariate regression analysis, only younger age (p=0.003%) was predictive of headaches.

With the dose escalation method, 12.8% of 103 Extended Release Dipyridamole/ Aspirin treated patients developed headaches, significantly lower than reported in the ESPS-2 trial (38%). Headaches were mild (2–3/10) and led to discontinuation of Extended Release Dipyridamole/ Aspirin in 2 (6.7%) cases.

**Conclusions:** Younger patients were more likely to experience headaches. The dose titration method of initiating Extended Release Dipyridamole/ Aspirin was associated with a significantly lower incidence of headaches and high compliance.
P1007
ARE CURRENT STROKE PREVENTION PRACTICES OF NEUROLOGISTS IN THE UNITED STATES IN LINE WITH PRESENT RECOMMENDATIONS AND GUIDELINES?
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Introduction: This study was designed to assess the rationale behind stroke prevention in the United States by practicing neurologists.

Methods: A questionnaire based on a stroke scenario was mailed to 1200 neurologists across the United States. Individual questions regarded: 1. Antithrombotic therapy after acute ischemic stroke, 2.a) AIS with PVD b) Ischemic heart disease with EF>50% and NSR, 3. Use of statin, 4. Use and choice of antihypertensives. For each scenario, physicians were asked to select the basis of their response from the following five choices: Published literature, personal experience, defensive medicine, individualized therapy, and others. Physicians were also asked to indicate their years in clinical practice after residency and whether stroke was their subspecialty.

Results: For option(1) most would use ASA/ERDP as antithrombotic therapy (34.8%), with (2a and b), more prescribing ASA+ Clopidogrel (3) 87.9% would use a lipid lowering drug, 71.8% a statin. (4) 78.3% choose an ACEI as initial antihypertensive treatment. Overall, 63% of responders based their choices on published literature, 24% based it on their experience, and 10% individualized therapy. Few responders believed they were practicing defensive medicine. The average years of experience was 16.4, and 10% of respondents were stroke neurologists.

Conclusions: Within the United States, neurologists’ practices are largely consistent with current stroke prevention guidelines, however there is still a need to keep abreast with current studies and outcomes as evident from lack of awareness about increased adverse effects and lack of synergism with combined use of ASA and Clopidogrel.

P1008
PREDICTORS OF IN-HOSPITAL MORTALITY AND SURVIVAL AFTER ACUTE ISCHEMIC STROKE
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Introduction: Many treatments appear to be protective in reducing risk of recurrent stroke. However, it remains unclear if the same factors are also associated with improving the outcome after an acute ischemic stroke (AIS).

Methods: Prospectively collected data from the University Health Consortium on 3522 patients was used in this analysis. Chi-Square and T-tests were utilized to determine which demographic and stroke features, medical history, and medications were univariate predictors of inpatient mortality. The univariate inclusions were stroke features, medical history, and medications were univariate predictors with a p-value less than 0.1 were included in a multivariate regression showing weakness (OR 1.9, 95% CI 1.16–3.27) and mental change (OR 3.09, 95% CI 1.55–6.20) were independent predictors of the faster evaluation.

Results: In the final multivariate regression analysis of the 3522 patients, the predictors of poor outcome included stroke severity (p=0.001, OR 4.98, CI 3.39–7.32), post-stroke complications (p=0.001, OR 22.22, CI 12.37–40) while antiplatelet medication use (p=0.12, OR 0.62, CI 0.42–0.90) and aspirin (p<0.001, OR 0.65, CI 0.47–0.89) were associated with improved stroke outcome.

Conclusions: Patients using aspirin and other antiplatelet agents were 1.6 and 1.5 times more likely to be discharged alive while patients with severe stroke and subsequent complications were 5 and 22 times more likely to die during hospital stay.
tensor drug treatment, severity on admission (Canadian Stroke Scale, CSS), in-hospital complications, mortality and functional state at discharge (Modified Rankin Scale, mRS)

**Results:** 1738 patients were included in the study, 55.9% were men. Average age: 69.61±12 years. 63.3% had high blood pressure and 27.9% DM. 39.4% received hypotensor drugs (90.2% of them for hypertension). Patients with ARB presented lower stroke severity on admission (EC≥6: 16 vs. 29.4%, p=0.011) and better functional state at discharge (mRS≤2: 78 vs. 63.6%, p=0.008). The multivariate logistic analysis showed that ARB pre-treatment was a predictive factor of lower stroke severity, independent of age, sex and stroke subtype (OR 0.4; 95% IC 0.2–0.7). Patients treated with diuretic drugs had higher severity on admission (EC≥6: 34.5 vs. 27.3, p=0.023) and worse outcome (mRS≤2: 58.9 vs. 65.8%, p=0.044). Other groups of hypotensor drugs did not show significant benefit on stroke severity.

**Conclusions:** Previous treatment with ARB was associated with a lower acute stroke severity on admission and better evolution, being an independent predictive factor of lower stroke severity. More studies are needed to confirm this possible protector role.

**P1011**

THE VESTIBULAR SYNDROME AS DIFFERENTIATING SIGN OF LOCATION OF ISCHEMIC STROKE OF THE CEREBELLUM

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**Background:** The purpose of this study was to classify the signs of vestibular syndrome preceding a stroke of cerebellum depending on the stroke localization.

**Material and methods:** 31 patients (26 men and 5 women, aged from 30 to 82 years) with completed ischemic stroke of the cerebellum were examined, and symptoms preceding the stroke were analyzed as well as the cause of stroke. The territories of the three cerebellar arteries were determined using CT/MRI imaging: posterior inferior cerebellar artery (PICA), anterior inferior cerebellar artery (AICA), superior cerebellar artery (SCA).

**Results:** Infarcts involving the PICA region (67.7%) and SCA region (19.4%) were far more frequent than those involving the AICA region (12.9%). Vertigo, vomiting and balance disturbances were the more frequent signs of stroke in PICA territory (80.9%); they were present in 50% of strokes in AICA and SCA regions. In 2 patients the cause of stroke were emboli in course of an aneurysm of vertebral artery, in 1 – coagulopathy, in 4 – stenosis of vertebral or basilar artery and in 2 – atrial fibrillation.

**Conclusions:** The prolonged symptoms of acute vestibular syndrome are the most frequent in PICA territory stroke of cerebellum.

**P1012**

CHRONIC OBSTRUCTIVE PULMONARY DISEASE AS A RISK FACTOR FOR STROKE-RELATED SEIZURES

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**Background and aims:** Chronic obstructive pulmonary disease (COPD) is a risk factor for cardiovascular disorders and different types of stroke. The present retrospective study investigates whether COPD is also a risk factor for the development of seizures in stroke patients.

**Methods:** The study population consisted of 237 patients with stroke-related seizures. The control population was composed of 939 patients, admitted for a stroke between 2002 and 2004 and who did not develop epileptic spells on a follow-up of 2 years. The stroke type and aetiology, and the vascular risk factors, including COPD, were compared. The seizure patients were older (p=0.009) and had more arterial hypertension (p=0.046) and cardiac-embolic strokes (p=0.045) than the control group.

**Results:** On logistic regression only partial anterior circulation syndrome/Infarct (PACS/I) and COPD (p=0.001) emerged as independent risk factors for the development of seizures in stroke patients. The occurrence of seizures was not related to the severity of the COPD or to its type of treatment.

**Conclusions:** The present study confirms that seizures occur most frequently in patients with a PACS/I. Although we were unable to demonstrate why COPD is a risk factor for seizures in stroke patients, its frequent associated nocturnal oxygen desaturation seems to be the most plausible explanation.

**P1013**

PREDICTORS OF VASCULAR DEMENTIA

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**Objective:** To examine the frequency and clinical determinants of vascular dementia in a cohort of consecutive stroke patients.

**Methods:** All stroke patients (n=463) admitted during one year were evaluated by standard protocol during hospitalisation and three months after stroke. The protocol included clinical, functional, neuroimaging and neuropsychological examination. The presence of vascular dementia was diagnosed according to the NINDS-AREN criteria. In addition, a wide range of demographic and clinical variables were examined.

**Results:** After excluding the patients who died (n=138; 29.81%), refused to be interviewed at 3-month follow-up (n=52; 11.23%) and with pre-stroke dementia (n=22; 8.05% of interviewed survivors), a total of 273 (58.96%) patients had neuropsychological examination 3 months after stroke. 49 (19.52%) of them met the criteria for vascular dementia. The correlates of dementia in logistic regression analyses were age, atrial fibrillation, prior stroke, lacunar infarctions, leukoaraiosis, bilateral lesions, number of lesions, moderate to severe stroke severity (NIH-NINDS score) and cognitive impairment (MMSE score) at admission and poorer functional outcome (Barthel index).

**Conclusion:** Dementia is frequent after stroke and is not determined by a single factor. Several factors combine to exceed the critical threshold for cognitive decline and some of them can be prevented.

**P1014**

MANAGEMENT OF SPASTICITY IN ADULTS

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**Background and aims:** Spasticity is a chronic motor disorder caused by upper motor neuron lesion, and is characterized by a velocity dependent increase in tonic stretch reflex (muscle, tone), with exaggerated tendon jerk resulting from hyperexcitability of the stretch reflex. Historically, treatment of spasticity has not been very effective. Over the last decades, studies have suggested that
chemodenervation using botulinum toxin (BoNT) can be helpful, especially when combined with other treatments such as physiotherapy and splinting or casting.

**Method:** One method of circumventing these limitations has been the implantation of a subcutaneous pump that delivers medication, most commonly baclofen, directly into the spinal fluid via an intrathecal catheter. The required dose is a fraction of that by enteral route, and adverse effects such as sedation are greatly reduced. Intrathecal pumps are indicated only for severe spasticity.

**Results:** At the stroke clinic at Apollo Neurosciences Centre-Indraprastha Apollo Hospitals New Delhi, India, the experience of the use of botulinum toxin in 56 patients of cerebral strokes was presented for its usefulness in the management of spasticity. The most common outcome measures of the study was the Ashworth scales of muscle tone and evaluation of range of movement. The ability of botulinum toxin to improve function in spastic limbs both upper and lower limb were evaluated along with the reduction in pain score.

**Conclusion:** This study shows the benefit of BoNT in the management of adult spasticity in stroke patients.

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**P1016**


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**Background and aims:** Stroke risk factors could influence stroke incidence and mortality. The aim of our study was to compare the rates of pre-stroke risk factors diagnosis in relation to incidence rates and mortality rates of first-ever in a lifetime stroke (FEL), on the basis of two population based studies.

**Methods:** We obtained our data from two population based studies: Warsaw Stroke Registry (WSR), conducted in 1991/1992 (population 182 649), and a study conducted as a part of European Register of Stroke (EROS) in 2005 (population 127 735). Standard criteria were used to define stroke (WHO criteria) and mortality.

**Results:** WSR and EROS studies showed similar incidence rates of stroke after standardization to the European population: 141.3 vs. 143.3 respectively, but 1-year case fatality rates decreased significantly from 59.7% (95% CI: 55.3–64.2) to 31.7% (95% CI: 25–42) respectively for WSR and EROS. Stroke mortality rates have also significantly declined (90.6/100 000 in 1991/1992 vs. 37.5/100 000 in 2005).

The pre-stroke diagnosis of common risk factors of stroke, such as hypertension, atrial fibrillation, diabetes and heart failure, has improved from 1991/1992 to 2005, especially regarding hypertension. The percentage of patients with non-treated hypertension before FEL decreased significantly from 22.8% to 10% in 2005 (p<0.05).

**Conclusions:** Two population-based studies showed similar incidence rates for FEL, but there is significant decrease in mortality rates in 2005. The explanation of such results could be better control of risk factors before FEL, although improvement in management of acute phase of stroke might play a role.

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**P1017**

**TELETHROMBOLYSIS IN TEMPIS**

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**Background:** The TEMPS project in Bavaria/Germany was founded in 2003. Two stroke centres provide telemedical support for 12 community hospitals with almost no experience in systemic thrombolysis for stroke. Patients are presented via two-way video-conference and neuroradiological scan transmission. We present the current data on long-term functional outcome after telethrombolysis.

**Methods:** We analysed survival and functional outcome in patients receiving telethrombolysis. Modified Rankin Scale (mRS), Barthel index (BI), Beck Depression Inventar (BDI) and a Quality of Life Questionnaire (SSQOL) were prospectively studied after six months. Their outcome was compared to consecutive patients at the two stroke centres.

**Results:** Over the first 22 months, 170 patients were treated with tPA in the telemedical and 132 in the stroke centre hospitals. After
six months, mortality rates were 14.2% vs. 12.9%. A good functional outcome was found in 39.5% of the telemedical hospitals vs. 30.9% of the stroke centres with mRS 0/1 and 47.1% vs. 44.8% regarding a BI of 95-100. Only 2/3 patients took part in the BDI and SSQOL. Signs of depression were seen in 19.3% vs. 15.6%. A good quality of life could be stated in 73% vs. 74.2%. All differences were not significant.

**Discussion:** Long-term survival and functional outcome after telethrombolysis in TEMPIS were comparable to stroke units and major trials. The quality of life in the majority of patients could be estimated as good even though signs of depression affected almost 1/5 of patients. Telethrombolysis is a potential alternative in areas without neurological stroke units.

**P1018**

**RESPONSE TO MUSIC IN PATIENTS WITH ACUTE ISCHAEMIC STROKE**


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**Background:** Auditory stimulation increases mean blood flow velocity (MBFV) in the middle cerebral artery (MCA). Our aim was to monitor such changes in the affected MCA in patients with acute ischaemic stroke (AIS) and to compare them with healthy individuals.

**Methods:** The study included 113 examinees (52 non-thrombolysed patients admitted to the hospital within 24 hours of AIS onset, and 61 healthy individuals). A baseline MCA MBFV was recorded by means of transcranial Doppler (TCD). In stroke patients only the affected MCA was insonated while in healthy controls both MCAs were recorded. MCA MBFV were monitored during listening to relaxing music for two minutes. The first response of MBFV increase was measured as time (Tmax) and percentage of change in amplitude (Amax). Pearson Chi-Square test was used for inter-group comparison.

**Results:** At baseline, stroke patients had lower MCA MBFV than healthy individuals (p<0.01). In both groups there was an increase in MBFV compared to baseline values as a reaction to the music. Tmax in the stroke group (15.87±7.72) was significantly longer (p<0.01) than Tmax in the control group (9.34±6.16). There was no statistically significant difference in Amax between the two groups.

**Conclusion:** Even though stroke patients with MCA branch occlusion have impaired blood flow in the affected MCA, music is still an effective auditory stimulus. However, their time of reaction to the music was prolonged when compared to healthy controls.

**P1019**

**ASSOCIATION BETWEEN CHLAMYDIA PNEUMONIA INFECTION AND CAROTID ATHEROSCLEROSIS PLAQUE**

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Several studies have assessed association between Chlamydia pneumonia infection and atherosclerosis. This study was designed to investigate the association between this organism and atherosclerotic plaque formation in right and left common carotid arteries (CCAs) and extracranial portion of internal carotid arteries (ICAs).

**Methods:** Antibodies to Chlamydia pneumoniae (IgA and IgG) were measured and compared in 42 patients who had plaque(s) in at least one of CCAs or ICAs (that were detected by duplex ultrasonound) and 82 patients without any plaque in these arteries. CP IgG and CP IgA titres over than 1/10 ISR were defined to be positive.

**Results:** We found that 6.1% of control subjects and 16.7% of our cases were CP IgA seropositive. Although the difference between these 2 groups was prominent but wasn’t significant statistically (p=0.104). 4.2% of females without atherosclerotic plaque and 31.6% of them with plaque were CP IgA seropositive; this difference is statistically significant (p=0.005). There was not any significant difference in seropositivity of CP IgG between case and control subjects and so in men and women groups with and without plaque.

**Conclusion:** CP IgA is a predictor of atherosclerosis, especially in women, but CP IgG has not a predictive value for plaque formation.

**Key words:** Atherosclerotic Plaque, Chlamydia pneumoniae, serum antibody

**P1020**

**BLINK REFLEX RESPONSES IN SUPRATENTORIAL STROKES**

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Blink Reflex (BR) is the electrophysiological counterpart of corneal reflex. BR responses are recorded as ipsilateral R1 and R2 responses and contralateral R2c response. Abnormalities in these responses in supratentorial strokes were evaluated in this article.

**Methods:** BR responses were obtained in 20 supratentorial stroke patients (SSP), and was compared to BR responses in 14 age and sex matched controls.

**Results:** BR responses were abnormal in 19 SSP. Only one patient with right middle cerebral infarction had completely normal BR responses. R1 response was normal in 18 patients and was prolonged in two patients. R2 response was normal in two patients and was prolonged or unobtainable in 18 patients. In 15 patients abnormality of R2 was bilateral. Three patients had unilateral R2 abnormality: in one case ipsilateral and in two cases contralateral to hemispheric lesion.

**Conclusion:** BR responses were abnormal in 95% of SSP. The most common abnormality was absent or prolonged R2 response (90%) that was bilateral in 75% of patients. We conclude that R2 response arch may pass through brain hemispheres, a fact that explains much longer latency of R2 in comparison to R1 response. We had no idea about why R1 response which passes directly in pons from trigeminal nerve nucleus to facial nerve nucleus must be abnormal in SSP (10%). We proposed coincidental micro-infarcts in pons as a probable explanation.

**P1021**

**THE FIRST STROKE UNIT IN SERBIA**


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During the year 2000 acute stroke (AS) was the major cause of death in Serbia while in 2001 it was the first lethal cause in hospital conditions. The purpose of our report is to show the new concept of treating the AS in Serbia. Department of urgent neurology is a part of the Institute of neurology located in the Emergency Centre. At any time, 24h a day, it is possible to do CT, laboratory blood analysis as well as conference examinations in neurosurgery,
cardiology, and radiology. These circumstances made the opening of an acute stroke unit (ASU) possible which offers six beds, six basic vital function monitors and also provides full time supervision by specially trained medical staff including physical therapy from the very start of treatment. ASU works under the standardized protocols and under the Acute Stroke Guide which is in use since November 2004. In one year we gave 18 fibrinolysis and the first one was done in February 2006. At the Symposium of Urgent medicine, in June 2006, doctors agreed that AS should be treated in the first three hours as disease of the first degree urgency, the same way as infarcts myocardii and trauma.

**Conclusion:** In Serbia we are dealing with a new concept of treating AS. At the present time we have only one ASU in which we are starting to use thrombolytic therapy.

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**P1022**

**PLASMA LEVEL OF INFLAMMATORY BIOMARKERS, MMP-9 AND TIMP-1, IN CAROTID ARTERY ATHEROSCLEROTIC DISEASE PATIENTS WITH APOE EPSILON 4 GENOTYPE**

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**Background:** Matrix metalloproteinases-9 (MMP-9) has been implicated in the development and plaque rupture in the carotid artery atherosclerosis.

**Aim:** To study the relationship between circulating MMP-9 and apolipoprotein E (APOE) genotypes in patients with carotid artery atherosclerotic disease (CAD).

**Methods:** Plasma levels of MMP-9, tissue inhibitors of metalloproteinase-1 (TIMP-1), and high-sensitive C-reactive protein (hs-CRP) were measured by using an ELISA in 157 patients with CAD and in 119 controls. APOE genotypes were determined by real-time polymerase chain reaction and melting curve analysis with the LightCycler (Roche Diagnostics).

**Results:** Levels of plasma MMP-9 and TIMP-1 were significantly higher in CAD patients than in controls (p=0.026, p=0.000, respectively). All patients and controls were subgrouped by APOE epsilon2, epsilon3, and epsilon4 genotypes. There was not a difference in plasma levels of MMP-9 and TIMP-1 in patients with APOE epsilon2 and epsilon3 genotypes, however, level of plasma TIMP-1 was higher in patients with APOE epsilon4 genotype.

**Conclusions:** Plasma level of inflammatory biomarkers, MMP-9 and TIMP-1, is increased in patients with carotid artery atherosclerotic disease. And level of plasma TIMP-1 was higher in patients with APOE epsilon4 genotype.

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**P1023**

**DETECTION OF NEOPTERIN AS PARAMETER OF POTENTIAL MONOCYTE ACTIVATION IN PATIENTS WITH ACUTE ISCHEMIC STROKE**

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**Background:** The mechanisms by which inflammation may induce endothelial dysfunction are not fully understood. Immune mechanisms contribute to cerebral ischemic injury. In patients with acute ischemic stroke it has been shown that neopterin was the determinant of endothelium-dependent vascular dysfunction.

**Objectives:** To analyse if neopterin (a by-product of activated macrophage metabolism) is elevated in patients with systemic inflammatory insult at the time of ischemic stroke.

**Material and methods:** 86 consecutive patients with mean age 67±7.8 years who were admitted within 24 h after ischemic stroke were investigated. A control group of 37 patients with mean age 58±4.9 years without ischemic stroke was also tested. The measurement of serum neopterin levels was performed using enzyme linked immunosorbent assay (ELISA).

**Results:** Patients with acute ischemic stroke had significantly higher serum levels of neopterin than those without acute ischemic stroke: 9.6±1.2 versus 7±0.8 nmol/L (p<0.01).

**Conclusions:** The finding of higher serum levels of neopterin, which is regarded as a humoral component of the immune-mediated inflammatory response, sustains the hypothesis that patients with ischemic stroke may show higher levels of inflammatory markers like neopterin. Our results indicate increased monocyte activation after ischemic stroke. These preliminary results need to be confirmed by controlled studies.
P1025

DOES UBIQUITIN-DEPENDENT ENDOCYTOSIS PLAY A ROLE IN THE PATHOMECHANISM OF THE CADASIL SYNDROME?

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Background and aim: Ubiquitin is a highly conserved protein involved in many important cellular processes such as cell surface receptor signalling, endocytosis and protein degradation. Since ubiquitin plays a key role in pathomechanisms of many neurodegenerative diseases, we evaluated its expression in one of them called Cerebral Autosomal Dominant Arteriopathy with Subcortical Infarcts and Leukoencephalopathy (CADASIL). CADASIL is an inheritable vascular dementia characterized by a degeneration of the vascular smooth-muscle cells (VSMC) caused by mutations in the Notch 3 gene. In the syndrome, there is an abnormal accumulation of the Notch 3 extracellular domain on the vessels but molecular pathways linking Notch 3 mutations to degeneration of the VSMC are poorly understood.

Material and methods: 8 human brains with CADASIL evaluated by using light and electron microscopy. Ubiquitin expression was studied by immunohistochemical reactions with monoclonal antibodies using standard streptavidin-biotin method.

Results: In human brains we observed increased ubiquitin expression on structures primarily affected in CADASIL: the VSMC and vascular lamina media. Also big ballooned cells resembling macrophages were ubiquitin-positive. At ultrastructural examination, we noted that pathognomonic to CADASIL deposits of granular osmiophilic material (GOM) were surrounded by numerous caveole and often located inside niches of the VSMC membrane resembling forming endocytic vesicles.

Conclusions: We suggest that in CADASIL, damage to the VSMC may be associated with disturbed ubiquitin-dependent endocytosis of the Notch 3 ligand and observed by us increased accumulation of ubiquitin on the vessel wall can be a manifestation of this disturbance.

P1026

DIFFERENCES IN BRAIN PERFUSION COMPUTER TOMOGRAPHY (PCT) INDICATOR VALUE VARIATIONS MEASURED WITH MODIFIED AND STANDARD METHODS IN PATIENTS WITH CEREBRAL INFARCTION (CI)

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Purpose: To evaluate the values of brain perfusion determined with modified (mPCT) and standard (sPCT) methods of PCT in the patients with various extension, localizations and stages of development of middle cerebral artery (MCA) infarction.

Methods and patients: PCT was performed with GE Lightspeed16 20w multislice scanner in 23 MCA infarction patients. Cerebral blood flow (CBF) and cerebral blood volume (CBV) mean values were determined using standard method with symmetric measurement in basal ganglion area, and using our modified method of 8 area measurements.

Results: CBF determined with mPCT method decreased below 50 to 22 ml per minute per 100 g (ml/min/100 g) accordingly at the level of oligemic and penumbra values in all brain blood supply regions of both hemispheres for patients with MCA CI within 24 hours from clinical onset. CBF decreased at the critical level (5 ml/min/100 g) in posterior regions of MCA blood supply in cases of fatal MCA infarction. CBV was less than 1.5 ml per 100 g (ml/100 g) in cases of total and partial MCA infarction within 24 to 72 hours after clinical onset. CBF, determined with sPCT method, did not decrease to critical levels neither within 24 hours, nor in later measurements. CBV values diminished critically at the level of basal ganglia only within 24 hours after clinical onset without any correlation with the extension of the CI.

Conclusion: mPCT is more informative than sPCT for elevation of regional blood supply changes in both hemispheres in cases of various extensions, localizations and stages of development of MCA infarction.
P1028
PREDICTORS OF FATAL OUTCOME IN MASSIVE MCA INFARCT
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Purpose: The study followed early clinical and CT (computed tomography) diagnosis in massive MCA (middle cerebra artery) infarct, with the aim of obtaining a conservatory or surgical therapeutic plan.

Method: We studied 50 patients with extensive MCA infarct who died during hospitalization in the Neurology Department Constanta in 2006. The study was of indirect retrospective type.

Results: 85% patients were between 65 and 84 years old. 28 presented left MCA infarct and 22 right MCA infarct. On admission, 75% of the patients with extensive left MCA infarct had National Institute of Health Stroke Scale (NIHSS) ≥18, 73% with right MCA infarct had NIHSS ≥15. 80% lived between a few hours and 5 days, 88% lived for one week and 6 patients lived for 3 weeks. CT scan performed in the first 24–48 hours revealed: 18 cases with extent of infarct >67%, 11 – between 33–66%, 21 – <33%; 7 cases – midline shift more than 1 cm; 2 cases – concomitant acute infarct in other territories; 2 – transtentorial herniation; 1 – hemorrhagic foci within the infarct area; 2 – hyperdense MCA sign; 1 – effacement of subarachnoid space, 2 – attenuation of corticomedullary contrast.

Conclusion: Advanced age, a high value of baseline NIHSS and specific CT modifications are important parameters unfavourable prognosis in massive MCA infarct.

P1029
ISCHAEMIC STROKE DUE TO ACUTE INTERNAL CAROTID ARTERY OCCLUSION: COMPARISON OF 1-YEAR CLINICAL OUTCOME IN PATIENTS TREATED BY AN EMERGENT CAROTID DISOBLITERATION VERSUS INTRAVENOUS THROMBOLYSIS
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Background: Intravenous thrombolysis (IVT) performed within 3 hours is the only standard treatment method in acute ischemic stroke (AIS) caused by an acute internal carotid artery occlusion (ICAO). An emergent carotid endarterectomy (CEA) can be used alternatively. The aim was to compare 1-year clinical outcome in patients treated by CEA and IVT.

Methods: In a retrospective, hospital-based, two-centre study, CEA group consisted of 29 patients (20 males; age 39–79, mean 63.6±10.3 years) in one centre, and the IVT group of 20 patients (11 males; age 32–88, mean 70.9±13.0 years) in the other. Clinical assessment was quantified by admission NIHSS score and 1-year mRS (with a poor outcome defined as a mRS>2). Independent samples t-test and chi-square test were applied when assessing statistical significance.

Results: CEA patients were significantly younger (p=0.033). Sex was not significantly different between both groups. Admission NIHSS was significantly lower in CEA (3–18, mean 10.2±4.7) versus IVT (12–31, mean 19.8±4.2) patients (p<0.001). Good 1-year clinical outcome was significantly more frequent in CEA (48.3%) versus IVT (20.0%) patients (p=0.044). When analyzing the subgroups of patients with admission NIHSS 10–20, no significant difference in age and sex distribution was found; good 1-year clinical outcome was present in 35.7% of CEA versus 14.3% of IVT patients (p=0.19).

Conclusions: In this comparison, emergent CEA in patients with AIS caused by acute ICAo is associated with a more favourable clinical outcome when compared to IVT, particularly in younger subjects with milder neurological deficit.


P1030
THE REVIEW OF 22 CEREBRAL VENOUS THROMBOSIS CASES
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Background: The clinical spectrum of the cerebral vein and dural sinus thrombosis (CVT) is wide and non-specific. With the development of neuroimaging techniques, their identification recently improved.

Objectives: To collect clinical data, identify causes and risk factors; to evaluate the treatment and outcome.

Patients and methods: 22 patients (pts) were admitted between 1998 and 2006. Their demographic, clinical, radiological data were analysed. The diagnosis was based on MRI+MRA, and/or CT+DSA. Received treatments and outcomes (mRS) were recorded at admission, after 1st and 3rd month, respectively.

Results: Sex distribution was: 13 women, and 9 men. Their average age was 36.8 years; 69.2% of women were fertile. Acute CVT was diagnosed in 7pts, subacute in 1pts, and chronic CVT in 4pts. The major clinical manifestations included headache in 18 pts (81.8%), focal neurological deficits in 10 pts (45.5%), papilledema in 6 pts (27.3%). All patients underwent CT, MRI+MRA (18 pts), DSA (4 pts). The most frequent thrombosed sinus was superior sagittal sinus (11 pts). 14 pts had infarctions and 11 of these were hemorrhagic. Risk factors were identified for 16 pts, congenital thrombophilia 5 pts, pregnancy 3pts, etc. After 90 days after admission, death rate was 13.6% and 68.2% made a recovery between 0–2 mRS.

Conclusions: CVT were underdiagnosed in our region (low percentage of admissions for benign intracranial hypertension). Even though the percentage of women of fertile age was great, oral contraceptives were not an important risk factor. Diagnostic methods and emergency management were not yet standardized enough, while anticoagulants were systematically used.

P1031
SPONTANEOUS INTRACRANIAL ARTERY DISSECTION AND ISCHEMIC STROKE
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Spontaneous cervicocephalic arterial dissection (CCAD) is an increasingly recognized cause of ischemic stroke in young adults. The aim of work was to study clinical manifestations of intracranial artery dissection (IAD).
Material and methods: We studied 54 patients with CCAD. Among them there were 24 patients with IAD (13 men, 11 women, mean age 26.0±7.8 years). 62% of patients had different clinical manifestations of a connective tissue weakness. Patients underwent clinical study, MRI and a follow-up MRA.

Results: IAD located in the middle (17); posterior (6) cerebral and basilar (1) arteries. 92% of patients with IAD developed ischemic stroke, 8% of patients – transient ischemic attack. IAD was provoked by alcohol, contraceptive drugs or infection. Clinical picture was characterized by the combination of the local brain ischemia symptoms and headache (86%). The course of stroke was favourable in most cases with complete or good functional recovery in 64%. Death occurred in 2 patients with massive brain infarcts. The initial MRA (carried out in 72% within 3 weeks after the disease onset) demonstrated occlusion (70%) or stenosis (30%) of corresponding arteries. The last MRA performed 2 or more months later showed positive dynamic (79%).

Conclusion: The incidence of IAD is comparable with those of extracranial artery dissection. Characteristic clinical manifestations and follow-up MRA have a great diagnostic importance. The development of IAD appears to be related to a weakness in connective tissue of the arterial wall.

P1032
GENETIC POLYMORPHISM OF THYMIDYLATE SYNTTHASE ENHANCER REGION IN PATIENTS WITH SILENT BRAIN INFARCTION
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Background and aims: Hyperhomocysteinemia is an independent risk factor for silent brain infarction (SBI). Plasma homocysteine (pHcy) level is influenced by the activities of enzymes such as 5,10-methylenetetrahydrofolate reductase (MTHFR). Thymidylate synthase (TS) also competes with MTHFR for their common cofactor, 5,10-methylenetetrahydrofolate. The polymorphism of thymidylate synthase enhancer region (TSER) might affect homocystein metabolism by modulating the activity of TS, and so that may be a determinant of SBI by elevating pHcy concentration. Therefore, we studied the polymorphism of TSER in patients with SBI.

Methods: 98 patients with SBI and 92 healthy controls were included. The genotypes of TSER and MTHFR were identified with the PCR-RFLP methods.

Results: The mean pHcy level was significantly higher in SBI patients (13.5±8.5 μmol/L) than in controls (10.3±4.1 μmol/L) (p=0.01). The frequencies of MTHFR C677T genotype and TSER 28bp tandem repeat genotype were not different between the patients and the controls. The pHcy concentrations were not inversely correlated in the SBI patients with TSER 3R3R genotype (r=–0.424, p=0.039).

Conclusions: Our findings suggest that the TSER genotype is not a major determinant of pHcy concentrations neither a risk factor for SBI in Koreans. However, folate supplementation might be meaningful in patients with TSER 3R3R genotype.

P1033
INTRA-ARTERIAL TIROFIBAN THERAPY IN ISCHEMIC STROKE
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Background and aims: Tirotibaban, inhibitors of the glycoprotein (GP) IIb/IIIa receptor, are being used to treat patients with acute cerebral ischemia. The purpose of this study was to evaluate the efficacy and safety of intra-arterial (IA) tirotibaban therapy and/or IA urokinase (UK) in ischemic stroke patients with major cerebral artery occlusion.

Methods: 9 ischemic stroke patients with a major cerebral artery occlusion were included in this study. All patients were treated with IA tirotibaban after endovascular procedures including mechanical thrombolyis and/or IA UK.

Result: 4 patients were treated with IA tirotibaban after IA UK (Group A). 5 patients were treated with only IA tirotibanan (Group B). In Group A, there was 1 patient with no vessel recanalization, 1 patient with partial recanalization, and 2 patients with complete recanalization. In Group B, there were 2 patients with no vessel recanalization, 3 patients with complete recanalization. In both Group A and Group B, an asymptomatic intracerebral haemorrhage did not occur in any patient, but a symptomatic intracerebral haemorrhage occurred in 1 patient.

Conclusions: The IA tirotibaban and/or IA UK may be successful treatments in reopening an occluded major cerebral vessel without increasing hemorrhagic risk and with good functional outcome.

P1034
STROKE OUTCOME IN ASSOCIATION WITH DAY OF THE WEEK: STROKE SEVERITY AND ARRIVAL AT THE HOSPITAL
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Background: The aim of the current study was to evaluate the outcome of first-ever stroke after 6 months in association with day of the week and the time of arrival at the hospital. The hypothesis was that outcome is the best for those arriving earlier and on working-days due to better management. The study was based on the Third Stroke Registry in Tartu, Estonia.

Methods: All patients underwent CT. The severity of stroke was assessed using the Scandinavian Stroke Scale (SSS) on admission and outcome by the Barthel Index (BI) score (max=20) 6 months following the stroke.

Results: From a total of 451 patients in the registry, the exact time of stroke occurrence was known for 265 patients. The analysis showed that the patients having hemorrhagic stroke and those with lower SSS score arrived to the hospital significantly earlier compared to the patients with other stroke subtypes (p<0.001). No difference between men and women were detected. The patients with unfavourable outcome (BI<15 or death) at 6 months arrived at the hospital significantly faster (p=0.008). The outcome after 6 months was not influenced by the day of the week of the ictus.

Conclusions: Contrary to our speculations, early arriving patients had worse outcome, explained by more severe stroke in these patients and the outcome of stroke was not dependent on the day of the week of stroke occurrence.
P1035
EPIDEMIOLOGICAL EVALUATION OF ACUTE CEREBROVASCULAR EVENTS IN ZABRZE IN 2005. A COMMUNITY-BASED STUDY
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In order to estimate epidemiological agents of cerebrovascular events, a community-based study was conducted in Zabrze. We reviewed records of patients hospitalized in 2005 in any of the three acute-care units: Stroke Unit of Clinical Department of Neurology, Neurological Department and Intensive Care Unit in a district hospital. All files with the diagnosis of I60, 61, 63, 64 and G45 according to ICD-10, obtained from the National Health Fund, were reviewed. The population of Zabrze numbered 191,247 (92,586 men, 98,661 women) and the total number of patients was 621 (270, 43.5% men, mean age 67.2 (64.7, 69 resp.). Stroke cases amounted to 430 (212,218), mean age 65.4 and 71.9, resp. Stroke was ischaemic in 376 cases (87.4%) and more frequent in women (n=193, 51.3%), haemorrhagic one was more common in men (29, 53.7%). 75% of events occurred between 55–84 and 32.3% between 65–74yrs. In men stroke was most common in group aged 65–74 (n=71, 33.5%) and 75–84 in women (71, 32.6%). Incidence rate of First Event Stroke was 224 (229, 221) and standardised for European population 198.3/y/10^5 and of First Event in Lifetime (n=328) was 171, standardised 151/y/10^5. Case-fatality rate was 17.2% for stroke generally, 13.0% for ischaemic, 46.3% for haemorrhagic stroke. Mortality rate was 38.7 (43, 31), standardised 33.1/y/10^5. Incidence and mortality rates predominated in the group aged 55–84 yrs and in men. Mortality rate proved to be much lower than established in 1992 (31.6%) in another Polish community-based study in Warsaw, including 200,000 people also, but incidence rate was higher (111/y/10^5 in 1992).

P1036
ELABORATION OF A SYSTEM IN THE URALS REGION OF RUSSIA: EARLY DIAGNOSTICS OF INTRACRANIAL ANEURYSMS (IA) BEFORE THEIR RUPTURE
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Introduction: We sought to create a scale to identify people at high risk for developing IA.

Methods: We compared 199 cases with treated IA (96 men, 103 women, mean age 43 years) and 194 controls without IA (108 men, 86 women, mean age 38 years). We identified the preponderance of certain features associated with IA, using relative risk (RR) in men (RRm) and women (RRw), and combined for overall relative risk (ORR). We tested this scale, using MR-angiography to identify IA, on 40 first-degree relatives (FDR) of patients with IA and 40 patients with migraines.

Results: We revealed the following factors associated with IA: History of hypertension (RRw=14.0, RRm=3.7), family history of haemorrhages (RRw=7.5, RRm=3.4), presence of 3 or more visible markers of connective tissue dysplasia (RRw=33.6, RRm=6.8), history of migraines (RRw=19.5, RRm=24.4). ORR in women was almost twofold higher than in men (74.6 and 38.3 respectively). The mean ORR in our patients was 45.4 in women and 12.3 in men. Individual ORR was defined as low when ORR was <33.6 in women and <6.8 in men, moderate – 33.6–53.1 in women and 6.8–13.9 in men, high – >53.1 in women and >13.9 in men. We found 3 IA cases (7.5%) among FDR and 2 cases (5%) in patients with migraines with moderate ORR.

Conclusion: This scale may be easily used for evaluation of individual risk of development of IA and future screening examinations of high risk patients.

P1037
CHARACTERISTICS OF CRYPTOGENIC STROKE/TIA LOCALIZATION DUE TO PATENT FORAMEN OVALE PREVALENCE
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Background: PFO is considered a cause of cryptogenic stroke and risk factor for neurological events. The goal of this study was to assess characterization of stroke/TIA localisation due to this inborn anomaly.

Methods: We investigated 133 consecutive pts diagnosed due to cryptogenic stroke (91 pts) and TIA (29 pts) or other neurological symptoms in years 2004 and 2006. In all patients transthoracic echocardiography and multiplane TEE with contrast (agitated saline) and Valsalva manoeuvre were performed. In 93 cases data concerning ischemic stroke were further subdivided according to the Bamford classification: total anterior circulation syndrome [TACS], partial anterior circulation syndrome [PACS], posterior circulation syndrome [POCS], or lacunar circulation syndrome [LACS]. Data were also assessed according to topography and divided into: hemispheric, subcortical, localized in trunk, unknown and due to number of ischemic lesions. In this subgroup PFO was identified in 54 cases (58%), (female: 34, age 41±23 yrs) and in the remaining 39 pts PFO was excluded (female: 24, age 43±25 yrs).

Conclusions: Ischemic cerebral events in patients with PFO prevalence were associated with posterior brain circulation contrary to ischemic events in patients without PFO, which were frequently classified as PACS. In PFO (+) group there was a trend towards lesions situated in hemispheres or in trunk while in PFO (−) unknown topography was more frequent.

P1038
ANALYSIS OF FACTORS INFLUENCING HOSPITAL ADMISSION WITHIN A 3 HOURS WINDOW BECAUSE OF ACUTE STROKE
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Introduction: Thrombolysis is the most effective form of specific therapy of ischemic stroke. Short time window – usually 3 hours – results with small number of patients treated with this method.

Aim of study: We aimed retrospective estimation of factors influencing early admission ≤3 hours in the acute phase of stroke.

Methods: The retrospective analysis of patients’ data was made. Study group consisted of 227 patients, inhabitants of Tricity and...
region: 106 women and 121 men, age 41–94 years. Prevalence of gender, accommodation, occupational status, functional state, history of hypertension, diabetes, smoking, alcohol abuse, coronary disease, myocardial infarction, stroke and TIA in subgroups ≤3 hours and >3 hours until hospital admission was made with use of Chi-square test.

**Results:** Prevalence of gender, accommodation, occupational status, functional state, history of hypertension, diabetes, coronary disease, smoking, alcohol abuse and infarct assessed factors was not significantly different (p>0.05) in groups of patients with time of hospitalization ≤3 hrs and >3 hrs. There was lower rate of hospitalization ≤3 hrs in groups of patients with previous stroke/TIA (p<0.05).

**Conclusion:** Results of our study showed that presence of stroke risk factors do not influence time of admission to hospital in acute phase of stroke. Worse functional status may have an impact on lower rate of hospitalization ≤3 hrs in the group of patients with previous stroke/TIA. We conclude that structured education concerning stroke symptoms and necessity of immediate hospitalization in case of stroke is essential, both in primary and secondary stroke prevention.

**P1039**

**SEIZURES AND EPILEPSY IN PATIENTS WITH LACUNAR STROKES**

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**Background:** The relation between seizures and small subcortical infarcts is uncertain. The present retrospective study investigates whether differences are observed between patients with and without subsequent seizures following a lacunar stroke.

**Patients and methods:** 37 patients with seizures and a prior history of a lacunar stroke were admitted to the Ghent University Hospital during 2000 and 2005. For comparison we used the 205 patients, admitted between 2002 and 2004, with an acute lacunar stroke and without epileptic spells on follow-up. 9 of 37 of the patients with seizures and 48 out of the 205 without seizures had a history of recurrent lacunar strokes. Vascular risk factors, outcome, location and number of lacunes, and degree of white matter changes were mutually compared.

**Results:** No differences in vascular risk factors, distribution and frequency of the lacunes, degree of severity of the white matter changes and outcome were observed. On the Mini-Mental State Examination moderate to severe cognitive disturbances were observed in both groups.

**Conclusions:** In the present study we found no evidence that seizures are directly induced by lacunar infarcts. The seizures appear to be part of a more global ongoing cerebral disorder leading to cognitive impairment.

**P1040**

**CHANGE OF ENDOTHELIUM ANTIAGGREGATORY ACTIVITY IN PATIENTS WITH ISCHEMIC STROKE DEVELOPED AGAINST THE METABOLIC SYNDROME BACKGROUND**

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**Objective:** To determine the impact of the metabolic syndrome on the antiaggregatory activity of the endothelium.

**Materials and methods:** 40 patients with ischemic stroke (IS) were examined, 20 of them were identified as having metabolic syndrome (MS). A cuff test was performed on all the patients during the first 48 hours from stroke onset, then 5–7 days thereafter and on the 21st day of disease. The ADP-induced thrombocyte aggregation (ADP-TA) was measured prior to and after cuff test and its percentage change was evaluated.

**Results:** In the beginning of the study, the ADP-TA change during the cuff test performance was equally small in all patients: In MS patients this indicator dropped by 11[0; 38]%, in non-MS patients by 12[43; 49]%. After 5–7 days after the stroke onset, the situation actually remained the same: for MS patients and non-MS patients the ADP-TA drop was 20[0; 27]%, and 12[3; 53]%, respectively. On the 21st day of the disease, the ADP-TA value in MS patients after the cuff test did not change while in non-MS patients this indicator dropped significantly by 50[28; 59]% (p<0.05).

**Conclusion:** The antiaggregatory activity of endothelium is decreased in all patients with ischemic stroke. However, the case monitoring demonstrates a noticeable gradual improvement of the endothelium aggregatory activity in non-MS patients whereas in MS patients the antiaggregatory capability of endothelium does not change and remains decreased. The above is an evidence of a more distinct endothelial dysfunction in patients with the IS developed against the MS background.

**P1041**

**MATRIX METALLOPROTEINASE-2 –790 T/G POLYMORPHISM IS ASSOCIATED WITH ANEURYSMAL SUBARACHNOID HEMORRHAGE IN A POLISH POPULATION**

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**Background and aims:** Matrix metalloproteinases (MMPs), which are proteolytic enzymes involved in ECM components degradation, are important players in growth and rupture intracranial aneurysms (IAs) – the main cause of non-traumatic subarachnoid haemorrhage (SAH). An increased MMP-2 activity has been shown in IAs. Polymorphisms in the promoter region may affect gene expression. In this context we analyzed the association of MMP2 –790T/G polymorphism and risk of aneurismal SAH.

**Methods:** We genotyped 227 patients with aneurismal SAH and 198 age- and gender-matched healthy control subjects (CS). Aneurismal SAH was diagnosed by computed tomography and/or lumbar puncture and digital subtraction angiography. Demographic data and information on vascular risk factors were collected. MMP-2 genotypes were determined by PCR-RFLP method.

**Results:** The distribution of the GPX1 genotypes was in Hardy-Weinberg equilibrium in the studied groups. The frequency of both genotypes and alleles differs significantly between the studied groups with an under-representation of GG genotype and G allele in aneurismatic SAH patients compared with CS: 3.01% vs. 8.08% and 21.37% vs. 27.27%, respectively (p<0.05). In crude logistic regression analysis GG genotype was associated with significantly decreased risk for aneurismal SAH: OR=0.36, 95% CI: 0.15–0.90 (p<0.05). This was also true after adjustment for other aneurismal SAH risk factors (arterial hypertension, smoking, excessive alcohol use): OR=0.30, 95% CI: 0.11–0.81 (p<0.05).

**Conclusions:** GG genotype of the MMP-2 –790T/G polymorphism is independently associated with a decreased risk for aneurismal SAH in a Polish population.
Membrane lipid degradation plays an important role in the pathogenesis of ischemic brain damage. The present study was undertaken to evaluate the level of glycolipids in brain homogenate and different brain subcellular fractions in an experimental rat model of cerebral ischemia. Three-month-old male Wistar rats were subjected to cerebral ischemia according to the model of Smith with minor modifications. Brain subcellular fractions were isolated and lipids were extracted in each subcellular fraction. The glycolipid content was measured by thin-layer chromatography and spectrophotometrically. In control rats, the total glycolipid content was the highest in nuclei and the lowest in brain homogenate. Gangliosides and cerebrosides were the major glycolipid classes and they ranged from 34% to 72% and from 28% to 66% of total glycolipids in different subcellular fractions, respectively. Cerebral ischemia led to increase of total glycolipids with the largest increase in the homogenate and microsomes – 89 and 20 times the control values, respectively. The total glycolipid content was the highest in brain homogenate and the lowest in myelin. Gangliosides and cerebrosides accounted for 23% to 53% and for 47% to 77% of total glycolipids in different fractions, respectively. The brain homogenate contained the highest amounts of gangliosides and cerebrosides. The lowest concentration of gangliosides and cerebrosides was observed in myelin. In conclusion, the results of the present study reveal that cerebral ischemia disrupts the brain glycolipid metabolism to a great extent. The accumulation of glycolipids indicates the energy disturbances and may be interpreted as a physiological adaptive response to ischemia.

**P1042**

**GLYCOLIPID CHANGES IN RAT BRAIN SUBCELLULAR FRACTIONS IN AN EXPERIMENTAL MODEL OF CEREBRAL ISCHEMIA**

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The risk of systemic vascular involvement is higher in patients with retinal AVM. Some of them are predictors of poor outcome. The aim of this study was to investigate the incidence of falls and some of its characteristics among hospitalized acute stroke patients. The patients and methods: 1809 acute stroke patients who were admitted between 01.01.2004 and 31.12.2005 to the Neurology Department were analysed. A fall was defined as any unplanned «touch to the floor» of any part of a patient's body, excluding the feet. The aim of this study was to investigate the incidence of falls and some of its characteristics among hospitalized acute stroke patients. 

**P1044**

**OCULOMOTOR DISTURBANCES IN THALAMIC LESIONS**

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The purpose of this study was to determine the severity of oculomotor abnormalities in thalamic lesions and to appreciate the correlation with location, size and outcome. Aims: We examined ocular motility and visual field disturbances in 40 patients with thalamic lesions, (35 haemorrhages and 5 infarcts, not lacunar). Sex, age, risk factors, CT or MRI aspects, were studied:

**Results:** 15 patients developed upward gaze palsies; skew deviation appeared in 7, convergent strabismus in 5, miotic pupil in 10, ptosis in 3, horizontal gaze deviation ipsi- or contralateral in 7; transient hemianopia appeared in 2 cases. Only 2 ischemic large infarcts presented complex ocular signs. All 8 patients who died had complex oculomotor abnormalities.

**Conclusions:** Oculomotor disturbances are more frequent and more complex in large posterolateral and paramedian haemorrhages, and for that some of them are predictors of poor outcome. They rarely appear in ischemic lesions.

**P1045**

**FREQUENCY AND SOME CHARACTERISTICS OF HOSPITALIZED ACUTE STROKE PATIENTS FALLING**

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The aim of this study was to investigate the incidence of falls and some of its characteristics among hospitalized acute stroke patients.

**Patients and Methods:** 1809 acute stroke patients who were admitted between 01.01.2004 and 31.12.2005 to the Neurology Department were analysed. A fall was defined as any unplanned «touch to the floor» of any part of a patient’s body, excluding the feet.

**Results:** Out of 1809 acute stroke patients, 1544 (85.35%) had cerebral infarction and 265 (14.65%) intracerebral haemorrhage. In the group of fall patients (61/3.3%) 49 had infarction (80.33%) and 12 haemorrhage (19.67%) (p<0.25). Out of 61 fall patients, vessel wall damage, thrombosis, occlusion, and ischemia due to steal phenomenon. This process could be enforced by hypercoagulability. These factors may lead to vessel wall damage, thrombosis, and occlusion, and finally in ischemia due to a hypoperfusion from a steal phenomenon. Patients in the group of FAS and CRVO are at higher risk of systemic vascular involvement. There is a great need for establishing suspicion of multiple AVM when retinal or spinal AVM exist, and of spinal AVM in cases of back pain associated with motor deficit.

**Conclusion:** P1042: Compared to the MRI finding, retinal AVM is described. The extensive coagulogram detected F AS caused by pial A VM and CR VO associated with vein occlusion (CR VO) associated with A VMs in a female is presented supporting the existence of this syndrome as a separate condition. A case history of a 59-year-old female presented between 01.01.2004 and 31.12.2005 to the Neurology Department were analysed. A fall was defined as any unplanned «touch to the floor» of any part of a patient’s body, excluding the feet.
49 (80.33%) had hemiparesis and 12 (19.67%) hemiplegia; 42 (68.86%) suffered from impaired spatial orientation and 47 (77.05) were aphasic. The degree of neurological deficit, impairments of spatial orientation and presence of aphasia were highly correlated with falls (p<0.001). The most frequent falls were noted during night (38 or 62.29%) and in the first five days of hospitalization (44 or 72%). In most of the cases (52%) the falls caused minor injuries like contusio and laceratio of skin and did not require specific medical treatment.

**Conclusion:** Acute stroke hospitalized patients do not have a high risk of falling (3.3% out of total hospitalized patients in two years of follow-up), and the incidence of serious injury is small. The falls are most frequent in the first days of hospitalization and occur during the night. Severity of neurological deficit, impaired spatial orientation and aphasia are highly correlated with falls.

**Key words:** acute stroke – falls

**P1046**
**INTRACEREBRAL HEMORRHAGE IN TUZLA, BOSNIA AND HERZEGOVINA: ANALYSIS OF RISK FACTORS, LOCALIZATION AND 30-DAY PROGNOSIS**

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**Objective:** The aim of the study was to analyze the frequency, risk factors, localization and 30-day outcome in patients with intracerebral haemorrhage.

**Patients and methods:** During a three-year follow up 352 patients (13.8% of all strokes) with intracerebral haemorrhage (ICH) were admitted at the Department of Neurology Tuzla. Risk factors, clinical features and neuroimaging results were analyzed for all patients. Stroke severity was assessed by the Scandinavian Stroke Scale (SSS) and disability by modified Rankin score (mRS).

**Results:** The most frequent risk factors were hypertension (84%), heart diseases (31%), cigarette smoking (28%) and diabetes mellitus (14%). The localizations were multilobar (38%), internal capsule/basal ganglia (36%), lobar (17%) and others (9%). Mortality at 1 month was 42%, and highest in patients with brain stem and multilobar haemorrhage (83%) and 64%, respectively. Factors independently associated with mortality were age (odds ratio 1.05 (95% confidence interval 1.02 to 1.08); p=0.001), stroke severity (OR 0.93 (0.92 to 0.95); p<0.0001), multilobar haemorrhage (OR 5.4 (3.0 to 9.6); p<0.0001) and intraventricular haemorrhage (OR 3.9 (2.2 to 7.1); p<0.0001). 45% of patients had favourable outcome at 1 month (mRS <2). Even though mortality in patients with internal capsule/basal ganglia haemorrhage within 30-days was lowest (23%) only 40% of them had mRS <2 at 1 month.

**Conclusion:** Hypertension is the most frequent risk factor in patients with ICH. ICHs are mainly localized in lobar and internal capsule/basal ganglia regions. Mortality following ICH as well as good outcome at 1 month is directly related to stroke severity and neuroimaging features.

**P1047**
**THE EARLY EDUCATION PROGRAM FOR STROKE PREVENTION IMPROVES STROKE AWARENESS**

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**Objectives:** Transient pure sensory hemisyndrome (PSS) may be caused by many medical conditions and frequently urges neurological consultation. We aimed to identify frequency, clinical characteristics and pathogenesis in patients with PSS in a highly selected cohort (stroke unit admissions).

**Methods:** We analysed 181 prospectively documented stroke unit patients with acute symptom onset during one year (2006). PSS was defined as isolated sensory loss of face and/or arm and/or leg in absence of any motor deficit. NIHSS was used to document focal neurological deficit.

**Results:** After exclusion of 20 patients in whom detailed information about sensory loss was lacking, 161 patients remained (20% TIA, 70% ischemic stroke/IS, 7% haemorrhage, and 3% sequelae of cerebrovascular disease/CVD). 11 (7%) had pure sensory symptoms (n=7 TIA, n=3 IS and n=1 sequel of CVD). They (6 female, median age: 51 yrs) were younger (p<0.003), more often diagnosed with lacunar syndrome (LACS) (p=0.035) and microangiopathic pathogenesis, lesions being allocated slightly more often in the right hemisphere (p=0.162). No difference in prevalence of classical vascular risk factors was found.

**Conclusions:** 7% of all stroke unit patients suffered from PSS presenting preferentially on the left side. They were younger and more often diagnosed with LACS, microangiopathic pathogenesis and benign clinical outcome. No difference regarding classical vascular risk factors was found. We conclude that PSS is definitely a cerebrovascular warning sign and should be taken seriously, more long-term data are needed to estimate its impact on recurrent stroke to justify an intensive diagnostic workup.
P1049
METABOLIC SYNDROME OF INSULIN RESISTANCE, FIBRINOLYSIS AND HIGH SENSITIVITY CRP IN THE ACUTE PHASE OF ISCHEMIC STROKE AND THEIR RELATION TO CAROTID DISEASE
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Background and aims: Ischemic stroke (IS) is mostly associated with atherothrombosis. Metabolic syndrome of insulin resistance (MSIR) represents an important risk factor (RF) for ischemic heart disease and stroke. MSIR is associated with haemostasis disorders and subclinical inflammation, both further increasing the risk of atherosclerosis. The aim was to assess the MSIR occurrence in the acute phase of IS and its association with fibrinolysis disorders and inflammatory markers, and relation to the carotid disease.

Methods: NCEP-ATP III criteria were used for MSIR diagnosis. Assessment of vWF, tPA and PAI-1 was used for the evaluation of fibrinolytic system. High-sensitivity CRP (hsCRP) was used as a marker of subclinical inflammation. The set consisted of 111 acute IS patients (65 males, 46 females, average age 60.2±10.4 years). Control group (CG) consisted of 58 healthy subjects (32 males, 26 females, average age 57.1±9.9 years). The degree of carotid stenosis was classified as ≤30%, 31–69%, ≥70%. H92732-test, Mann-Whitney U-test and Wilcoxon Signet Rank test were applied when assessing statistical significance.

Results: MSIR occurrence was significantly higher in IS versus CG subjects (p<0.0001). Higher PAI-1 level was observed in IS patients (p<0.01). Significantly higher levels of fasting insulin (p<0.001) and hsCRP (p<0.0001), and significantly more severe atherosclerotic changes in carotid arteries (p<0.002) were present in IS patients with MSIR attributes, when compared to those without them.

Conclusions: MSIR represents an important RF also in IS and it is associated with more severe carotid disease. Subclinical inflammation and fibrinolysis disorders are significantly associated with MSIR.

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PERFUSION COMPUTED TOMOGRAPHY (PCT) – A NEW METHOD IN PATIENTS WITH HYPERHOMOCYSTEINEMIA
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BILATERAL THALAMUS INFARCTION. A CASE REPORT
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BLOOD RHEOLOGICAL PROPERTIES OF PATIENTS WITH INCipient STAGES OF CHRONIC BRAIN ISCHEMIA
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CLINICAL AND EPIDEMIOLOGICAL CHARACTERISTICS OF STROKE IN ARMENIA
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A SYSTEMATIC REVIEW OF VINPOCETINE FOR ACUTE ISCHEMIC STROKE
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STROKE IN PATIENTS IN THE TERMINAL STAGE OF CHRONIC RENAL FAILURE
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NIGHT AND DAY HEMORRHAGIC INSULT
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CEREBRAL CAVERNOUS MALFORMATION – DIAGNOSTIC TRAPS
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METHYLENETETRAHYDROFOLATE REDUCTASE (MTHFR), II (F2) AND V (F5) COAGULATION FACTORS GENES’ POLYMORPHISM AND ISCHEMIC STROKE IN UZBEKISTAN
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EFFECT OF FIBRIN and FIBRIN DEGRADATION PRODUCTS ON TPA and PAI-1 EXPRESSION OF VASCULAR ENDOTHELIAL CELLS IN COCULTURE SYSTEM
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METABOLIC SYNDROME IN DIFFERENT SUBTYPES OF ISCHEMIC STROKE
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IN EMERGENCY ROOM SYSTOLIC ARTERIAL PRESSURE CAN HELP TO DISTINGUISH BETWEEN ACUTE NEUROLOGICAL SYMPTOMS OF VASCULAR AND NON-VASCULAR ORIGIN
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ESTROGEN CYCLE LIFE AND RISK OF NON-EMBOLIC STROKE
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CLINICO-EVOLUTIVE PARTICULARITIES OF STROKE IN DIABETIC PATIENTS
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SYMPTOMATIC CAPILLARY TELANGIECTASIA OF THE BRAIN STEM AND INTRACEREBRAL DEVELOPMENTAL VENOUS ANOMALY: A RARE ASSOCIATION
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THE EFFECT OF CHRONIC ADMINISTRATION OF GINKGO BILOBA EXTRACT (EGB 761) ON PROLONGED RECOVERY PERIOD IN FOCAL PHOTOTHROMBOTIC ISCHEMIC CORTICAL INJURY
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SUBCLAVIAN ARTERY DISSECTION SECONDARY TO NECK MANIPULATION
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THE RISK-FACTOR CORRELATION BETWEEN CEREBROVASCULAR DISEASE AND ISCHAEMIC STROKE GRAVITY AS PRESENTED BY COMPUTED TOMOGRAPHY
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EFFECT OF GAP JUNCTION BLOCKER ON BRAIN DAMAGE AFTER TRANSIENT FOCAL CEREBRAL ISCHEMIA
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CEREBRAL PROTECTION TECHNIQUES DURING STENTING OF NEAR OCCLUDED ICA
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DUAL CEREBRAL PROTECTION TECHNIQUE DURING CAROTID STENTING
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Ageing and dementia I

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ITEM RESPONSE MODELS FOR ALZHEIMER’S DISEASE ASSESSMENT SCALE (ADAS-COG): USING PLACEBO AND BASELINE DATA FROM CLINICAL TRIALS WITH GALANTAMINE
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Aim: To enhance clinical assessments of mild-to-moderate Alzheimer’s disease (AD).

Methods: ADAS-cog is the gold standard for monitoring cognitive function in AD clinical trials. 2,000 mild-to-moderate AD patients were randomly selected from a clinical trial database (n=3618). Samejima’s graded response models were used to explore the relationship between ADAS-cog items and AD severity. Item and test characteristic curves and information functions were plotted for all ADAS-cog 13 parameters. Linear regression analysis explored the relationship between estimated subjects’ abilities and baseline MMSE scores.

Results: Analysis population age was 75.6±7.9 years with mean baseline MMSE 18.6±3.8 (range 10–25). ADAS-cog items clustered according to difficulty and discrimination. The most difficult group included ADAS-cog items 1, 3, 8 (word recall, delayed word recall, word recognition) with moderate to high discrimination. Medium difficulty group included items 7 (orientation) and 9 (remembering test instructions) with moderate to very high discrimination. The least difficult group included eight ADAS-cog items: 2, 4, 5, 6, 10, 11, 12, and 13 with moderate to high discrimination. Relationship between subjects’ ability and base-line MMSE was described by the regression line MMSE=15.9±4.3ability (R2=0.49). ADAS-cog items clustered as the “least difficult” group provide maximum information for subjects MMSE <16. The most difficult items may be informative for mild AD only.

Conclusions: ADAS-cog is not uniformly sensitive across all levels of cognitive impairment. ADAS-cog 8 may be informative for moderate AD and ADAS-cog 3 (items 1,3,8) for milder disease. These hypotheses require confirmation and further validation.

P1077
DOES SEROTONIN AUGMENTATION HAVE ANY EFFECT ON COGNITION AND ACTIVITIES OF DAILY LIVING IN ALZHEIMER’S DEMENTIA? A DOUBLE-BLIND PLACEBO-CONTROLLED CLINICAL TRIAL
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Structured format: The trial was designed as an 8-week randomized, placebo-controlled, double-blind study.

Background and aim: Recent studies suggest that cholinergic dysfunction does not provide a complete account of age-related cognitive deficits and other neuronal systems like monoaminergic hypofunction are involved. In several studies selective serotonin reuptake inhibitors demonstrated promotion in neurogenesis in the hippocampus and enhanced memory and cognition. The aim of this study is to survey the effect of serotonin augmentation on cognition and activities of daily living in patients with Alzheimer’s disease.

Methods: 96 patients aged 55–85 years, suffering from mild to moderate dementia were randomly allocated into one of the two treatment groups: Fluoxetine plus rivastigmine or rivastigmine alone. Efficacy measures comprised assessments of cognition, activities of daily living and global functioning.

Results: Fluoxetine plus rivastigmin and rivastigmine groups demonstrated improvement on measures of cognitive and memory without any significant difference; however, patients taking fluoxetine plus rivastigmine did better in their activities of daily living and global functioning.

Conclusion: Concomitant use of selective serotonin enhancing agents and acetyl cholinesterase inhibitors can provide greater benefit in activities of daily living and global functioning in patients with cognitive impairment.

Key Words: Alzheimer’s disease, serotonin, fluoxetine, rivastigmine, cognition

P1078
IDEAL: A 28-WEEK OPEN-LABEL EXTENSION OF THE FIRST TRANSDERMAL PATCH IN ALZHEIMER’S DISEASE
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Background and aims: Skin patches offer many advantages over oral medications. Rivastigmine patch is the first patch developed for Alzheimer’s disease (AD). We aimed to evaluate the long-term safety and tolerability of rivastigmine patch.

Methods: The double-blind phase (DBP) of IDEAL (Investigation of TransDermal Exelon in Alzheimer’s disease) was a 24-week, randomised, double-dummy, placebo- and active-controlled study of target doses of rivastigmine patches (10 cm², 20 cm²) and capsule (12 mg/day) versus placebo. Doses were titrated at 4-week intervals in increments of 5 cm² (patches) or 3 mg/day (capsules).
All patients entering the 28-week open-label extension (OLE) were switched to 10 cm² patch, and titrated to 20 cm². Primary evaluations included AEs/SAEs.

**Results:** 1195 patients aged 50–85 entered the DBP, 870 entered the OLE. During the DBP, 10 cm² rivastigmine patch provided equivalent efficacy to highest doses of capsules, with three times fewer reports of nausea and vomiting. When entering the OLE, 10 cm² patch was well tolerated by patients formerly randomised to rivastigmine capsule or patch; ≤2.5% reported nausea, ≤1.9% vomiting (Weeks 1–4). Patients formerly receiving DBP placebo experienced a higher incidence (8.5% nausea, 6% vomiting) of gastrointestinal AEs. In the long-term, no unexpected safety issues arose, and skin tolerability was good. 20 cm² patch data will be presented.

**Conclusions:** Patients on capsules (≥6 mg/day) can be switched to 10 cm² rivastigmine patch, while de novo patients or those on ≤6 mg/day should be titrated from 5 cm² to 10 cm² patch. Long-term rivastigmine patch treatment showed favourable safety and tolerability. The transdermal patch is an advantageous way to deliver rivastigmine in AD.

P1079
**SPECIFIC BENEFITS OF MEMANTINE ON BEHAVIOURAL SYMPTOMS IN PATIENTS WITH MODERATE TO SEVERE ALZHEIMER’S DISEASE (AD)**

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**Background and aims:** Behavioural disturbances are common in AD and are distressing for patients and caregivers. Beneficial effects of memantine on AD behavioural symptoms have previously been reported. This pooled analysis evaluated the benefits of memantine (20 mg/day) on behavioural disturbances in patients with moderate to severe AD (MMSE<20).

**Methods:** Data from six 24–28 week, multicentre, randomised, placebo-controlled, parallel-group, double-blind studies were included: 3 in mild to moderate and 3 in moderate to severe AD. The analyses included 959 patients on memantine and 867 on placebo. Behavioural symptoms were evaluated using the Neuropsychiatric Inventory (NPI) at week 12 (W12) and 24/28 (W24). NPI total scores were analysed using ANCOVA; single items using non-parametric methods.

**Results:** Analysis of total NPI scores showed a statistically significant benefit of memantine compared to placebo at W12 and W24 (p<0.05). Memantine showed advantages over placebo for most NPI single items with statistically significant benefits for delusions (p<0.01; W12>24), hallucinations (p<0.05; W12), agitation/aggression (p=0.001; W12>24) and irritability/lability (p<0.01; W24). Individual NPI single items were analysed in the subset of patients who were symptomatic for the item at baseline. Statistically significantly more memantine than placebo-treated patients showed improvement on: delusions, hallucinations, agitation/aggression, elation/euphoria and disinhibition. Single items were also analysed in the asymptomatic subset of patients. Here, statistically significantly less memantine than placebo-treated patients showed deterioration on: delusions, agitation/aggression, disinhibition and irritability/lability.

**Conclusion:** These results show that memantine significantly improves the behavioural symptoms of patients with moderate to severe AD. Specific benefits were observed on symptoms often associated with caregiver burden.

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**MODIFICATION OF THE RANDOMIZED-WITHDRAWAL AND STAGGERED-START CLINICAL TRIAL DESIGNS: TOWARD A PRACTICAL DEMONSTRATION OF DISEASE MODIFICATION IN ALZHEIMER’S DISEASE (AD)**

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**Background:** Demonstration of disease modification in AD is a complicated methodological and regulatory issue that has been approached in several ways. Among the strategies proposed are those based on measuring clinical outcomes in modified cross-over type studies: 1. the ‘randomized-withdrawal’ design and 2. the ‘staggered-start’ design. These two designs are complicated due to long study duration, leading to unbalanced dropout rates introducing bias. A suggested alternative is a parallel groups design comparing slopes and severity of disease at baseline.

**Methods:** The staggered-start design can be mathematically proven to be equivalent to the randomized-withdrawal design. A proposed “natural history staggered-start” design based on parallel groups is compared to the staggered-start and randomized-withdrawal designs to see whether it is capable of distinguishing between a disease modifying and a symptomatic treatment.

**Results:** A “natural history staggered-start” design is described in which an analysis of slope divergence is combined with an analysis assessing differences in treatment effect depending on severity of disease at baseline. This design is shown to be mathematically equivalent to a staggered start or randomized-withdrawal design.

**Conclusion:** The staggered-start and randomized-withdrawal designs are impractical because of the long duration of treatment required, the bias and loss of power introduced by the associated high dropout rates, and ethical concerns. A novel and practical parallel groups design allows measurement of the same underlying patterns of drug effect, with differentiation of symptomatic and disease modification drug effects, without the drawbacks of these cross-over approaches.

P1081
**EFFICACY OF MEMANTINE IN PATIENTS WITH MODERATELY SEVERE TO SEVERE ALZHEIMER’S DISEASE IN JAPAN (DOSE-FINDING STUDY)**

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**Objective:** To investigate the efficacy of memantine at a dose of 10 or 20 mg for 24 weeks in patients with moderately severe to severe Alzheimer’s disease (ms/s AD) in Japan and to determine the recommended dose.

**Method:** 315 ms/s AD patients were enrolled in the multicentre, placebo-controlled, double-blind study. A total of 314 patients (n=107 in 10 mg (Group L), n=100 on 20 mg (Group H), n=107 on placebo (Group P), respectively) were analyzed for efficacy. Primary outcome measures were SIB-J and ADCS ADL-J, and secondary were CIBIC plus-J, MMSE, FAST and NPI.

**Results:** Memantine significantly showed dose-dependent changes in SIB-J, but failed to show changes in ADCS ADL-J. The dose-dependency was not demonstrated in CIBIC plus-J, although Group H was better than Groups P and L at weeks 4, 12 and 24. The analy-
Idiopathic normal pressure hydrocephalus (iNPH) is known to have symptoms of gait disturbance, dementia and urinary incontinence in the elderly. International and Japanese guidelines for iNPH are useful to take notice of it clinically. However, its pathophysiological mechanism remains to be clarified. We studied regional changes of CBF with SPECT of iodoamphetamine. Regional changes of cortical CBF were studied using three-dimensional stereotactic surface projections (3D-SSP). 18 patients (male 11: female 7, mean age 75.6 yrs) were included in this study. Regional decrease of CBF on 3D-SSP images were classified into three groups; anterior, posterior and mixed. There were 7 cases, 2 cases, and 9 cases, respectively on the lateral aspect. On the medial aspect, there were 12 cases, 0 case, 6 cases, respectively. CSF shunt operation was done in all cases and it was effective in 17 cases. Statistical analysis between these 17 cases and 5 cases of age-matched control revealed significant decrease in areas of the anterior cingulate gyrus and the sylvian fissure. The latter seemed to be artifact due to dilatation of sylvian fissure. In contrast, the area of anterior cingulate gyrus might be closely related with gait, attention, and urinary control. Thus, present study revealed CBF decrease in the frontal lobe, especially on the medial aspect, in iNPH. The area of anterior cingulated gyrus may be involved in neural network developing symptoms of iNPH.
P1085
THE RELATIONSHIP BETWEEN THE COGNITIVE FUNCTION AND MORTALITY IN THE KOREAN ELDERLY: THE AGE STUDY
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Backgrounds: As in elderly people health problems are increasing, especially dementia becomes the clinically important problem. Until nowadays there are few cohort studies about dementia and mortality in Korea. This study is to examine the extent to which cognitive status and decline in cognitive status predict mortality in elderly Korean.

Methods: There were 2215 of “the Ansan Geriatric study (AGE study)” participating in this study. The cognitive function of participants was assessed using the Mini-Mental State Examination (MMSE) from 2002–2003. In a 2-year follow-up, Cox proportional hazards models were conducted to examine the association between the MMSE and increase of mortality, after controlling sociodemographic characteristics, medical condition, and depressive symptoms.

Results: The mortality risk was significantly associated with persons in the moderately-severely cognitive impaired category (hazard ratio (HR) = 2.028, p<0.001).

Conclusion: Baseline moderate-severe cognitive status independently predicts mortality in elderly Korean. Cognitive function should be considered as a part of identifying elderly persons at high risk for mortality.

P1086
MAGNETIC RESONANCE SPECTROSCOPY (MRS) STUDY OF COGNITIVE ACTIVATION IN YOUNG AND OLD HEALTHY SUBJECTS
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Background and aims: To compare the variations of MRS spectrum after cognitive activations in young and old healthy subjects. fMRI could detect different patterns of activation during neuropsychological tasks in young versus old healthy subjects (Rotte, 2005) but do not give information on neurotransmitters and related metabolites; standard regional spectroscopy studies have given relevant information. Particularly, it is possible to detect the glutamate-glutamine-GABA metabolites (GLX) (Rothman, 2002).

Methods: 12 normal subjects have undergone a spectroscopic study using GE SIGNA 1.5 T; proton magnetic resonance spectroscopic (1H-MRS) data were acquired using point resolved spectroscopic (PRESS) localization (echo time 30 ms, repetition time 1500 ms, voxel volume 2 cm²). Region of interest was positioned manually in the mesial temporal region of dominant (Annett test) hemisphere; The ratio between NAA and GLX or GLX was analyzed in basal condition and after cognitive activation with verbal fluency and digit span.

Results: 9 subjects (mean age 46.3±20.7) were analyzed. A significant difference (p<0.05) was found between basal and post-activation spectrum (GLX) in young vs. old subjects; a trend of positive correlation was found between age and (%) GLX (r=0.44) (T and Mann-Whitney tests).

Conclusions: Activation spectroscopy can detect variations in the glutamine-GABA (GLX) metabolites due to cognitive activation. It could also allow some cautious physiological considerations: Even in an easy cognitive task, the old normal subjects seem to activate neural networks more than young (Fridriksson, 2006; Baron and Serrati, 2001). Our data could stimulate to verify the usefulness of this protocol as diagnostic tool.

P1087
USEFULNESS OF THE VSRAD(VOXEL-BASED SPECIFIC REGIONAL ANALYSIS SYSTEM FOR ALZHEIMER’S DISEASE) SYSTEM FOR DIAGNOSIS OF THE EARLY PHASE OF ALZHEIMER’S DISEASE
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Purpose: VSRAD is a newly developed voxel-based specific regional analysis system in Japan for the diagnosis of Alzheimer’s disease. In this study, the usefulness of the system was examined.

Methods: The subjects were 27 patients (12 males and 15 females; average age 77.4±6.6 years; disease duration 531.4±434.6 days) who had been diagnosed with Alzheimer’s disease at our hospital based on clinical criteria (DSM-IV), and 27 age-matched normal controls (12 males and 15 females). Their mental function and higher cortical function were evaluated using MMSE (Mini Mental State Examination) and JSS-H (Japan Stroke Scale – Higher Cortical Function (Japan Stroke Scale 32: 1800–1807, 2001)). The degree of specific atrophy of the bilateral parahippocampus was analyzed quantitatively in the two groups from sagittal sections of head MRI (1.5 Tesla) T1WI, by means of the VSRAD system.

Results: In the dementia group, the values of MMSE, JSS-H, and the degree of atrophy of parahippocampal were 19.2±6.1, 7.0±4.9, 2.7±2.0, respectively. In the control group, the corresponding values were 24.6±3.5, 2.8±2.3, 1.2±0.6. There were statistically significant differences in the values of MMSE (p<0.001), JSS-H (p<0.001), and the degree of parahippocampal atrophy (p<0.001) between the dementia and control groups. In the dementia group, there were statistically significant relationships between the values of MMSE and JSS-H, and the degree of parahippocampal atrophy.

Conclusions: The VSRAD system can be used for the diagnosis of Alzheimer’s disease.

P1088
UPDATE OF MEMANTINE SAFETY IN SHORT- AND LONG-TERM TREATMENT OF MILD TO SEVERE ALZHEIMER’S DISEASE
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This study assessed the short- and long-term safety and tolerability of memantine in patients diagnosed with probable AD, using NINCDS-ADRD A criteria. Memantine, a moderate affinity, uncompetitive N-methyl-D-aspartate (NMDA) receptor antagonist, is approved in the U.S. and Europe for the treatment of moderate to severe Alzheimer’s disease (AD). Safety (6 months) of memantine was assessed in 6 double-blind, placebo-controlled trials (placebo, n=1069; memantine, n=1242; 20 mg/day; 24–28 weeks) of overlapping severity: 3 in mild to moderate AD (MMSE 10–23), and 3 in moderate to severe AD (MMSE 3–14). Long-term safety of memantine was assessed in open-label extensions to the double-
blind trials (placebo-memantine, n=682; memantine-memantine, n=723; 20 mg/day; 24–80 weeks). Safety parameters included adverse events (AEs), vital signs and clinical laboratory tests. The mean length of treatment in the open-label phase was 1 year. The six short-term double-blind trials revealed that no AEs occurred at a rate ≥5% and at an incidence of at least twice that of placebo across all studies. The profile of AEs was similar for both the mild to moderate and moderate to severe AD trials. The safety and tolerability profile in the long-term open-label studies was similar to that reported in the short-term studies. Most AEs were considered mild or moderate in severity and not related to memantine. No clinically relevant differences between memantine and placebo patients in vital signs or laboratory values were observed. Treatment of AD with memantine is safe and well tolerated in 6-month double blind studies and long-term, open-label clinical trials.

P1089
ALZHEIMER PATIENT’S CAREGIVER INVOLVEMENT AND DISTRESS: RESULTS OF THE FAMILY OF ALZHEIMER PATIENTS MAIN IMPROVEMENTS OF LIFE STUDY (FAMILY)
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Objectives: This was a prospective observational cohort study of newly diagnosed Belgian patients older than 60 years suffering from Alzheimer’s dementia (AD). The aims of the study were to determine caregiver burden, quality of life and emotional impact.

Material and methods: Inclusion criteria were diagnosis of AD by DSM-IV criteria, age ≥60 and presence of a caregiver. Caregiver burden was assessed by Caregiver Activity Survey (CAS), ZARIT and Patient Health Questionnaire (PHQ).

Results: A total of 358 patients were recruited and a cumulative number of 593 patient visits were available for evaluation. The majority of patients were female (65%), >75 years old (69%), with a mean MMSE of 20.2±4.37, Katz ADL 8.6±3.8, Lawton IADL 20.1±7.9, ADASCog 19.1±10.0, GDS 3.9±1.1 and NPI 15.3±14.7. Educational level was mostly limited to primary (54%), while 43% of patients went to secondary school and only 10% received higher or university education. The mean caregiver age was 63 (SD 13.7) and most were retired spouses. Mean caregiver time spent in dressing the patient was 1hr (±2.5), grooming 0.67 hr (±1.4) and in supervision for new born cells (BrdU), proliferation (PCNA), migrating neuroblasts and a decrease in TUNEL+ neural stem cells compared to non-tg controls. APP tg mice treated with Cerebrolysin for 1 and 3 months. Markers of BrdU+ and DCX+ neural stem cells in the dentate gyrus of the hippocampus.

Methods: Transgenic mThy1-hAPP751 mice were loaded with BrdU and treated with Cerebrolysin for 1 and 3 months. Markers for new born cells (BrdU), proliferation (PCNA), migrating neuroblasts (DCX), and apoptosis (TUNEL) were analysed in the subgranular zone of the hippocampus.

Results: The vehicle-treated APP tg mice showed decreased numbers of BrdU+ and DCX+ neural stem cells in the dentate gyrus compared to non-tg controls. APP tg mice treated with Cerebrolysin resulted in a significant increase of BrdU+ cells, DCX+ neuroblasts and a decrease in TUNEL+ neural stem cells compared to vehicle treated APP tg mice. Cerebrolysin did not change the number of PCNA+ proliferating neural stem cells and the ratio of BrdU+ cells converting to neurons and astroglia.

Conclusion: These findings suggest that Cerebrolysin rescues the alterations in neurogenesis in APP tg mice by protecting neuronal stem cells and decreasing the rate of apoptosis. These studies suggest that a combined effect of Cerebrolysin on neurogenesis and amyloid production might contribute to the alleviation of the synaptic and cognitive deficits in patients with AD.
P1092

POSITRON EMISSION TOMOGRAPHY (PET-TC) IN ELDERLY PEOPLE WITH MILD COGNITIVE IMPAIRMENT (MCI): A STATISTICAL PARAMETRIC MAPPING (SPM) STUDY

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Introduction and objective: Cerebral glucose metabolism impairment is well-known in Alzheimer’s disease, however its prognostic value in MCI is not yet established. The aim of this study is to evaluate sensitivity, specificity and positive predictive value (PPV) of 18F-FDG PET-TC for anticipating cognitive evolution in MCI subjects.

Methods: Resting PET-TAC explorations with 18 F-FDG were done in persons over 70 years of age, who met Petersen’s MCI criteria. Patients with cerebrovascular disease were excluded. A clinical follow-up was done one year later, inside a prospective and longitudinal study. PET patterns were classified into two categories as low- or high-probability for developing a progressive MCI (P-MCI): Type I (asymmetrical metabolism defects in posterior cingular cortex and parieto-temporal lobes) and Type II (normal or low-diffuse metabolism impairment in cortex). Cognitive evolution and PET results were correlated with SPM analysis.

Results: 31 persons with MCI who signed an informed consent were included (mean age 76±5 years). After a mean follow-up period of 15±3 months, there were 19 subjects who showed a P-MCI and 84% of them had a Type I PET pattern, whereas among 12 patients who remained stable, 91% presented a Type II PET pattern. Therefore, sensitivity of PET to anticipate the MCI progression was 84%, with 91% specificity and PPV of 94%.

Conclusions: In this study, 18 F-FDG PET-TC have shown a high PPV and prognostic utility in elderly MCI patients. More studies with larger series and longer follow-up periods should be done in order to confirm these results.

P1093

PROGRESS OF LEUKOARAIOSIS COULD BE REDUCED TO ONE-FORTH BY THE PLATELET HYPER-AGGREGABILITY CORRECTION. A RANDOMIZED PROSPECTIVE STUDY

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Background: First, the author found out a significant high incidence, 90.4%, of leukoaraiosis in the platelet hyper-aggregability patient (Acta Neurol Scand 105:445-49, 2002). Secondly, by the comparison study in two groups between corrected and matched non-correcting of the platelet hyper-aggregability, very little aggravation in the white matter lesion was observed in visual evaluation (International Psychogeriatrics 17:689-98, 2005).

Objectives: To measure the amount of volume inhibition of leukoaraiosis aggravation, by means of correcting the platelet hyper-aggregability.

Methods: Amount of volume of leukoaraiosis aggravation measured using NIH Image is compared in correcting cases (A group) and non-correcting cases (B group) of the platelet hyper-aggregability, in 12 examples each with 1.5 years observation. Platelet aggregability was estimated by an optical analytical method using two different concentrations each of ADP and collagen (the double ADP method, made by MC medical company, Japan), and classified to 9 classes. By this apparatus, platelet hyper-aggregability (class 9 and 8) and non hyper-aggregability are determined. Platelet hyper-aggregability was corrected to normal aggregability (class 5) by administration of anti-platelet agents throughout the observation period.

Results: Initial white matter lesion volume was 31.2 cm³ in group A and 29.6 cm³ in group B, and 1 year after it was 32.6 cm³ and 34.2 cm³, respectively. Yearly volume increase of white matter lesion was 4.3% in group A and 16.1% in group B (p=0.00011).

Conclusions: It is concluded that the aggravation of leukoaraiosis volume is inhibited to one-fourth by correcting of the platelet hyper-aggregability, thus the Binswanger dementia could be prevented.

P1094

CCL3 CORRELATES WITH THE SEVERITY OF NON-COGNITIVE IMPAIRMENTS IN PATIENTS WITH ALZHEIMER’S DISEASE

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It is well documented that microglial-mediated inflammatory response provoked by α-amyloid contributes to cell loss and cognitive decline. Microglia may secrete toxic factors as amyloid and proinflammatory products such as chemokines, reactive oxygen species and represent systemic concurrent processes or may represent secondary response – a repair response to neuronal injury. The mechanisms underlying inflammatory reactions in AD, which may lead to neuronal degeneration and cell death are poorly understood. In the present study we investigated CCL3 level in peripher al blood of AD patients. Apart from analysing the influence of CCL3 on the disease progression the aim of the study was also to correlate it with the clinical markers represented by Mini Mental State Examination test (MMSE) and Global Deterioration Scale (GDS). Extending the spectrum of clinical symptoms not assessed by MMSE or GDS, CCL3 was correlated with some non-cognitive signs as behaviour, mood and personality changes. 41 patients including 22 patients with sporadic AD and 19 non-demented, age-matched patients with other neurological diseases were examined. Plasma samples for CCL3 analysis were collected and stored at -80°C until processing. MIP-1β levels were determined using Enzyme-linked Immunosorbent Assay according to the manufacturer’s instruction. The present study showed statistically important differences of CCL3 expression between AD and control patients. Among patients with AD CCL3 levels were lower but correlated with some non-cognitive signs as behaviour, mood and personality changes. Discovered dependencies support the important role of microglial – mediated inflammatory response represented by CCL3 in the progression of non-cognitive impairments in patients with AD.

P1095

DEMENTIA AND PARKINSONISM: DIAGNOSTIC AND THERAPEUTIC MANAGEMENT

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Introduction: Dementia and parkinsonian symptoms may be found in the same patient making diagnosis and sometimes treat-
ment more difficult. The aim of our study is to describe the clinical data, the neurocognitive profile and the therapeutic approach of patients with both pathologies.

**Patients and methods:** A retrospective study was performed. We included patients with dementia and parkinsonism followed-up from June 2002 to March 2007 in the neurological department of Razi hospital in Tunisia. Diagnosis was made through a detailed clinical history, neurological examination, neuropsychological tests and cerebral imaging when necessary.

**Results:** 32 patients were assessed (mean age 69.5); 16 patients were on neuroleptics. Parkinson’s disease with dementia (18%) and Alzheimer’s disease with parkinsonism (15%) were the most frequent, other diagnoses were less frequent. The neuropsychological testing permitted to help the differential diagnosis while the use of neuroleptics was in several cases misleading.

**Discussion:** Clinical features, such as visual hallucinations (VH), extrapyramidal signs and visuospatial impairment in the earliest stages were helpful for the diagnosis. Postural instability gait difficulty (PIGD) motor subtype in Parkinson’s disease (PD) patients is associated with a faster rate of cognitive decline in PD and may be considered a risk factor for incident dementia in PD. The use of new antipsychotic drugs is preferable to manage neuropsychiatric features of dementia without inducing or worsening parkinsonian symptoms. We propose an algorithm of diagnosis and management.

**P1096**

**MEMANTINE IS SAFE AND EFFECTIVE IN THE TREATMENT OF MODERATE TO SEVERE ALZHEIMER’S DISEASE: AN UPDATED META-ANALYSIS**


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**Background and aims:** Memantine, an N-methyl-D-aspartate (NMDA) receptor antagonist, is approved in the US and Europe for treatment of moderate to severe Alzheimer’s disease (AD). This updated meta-analysis assesses the overall safety and efficacy of memantine in randomized, placebo-controlled trials in moderate to severe AD.

**Methods:** Double-blind, placebo-controlled memantine trials in moderate to severe AD with a duration of 16-28 weeks were collected and analyzed for measures of cognition (SIB), global status (CIBIC+), function (ADCS-ADL19), and behaviour (NPI). Weighted mean differences and odds ratios were calculated with fixed effect models.

**Results:** Out of five analyzed trials, two included patients on stable cholinesterase inhibitors. Two new trials were integrated since the last memantine meta-analysis, one set in US nursing homes and one set in China. Significant effects of memantine were demonstrated on all outcomes, with no evidence that efficacy was driven by outlier trials. Evidence of heterogeneity occurred only on the measure of cognition. Findings were similar using OC or LOCF approaches. Similar numbers of patients received memantine (n=767) and placebo (n=761). The proportions of all-cause discontinuations and discontinuations due to adverse events (AEs) were significantly lower for memantine than for placebo (18.6% vs. 23.5%; p=0.02 and 9.8% vs. 13.0%; p=0.04, respectively). The proportion of AEs, SAEs, and deaths were similar between the two groups.

**Conclusions:** This meta-analysis of five 16-28 week trials in moderate to severe AD shows significant effects of memantine treatment over placebo on measures of behaviour, cognition, function and global status. Memantine was safe and well tolerated.

**P1097**

**LONG-TERM SAFETY AND EFFICACY OF MEMANTINE TREATMENT IN MODERATE TO SEVERE ALZHEIMER’S DISEASE: RESULTS FROM A THREE-YEAR TRIAL**

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This study evaluated the long-term safety and efficacy of memantine in patients with moderate to severe Alzheimer’s disease (AD), as well as the tolerability of a shorter titration period and once-daily dosing. Patients from two 24-week lead-in clinical studies (MEM-MD-01, MEM-MD-02) were enrolled in the 134-week extension, which consisted of a 4-week titration period followed by three open-label maintenance periods. Patients previously treated with memantine were either maintained on current memantine dosing (10 mg b.i.d.) or switched to 20 mg q.d. dosing; patients previously treated with placebo were randomized into four treatment groups to investigate 22-day vs. 8-day titration and 10 mg b.i.d. vs. 20 mg q.d. dosing. Following titration, all patients were administered 10 mg b.i.d. dosing for 130 weeks. Efficacy was assessed using the Severe Impairment Battery (SIB) and the Clinician’s Interview-Based Impression of Change Plus Caregiver Input (CIBIC-Plus), and compared to projected placebo declines. Compared to projected placebo data, memantine was associated with a significantly slower rate of decline on the SIB and CIBIC-Plus at one, two, and three years of treatment. AEs were similar between groups, predominantly mild to moderate in severity, and judged unrelated to memantine. Overall, the most frequent AEs were agitation, fall, accidental injury, and urinary tract infection. Rapid titration was associated with more AEs. These analyses provide support for the long-term efficacy and safety of memantine in the treatment of moderate to severe AD, although inferences are limited due to the lack of a comparison group and the impact of missing data.

**P1098**

**COGNITIVE EFFECTS OF MEMANTINE IN MODERATE TO SEVERE ALZHEIMER’S DISEASE: A RESPONDER ANALYSIS**

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Memantine is an uncompetitive NMDA receptor antagonist, approved for the treatment of moderate to severe Alzheimer’s disease (AD). In a previous trial in moderate to severe AD, the memantine group showed significantly better cognitive performance on the Severe Impairment Battery (SIB) than placebo-treated patients. We compared treatment groups from this study to determine percentages of patients who demonstrated a response on the SIB total score and three SIB subscales (memory, language, and praxis). We examined the numbers of patients who demonstrated any response to treatment (score change ≥0), responded strongly (score change ≥4), and responded very strongly (score change ≥8). On the SIB total score, more memantine- than placebo-treated patients demonstrated any response across the entire trial (p=0.005), and at study endpoint (37.5% vs. 22.9%; p=0.048).
Similarly, the proportion of strong responders was significantly higher in the memantine group across the entire trial (p=0.001), and at study endpoint (19.8% vs. 6.0%; p=0.015), while the proportion of very strong responders was significantly higher in the memantine group across the entire trial (p=0.014), and supported memantine treatment at study endpoint (10.4% vs. 2.4%; p=0.06). On the SIB subscales, a higher proportion of responders was observed in the memantine group across the entire trial for memory (strong response: p=0.04), in language (strong response: p=0.031), and praxis (any response: p=0.010; strong response: p=0.033). We conclude that a significantly greater percentage of memantine-treated patients with moderate to severe AD demonstrated cognitive improvement (overall, and in individual domains of memory, language, and praxis), relative to untreated patients.

P1099
APOLIPOPROTEIN E PHENOTYPE IN DEMENTED PATIENTS IN GREECE
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Apolipoprotein E (ApoE) is a 34 kDa protein normally involved in the transport of cholesterol and plasma lipoprotein metabolism. ApoE has also relevance to the nervous system. Human ApoE is located in chromosome 19 and has three major allelic isoforms (ε2, ε3, ε4), with ε3 being the most frequent among general population. Our aim was to investigate whether the ApoE phenotypes with the type and the severity of dementia in Greek patients. We have examined 74 demented patients (54 females and 20 males) with a male to female ratio of 1:4 at a mean age of 67.3 years old. Genomic DNA was isolated from whole blood by the use of commercial available WIZARD® Genomic DNA Purification kit. For the amplification of the fourth exon from ApoE gene locus as well as for the genotyping of ApoE ε2, ε3, ε4 we used the commercial available INNO-LiP® ApoE kits. 68% of the patients revealed the ε3/3 genotype. In contrast to previous reports, we found a significantly higher proportion of patients with ε4 allele (21% vs. 12% of patients with mild and moderate dementia). The ε4 allele was more frequent in the patients with moderate to severe dementia and in a lesser extent from mixed type and frontotemporal dementia (16%), while 7% suffered from Alzheimer’s disease. The most severely demented patients with MMSE score: 10-20/30 determined the ε4 allele. Our results indicate that the most common ApoE phenotype in Greek demented patients is the ε3/3. Furthermore, patients with the phenotype Apo E4/3 suffered mainly from mixed as well as from vascular dementia. Our investigation continues.

P1100
EXERCISE AND DEMENTIA
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Introduction: Dementia is a disorder that gradually robs people of their ability to remember, understand and control their motor skills. Patients suffering from vascular (VD) or Alzheimer-type (AD) dementia have been examined once a year since 2001 to establish whether physical exercise improves their cognitive and motor capacity.

Methods: 16 pat. (12 VD, 4 AD, mean age 80.1) participated in the first and in a rebound study after 6 months, 9 VD-pat. (80.5) in a follow-up 9 months later, 11 patients (8 VD, 3 AD, 83.0) in the fourth and 16 pat. (11VD, 5AD, 78.9) in the latest study. Cognitive deficiencies were measured with the MMST, motor capacity by a task using rhythmic skills, adapted from gymnastics. First study: 12 training units of 30 min., twice a week. Following studies: 6–8 units, once a week. Latest study: 8 units, twice a week. All courses were followed by the MMST and the motor capacity task.

Results: First and rebound study: 14 pat. improved in cognitive and all patients in motor capacity. Third study: Only 1 pat. improved cognitively, 3 motorically. Fourth study: All pat. improved in motor capacity, cognition did not change. Latest study: 11 pat. improved motorically, 2 deteriorated and 3 stayed the same. Cognitively, 7 deteriorated, 6 improved, 3 stayed the same.

Conclusion: Pat. suffering from dementia can improve their cognitive and motor capacity by physical exercise. A training twice a week is more effective than once. Cognition only improves if the training units take place regularly, at least for 6 weeks.

P1101
COGNITIVE EFFECTS OF GALANTAMINE-PRC IN PATIENTS WITH ALZHEIMER’S DISEASE (AD) – RESULTS OF A 6-MONTHS OPEN-LABEL PHASE-IIIb-STUDY
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Background: Randomized controlled clinical trials have demonstrated the efficacy of galantamine-PRC in the treatment of AD-patients. Objectives of this clinical trial were to further study the overall effect of galantamine-PRC on cognition and function in patients with AD.

Methods: Open-label, multi-centre clinical trial (GAL-DEM-3002). Patients with mild to moderate AD (NINCDS-ADRDA criteria) received 16–24 mg/day galantamine-PRC for 6 months. Primary objectives were to examine the effects on cognitive function using ADAS-cog and DemTect. Response-rate at endpoint was defined as percentage of patients with change in ADAS-cog ≥ 20. Statistical analyses based on intent-to-treat population (LOCF, t-test, Wilcoxon-test for dependent samples).

Results: 133 patients (48% with mild, 52% with moderate AD; mean age±SD 75.4±7.8 years; 68% women) were enrolled with 71% of the patients completing the study. 53% of the patients received 24mg/day galantamine-PRC. After 6 months mean total scores changed significantly, both in ADAS-cog, from 23.3±9.3 (baseline) to 20.4±9.7 (p<0.0001) and DemTect from 7.3±2.9 to 9.2±4.3 (p<0.0001). The response-rate was 64.2%. CGI demonstrated an improvement or stabilization for 83% of patients. 64% of the patients had at least one AE. Most frequent AEs (<5%) were nausea, vomiting and headache. 28 patients discontinued due to AEs. 15 patients experienced a serious AE with 3 SAES thereof considered as possibly related to study medication (syncope, hypotension, agitation). 2 deaths (sudden death, renal failure) were rated as unrelated to galantamine-PRC.

Conclusions: This clinical trial supports the evidence from placebo-controlled trials that galantamine-PRC is tolerated and effective in the treatment of AD-patients in a clinical setting.
P1102
TREATMENT WITH GALANTAMINE IMPROVES COGNITIVE FUNCTION IN PATIENTS WITH ALZHEIMER’S DEMENTIA AND CONCOMITANT CEREBROVASCULAR DISEASE – RESULTS OF A ONE YEAR OPEN-LABEL PHASE-IIIIB STUDY
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Background: Galantamine has been demonstrated to be effective and generally safe in patients with Alzheimer’s disease and cerebrovascular pathology (AD+CVD) in placebo-controlled trials. The aim of this open-label clinical trial (GAL-GER-5) was to observe cognitive function during long-term treatment with galantamine in patients with AD+CVD.

Methods: Open-label, multi-centre clinical trial (phase IIIb). Patients with mild to moderate AD+CVD; mean age±SD 75.5±6.8 years; 58% women) were enrolled. 80% of the patients completed the study. Modal daily galantamine dose was 16 mg for 44%, and 24 mg for 51% of the patients. After 12 months mean total score in AKT showed a stabilization from 49.0±2.0 to 49.2±6.9 (p=0.7807) and DemTect increased significantly from 7.8±2.0 to 9.4±3.9 (p<0.001). CGI demonstrated an improvement or stabilization for 71% of patients. 56% of the patients had at least one adverse event (AE). Most frequent AEs with an incidence >5% were nausea and vomiting. 8 patients discontinued due to AEs. 21 patients experienced an SAE; with 4 SAEs considered as possibly related to study medication (heart failure, syncpe, aggravated dementia, urinary retention).

Conclusions: This open-label study supports evidence from placebo-controlled trials of the efficacy and safety of galantamine in patients with AD+CVD and suggests similar cognitive effects and safety through 12 months.

P1103
THE SEVERITY OF SPATIAL NAVIGATION DEFICIT IN MILD COGNITIVE IMPAIRMENT IS HIPPOCAMPAL dysfunction DEPENDENT
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Objectives: To characterize spatial navigation deficit in amnestic mild cognitive impairment (MCI) with primarily hippocampal dysfunction and Alzheimer’s disease (AD).

Methods: 55 patients were classified based on Petersen’s criteria to non-annestic (naMCI) (n-10) and amnestic MCI (aMCI) (n-45) subdivided to single (aMCIs) (n-14) and multiple domain (aMClm) (n-31). Furthermore aMCI group was divided in memory consolidation impairment – hippocampal aMCI (HaMCI) single (HaMCI) (n-3) or multiple domain (HaMClm) (n-12) and retrieval impairment – non-hippocampal mainly frontal (NHaMCI) single (NHaMCI) (n-11) or multiple domain (NHaMClm) (n-19). Results were compared to control (n-29) and AD group (n-24).

Subjects underwent neuropsychological testing, MRI and apoE sampling. Spatial navigation was tested in a human analogy of Morris Water Maze (enclosed arena 2.9 m in diameter) and on a computer test. Subjects should locate a hidden goal in 4 subtests using the start position or cues for navigation to focus on allocentric or egocentric navigation.

Results: The HaMClm group was impaired in all phases of the test (p<0.005) and performed similarly to the AD group. The HaMCIs group was impaired in virtual allocentric navigation (p<0.035) and in real space allocentric delayed navigation (p<0.002). The NHaMCln group failed in allocentric (p<0.009) and combined real space egocentric + allocentric navigation (p<0.05). We did not find any impairment in patients with NHaMCIs and naMCI.

Conclusions: Spatial navigation deficit in patients with HaMCI is more profound than in NHaMCI or naMCI. HaMCIs individuals show the same impairment as patients with AD. Spatial navigation testing is profitable for identification of individuals at higher risk of AD among the heterogeneous MCI population. Supported by grant GACR 309/05/0693.

P1104
DISABILITY AND DIFFERENT LEVELS OF COGNITIVE IMPAIRMENT: THE RESYDEM STUDY
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Objectives: To establish the relationship among patients with dementia, mild cognitive impairment (MCI) and residents without cognitive impairment and their functional assessment, ranging from autonomy to dependence (mild, moderate, severe and total).

Methods: A representative sample of 1037 persons selected at random from the institutionalized elderly population in Spain was studied. 852 constituted the suitable sample for the analysis of dementia, which was present in 526 (61.7%) cases. The CM 98 Test of Basic Activities of Daily Living, validated in 1998 and with an ability to classify patients similar to Barthel Index, was used. It was conducted a descriptive study in which the lineal trend of data was analyzed by calculating the coefficient of determination and the equation of the line by means of the least-squares method.

Results: In normal subjects, it a decreasing lineal trend with a slope of –14.3% and an R^2 of 0.83 was observed. Likewise, in patients with MCI, the trend is decreasing with a slope of –5.6% and an R^2 of 0.97, in contrast with the increasing trend with a slope of 20.0% and an R^2 of 0.93 observed in patients with dementia.

Conclusion: In the RESYDEM study it is confirmed that one of the features of dementia is functional impairment, which does not manifest itself; neither in patients with MCI nor in residents without cognitive impairment. Pharmacological treatment of dementia can make a difference by maintaining or improving their functional ability.
Background and aims: Data from numerous randomized, placebo-controlled trials (RCTs) of donepezil in mild to moderate AD have demonstrated its tolerability in this patient population. Three RCTs of donepezil in severe AD have now been conducted. The objective of this combined analysis was to examine the safety of donepezil in patients with severe AD.

Methods: Data were pooled from three 6-month RCTs in patients with severe AD (Mini-Mental State Examination scores ≤12). All patients who received at least one dose of study medication were included. Donepezil or matching placebo was increased to 10 mg in 2 studies and to 5 or 10 mg in 1 study. Adverse events (AEs) were monitored throughout the study and 30 days after study end. Clinical laboratory results, vital signs, and electrocardiograms (ECG) were assessed.

Results: 501 donepezil- and 392 placebo-treated patients were evaluated. Average age was approximately 80 years. 80.6% of donepezil patients and 73.0% of placebo patients reported AEs. Most common AEs (≥5% of donepezil patients and twice the placebo rate) were diarrhoea, vomiting, anorexia, nausea, and ecchymosis. Rates of other important safety outcomes were:
- Discontinuation due to AEs: donepezil, 12%; placebo, 7%
- Serious AEs: donepezil, 11.6%; placebo 11.5%
- Severe AEs: donepezil, 11.0%; placebo, 16.6%
- Death: donepezil, 4.8%; placebo, 7.1%

No notable changes in clinical laboratory results, vital signs, or ECG were observed in either group.

Conclusions: Donepezil is well tolerated in patients with severe AD, with a similar safety profile to that observed in the mild to moderate AD population.

P1106 NORMAL VALUES OF CEREBROSPINAL FLUID BIOMARKERS TAU, PHOSPHO-TAU AND B-AMYLOID 1–42
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Cerebrospinal fluid (CSF) tau protein, phospho-tau and beta amyloid 1–42 (Abeta42) have been recently recognized by the EFNS task force, as an adjunct for dementia diagnosis in cases of diagnostic doubt. However normal values of these markers in cognitively healthy individuals have not been established yet. For this purpose double-sandwich ELISA (Innogenetics, Belgium) was used to quantify CSF tau, Abeta42 and phospho-tau (thr-181) in 95 normal individuals (61 males, 34 females, age range 25–85 years). Tau and phospho-tau did not follow the normal distribution and a "tail" in the frequency distribution towards high values was compatible with the log-normal pattern. Median values (25th-75th percentiles) were: for tau 187 (130–250), for Abeta42 637 (475–821) and for phospho-tau 43 (38–61) pg/mL. Age significantly affected tau and phospho-tau levels after the age of 65 and 55 respectively. Sex showed a tendency to affect only tau levels, with females presenting with higher levels as compared to males. A significant positive correlation was noted between tau and phospho-tau (Spearman’s r=0.8, p=0.000001). Tau and phospho-tau correlated negatively with MMSE (gammas −0.29 and −0.49, with p=0.028 and 0.0008 respectively) while tau and phospho-tau correlated positively with each other R=0.8, p=0.000001. Deviations from normal distribution, an effect of age and the correlation between tau and phospho-tau should be taken into account in studies of these biomarkers in the differential diagnosis of dementia.

P1107 COMPLIANCE AND PRACTICAL CONSIDERATIONS IN THE MANAGEMENT OF ALZHEIMER’S DISEASE WITH MEMANTINE
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Background and aims: Practical issues and compliance with therapy are highly relevant considerations in the management of AD patients. Reasons cited for poor compliance include lack of information on medication (benefits and safety), difficulty with dosing regimens, forgetfulness, living alone and cost. The NMDA receptor antagonist, memantine, has been investigated in several areas directly related to these concerns – daily dosing, treatment switching and safety.

Results: Memantine is a well-tolerated and efficacious treatment for moderate to severe AD, administered as monotherapy or add-on therapy in patients receiving treatment with AChEIs. A 12-week study in 78 patients indicated that simple once-daily administration of memantine (20 mg) shows safety comparable to the currently recommended schedule (10 mg twice-daily) in patients with moderate to severe AD. Furthermore, an 8-week study in 46 patients switched to memantine following either abrupt or stepwise discontinuation of donepezil (AChEI) found the switch was safe and well-tolerated, with most patients experiencing stabilisation or improvement in global status. In addition, the well-documented tolerability of memantine in the clinical setting, translates to the naturalistic setting, including patients with high levels of co-morbidity and co-medication. Over a 6-month period, tolerability and safety was rated as very good or good in >93% of patients.

Conclusions: In AD patients, memantine demonstrates favourable effects in terms of simplified dosing, treatment switching and overall safety (also in naturalistic setting). Such developments in pharmacotherapy need to be supported by measures including adequate clinical follow-up, treatment of co-morbidities, prevention of treatment complications and improved information/advice to patients and caregivers.

P1108 EFFICACY AND LONG-TERM SAFETY AND TOLERABILITY OF ROSIGLITAZONE XR IN ALZHEIMER’S DISEASE
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Background and aims: Rosiglitazone, a PPAR-γ agonist used in type 2 diabetes, may increase brain glucose metabolism and benefit patients with Alzheimer’s disease (AD). Efficacy, and long-term
safety and tolerability of an unmarketed formulation of rosiglitazone were evaluated in AD subjects.

Methods: Subjects with mild-to-moderate AD were randomised to receive rosiglitazone XR (2 mg/day, 4 mg/day, 8 mg/day [4 mg/day for first 28 days]) or placebo in a 24-week, double-blind study (AVA100193). Co-primary efficacy endpoints were the mean change from baseline ADAS-cog and CIBIC-plus scores (Week 24 ITT-LOCF). Study completers could enter a 48-week, open-label extension (AVA100468) and receive rosiglitazone XR 8 mg/day (4 mg/day for first 28 days).

Results: In AVA100193 (ITT n=511), no significant differences on either endpoint were detected between any rosiglitazone-treated group and placebo-treated group at week 24. However, in an exploratory analysis of the pharmacogenetics population (n=323), a differential treatment effect was observed in cognition: APOE e4-negative subjects improved, whereas e4-positive subjects showed no improvement or a decline. 337 subjects entered the 48-week extension study; 82% completed. 48% of subjects experienced ≥1 adverse event (AE); 7% withdrew due to an AE; 9% of subjects experienced ≥1 serious AE. Changes in fasting insulin and plasma glucose levels were within expected ranges.

Conclusions: No significant differences between placebo and rosiglitazone XR were detected in the ITT population. Differential analysis by APOE e4 status suggests potential efficacy of rosiglitazone XR in e4-negative subjects. Rosiglitazone XR 8 mg/day appears to be safe and well-tolerated for up to 72 weeks in AD subjects.

P1109
EFFECTS OF DONEPEZIL IN PATIENTS WITH MODERATE-TO-SEVERE ALZHEIMER’S DISEASE DISCONTINUING MEMANTINE MONOTHERAPY
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Background and aims: To evaluate the efficacy and safety of donepezil in Alzheimer’s disease (AD) patients discontinuing memantine treatment due to poor efficacy or tolerability; to investigate how prior cholinesterase inhibitor (ChEI) therapy might influence efficacy upon rechallenge with donepezil.

Methods: Patients (≥50 years; Mini-Mental State Examination [MMSE]: 5–17) were enrolled in a 12-week, open-label trial at 26 European centres. All had received memantine monotherapy (10 mg/bid) for ≥3 months up to baseline. Patients were then switched to donepezil 5 mg/d for 4 weeks; 10 mg/d thereafter. Primary efficacy measure: MMSE. Secondary measures: Clinical Global Impression-Improvement (CGI-I), Physician and Caregiver Satisfaction Questionnaires (PSQ, CSQ), Neuropsychiatric Inventory (NPI), and a Caregiver Diary (CD) to assess social behaviour.

Results: ITT population: n=103; mean age: 73.2 years; baseline MMSE: 13.21; mean memantine duration: 275 days; 42% had prior ChEI exposure; 92% discontinued memantine due to lack of efficacy. At Week 12-LOCF, significant improvements were seen on the MMSE (mean: +1.55 points), PSQ, CSQ, CGI-I (60% of patients rated as improved), and CD (44–56% rated as improved on interaction, engagement/interest in conversation, or initiation of pleasurable activities). No significant effects were seen for total NPL. In those patients with prior ChEI exposure, CSQ (p=0.0001) and CGI-I (p=0.0227) scores improved significantly; MMSE showed a trend towards improvement (p=0.0995). Withdrawal rates (8.7% due to AEs and AEs were consistent with the established donepezil safety profile.

Conclusion: Donepezil was effective and well tolerated in moderate-to-severe AD patients who discontinued memantine monotherapy, including those with a prior history of ChEI treatment.

P1110
SPECIFIC SPECTROSCOPIC MR METABOLITE PROFILE AND TAU-PROTEINS PROFILE IN AUTOPSY PROVEN CREUTZFELDT-JAKOB’S DISEASE IN A PATIENT WITH NON-SPECIFIC INITIAL EEG, MRI AND NEGATIVE 14-3-3 PROTEIN
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Background: As the clinical signs of the Creutzfeldt-Jakob disease (CJD) may overlap with other dementing or neurodegenerative diseases, other criteria are used in diagnosis of sCJD. EEG and 14-3-3 protein in cerebrospinal fluid represent powerful diagnostic criteria for probable but not definite sCJD.

Case description: Autopsy proven sCJD presented by progressive dementia, ataxia and myoclonus is described. Negative 14-3-3 protein and non-specific EEG supported an alternative diagnosis to CJD. MRI has not detected basal ganglia hyperintensities. Massive reduction of NAA/Cr and specific tau proteins levels separated this case from other dementing illnesses. Immunohistochemical verification has been performed.

Conclusion: Rapidly progressive dementia with negative 14-3-3, non-specific EEG and MRI must still be considered in the differential diagnosis of sCJD. MRS and tau proteins may improve diagnosis early in the course of the disease, and represent powerful mechanisms in prognosis and therapeutic follow-up of CJD.

P1111
HIGH PLASMA CONCENTRATION OF P-TAU AND AMYLOID B42 IN MILD COGNITIVE IMPAIRMENT MAY REFLECT THE PROGRESS OF THE DISEASE TO AD
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Patients with mild cognitive impairment (MCI) are reported to develop Alzheimer’s disease (AD) at the rate of 12% per year, greatly exceeding the 1% to 2% incidence of normal controls. Several studies have shown an increase in plasma Aβ42 in MCI compared to normal and AD patients. The efficiency of Aβ peptides elimination in earlier stages of AD has proven in animal models. We found no study measuring phospho-tau (p-tau) level in plasma. We measured the plasma level of Aβ42 and p-tau181 in 7 patients with MCI, 29 AD and 16 normal controls who had also underwent brain SPECT imaging. Plasma level of Aβ42 was significantly higher in MCI (57.9±33.3 pg/ml) compared AD (16.3±15.5 pg/ml) and normal group (12±7.7 pg/ml) (p≤0.000). P-tau was not detectable in normal group but P-tau was detectable in (57%) (4/7) of patients with MCI and 4 patients with AD. 3 patients with MCI who had high plasma Aβ42 and detectable...
p-tau too, had shown bilateral posterior temporoparietal hypoperfusion and one showed not-characteristic perfusion defects in SPECT. Since high plasma Aβ42 and p-tau in our patients with MCI was accompanied by perfusion defect characteristic of AD which is said to be a sign of the progression of MCI to AD, we suggest the evaluation of plasma Aβ42 and p-tau as the risk factors of the disease in patients with MCI.

**P1112**
**EVALUATION OF COGNITIVE DETERIORATION (CODE) IN ACTIVITIES OF DAILY LIVING (ADL; IADL): ARE THE COMMONLY USED TESTS SUFFICIENT?**
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**Background and aims:** To structure a test which allows an objective assessment of patients' performances in ADL and IADL. The correlation of neuropsychological findings with their effects on ADL and IADL is complex one particularly in the elderly patients with a low educational level: the current tests lead to a subjective deformation (Loewenstein DA, 1989)

**Methods:** 103 patients with suspected CoDe were assessed [mean age: 75.5±7.38 s.d., education: 6.5±3.7 s.d., MMSE score: 19.72±5.56 s.d.]; they underwent a test in a hospital setting in which they were asked to perform various tasks including the ADL and IADL. A 14-item, 50-subitem scale was generated. A sample of 40 healthy subjects was also analyzed. Spearman's and Pearson's tests were used for statistical analysis.

**Results:** MMSE weakly correlates with the total (r=0.6) and ecological scores (r=0.61). The correlation between the functional scores and ADL IADL is weaker (total score vs. ADL r=0.48 and vs. IADL r=0.45) and between the ecological scores vs. ADL r=0.45 and vs. IADL r=0.48); instead, for ADL<4 the correlation is lost and for IADL<8 the correlation is weak (r=0.4). No correlation was found between total and ecological scores and the age or education level. The test shows a good internal consistence and a ceiling effect in a normal sample.

**Conclusions:** Our data confirm the need of a new practical assessment tool in order to measure the functional status of patients affected by dementia, especially in case of initial behavioural impairment or of low educated patients.

**P1113**
**THE PREVALENCE OF DEMENTIA AND ALZHEIMER’S DISEASE IN ELDERLY COMMUNITY RESIDENTS OF NORTHERN ITALY: BASIS FOR THE SETTING-UP OF A REGISTRY FOR DEMENTIA**
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**Background:** Dementia is a growing problem in developed countries as it strains medical capacity and has welfare implications. A careful evaluation of incidence, prevalence and severity of dementia is crucial to direct resources in a more cost-effective use. Aim of the study was to acquire preliminary data to set up a registry of dementia and Alzheimer’s disease (AD) in the province of Pavia, Northern Italy.

**Methods:** A computer data base was accessed, that lists all residents in the province of Pavia, with a ICD9 codes for dementia or AD, who received medical or social care. Residents with this characteristics entered from January 2005 – December 2005 were detected.

**Results:** We found 4488 subjects (1116 males, 25% and 3372 females, 75%) with dementia; of those, 1029 with AD, 2089 with senile dementia, 1190 with vascular and 180 with other types of dementia. The prevalence of dementia and AD increased with advancing age (95%±65 years old) and it was consistently higher in women. In our study the dementia prevalence was 3.64% (confidence interval 3.53–3.75) similar to the European prevalence. AD prevalence at 0.84% (confidence interval 0.79–0.89), instead, was considerably lower than the Italian rate of 2.5% and the European rate of 4%.

**Conclusion:** Lack of uniform reporting criteria is thought to be the main reason for the underestimate of AD prevalence. Adherence to international standardized diagnostic criteria by general practitioners and specialists and a closer collaboration with the experts involved in the monitoring process will greatly contribute to improve the quality of data.

**P1114**
**COMBINATION TREATMENT WITH GALANTAMINE AND MEMANTINE: SAFETY DATA IN PATIENTS WITH MILD TO MODERATE ALZHEIMER’S DISEASE**
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**Objective:** Second interim safety analysis from an ongoing observational study of patients with mild to moderate Alzheimer’s disease (AD), performed to examine safety and tolerability of concomitant galantamine(GAL) and memantine(MEM).

**Methods:** 2-year, multicentre, prospective, open-label, observational study, patients were receiving GAL or no AD medications at study entry. Patient enrolment was initiated in July 2003 and concluded in December 2004. All enrolled patients were followed for a 2-year period. Physicians altered therapy as needed. Data collection used for the second interim analysis (pre-specified on an annual basis) included patients receiving MEM and other treatments. Because of uneven follow-up times, analyses were adjusted for years at risk. Patient-years at risk (PYR) were defined as total number of calendar days patients were enrolled in the study and being treated with a given regimen divided by 365.25.

**Results:** 499 subjects were analyzed in 1 or more groups over the course of the study: GAL (n=362 subjects), MEM (12), GAL+MEM (68), AChEI other than GAL (other-AChEI, 22), and untreated (179). PYR were determined: GAL, 380.1; MEM, 9.1; GAL+MEM, 62.7; other-AChEI, 16.2; untreated, 153.9. Overall AE incidences per patient-years at risk were 0.23 for GAL, 0.55 for MEM, 0.37 for GAL+MEM, 0.49 for other-AChEI, and 0.34 for untreated subjects, respectively.

**Conclusions:** Overall incidences of AEs per patient-years at risk calculated for subjects in this interim analysis of an observational study were similar for subjects in the galantamine+memantine group and untreated (statistical significance not tested). Funded by Ortho-McNeil Neurologics, Titusville, NJ, USA.
Background and objectives: Acetylcholinesterase inhibitors are used for the treatment of Alzheimer’s disease. Recently, donepezil, an acetylcholinesterase inhibitor, is suggested to have neuroprotective effects. However, the precise protective mechanisms of donepezil have not yet been clearly understood. We investigated the neuroprotective effects and mechanisms of donepezil against β-amyloid (1–42) induced neurotoxicity in rat cortical neurons.

Method: To evaluate the effects of donepezil on β-amyloid (1–42) induced neurotoxicity, we treated several doses of donepezil alone for 18h after combined treatment of β-amyloid (1–42) and donepezil for 6h.

Results: MTT (3-[4,5-dimethylthiazol-2-yl]-2,5-diphenyltetrazolium bromide) assay, trypan blue staining, cell counting kit-8, and DAPI staining showed that donepezil increased neuronal cell viability in a concentration-dependent manner. In the study to investigate the neuroprotective mechanisms of donepezil, the neuroprotective effects of donepezil were completely blocked by LY294002, as well as the activation of nicotinic acetylcholine receptors (nAChRs). And, they were achieved by activating PI3K, enhancing phosphorylation of Akt and GSK-3β, and reducing phosphorylated tau, as confirmed by western blot analysis. Donepezil decreased GSK-3β activity, as well.

Conclusion: These results suggest that donepezil prevents β-amyloid (1–42) induced neurotoxicity in primary cultures of rat cortical neurons through the activation of PI3K and Akt and the inhibition of GSK-3β, as well as the activation of nicotinic acetylcholine receptors, and that PI3K activation and GSK-3β inhibition are more important mechanisms of donepezil than nicotinic receptor activation.

Movement disorders

P1118

COMPUTERIZED DIAGNOSIS OF INCipient DEMENTIA

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TREATMENT OF MILD COGNITIVE IMPAIRMENTS (MCI) WITH CEREBROVASCULAR DISEASE (CD) BY MEANS OF PIRIBEDIL OR CHOLINE ALFOSCERAT: ROLE OF ADJUNCTIVE THERAPY BY NEUROMETABOLIC DRUGS

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EFFECTS OF BRAIN WAVE DISTURBANCE DURING SLEEP IN ALZHEIMER’S DISEASE

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Backgrounds and aims: In Parkinson’s disease (PD) are well known various clinical gastrointestinal disfunctions, supported also by anatomopathological evidences since first studies of Lewy. It has also been hypothesized a crucial role of these dysfunctions on the absorption of L-dopa(LD), and thus on LD plasma levels and thus in the genesis of motor fluctuations. Aim of this study was to evaluate the mioelectrical gastrointestinal activity in patients with PD by means of an electromyographic (EMG) surface evaluation.

Methods: We studied three groups of patients (total 18): a) de novo b) with motor fluctuations c) without motor fluctuations. The protocol of study was: 1) stopping L-dopa therapy and have an empty stomach during the last 12 hours before EMG evaluation 2) two sessions of EMG registration, each one lasting 45 minutes, before and after LD intake. For the EMG study we placed on the abdominal skin two active recording electrodes, one reference electrode. The electrogastrographic (EGG) signal was registered, sampled, filtered by a dedicated system. In the same patients we evaluated in three different days the LD plasma levels.

Results: The EGC frequency at rest and after LD intake was normal and does not change in the three clinical groups. The LD plasma levels showed a marked intraindividual and interindividual variability in all three groups.

Conclusion: In PD the gastric motility at rest is normal and is not influenced by LD intake. L-dopa plasma levels seem to be not correlated with severity of disease.
**P1122**

**PRODEST – DEPRESSIVE SYMPTOMS IN PARKINSON’S DISEASE: DEMOGRAPHIC DATA**


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PRODEST1 is to explore the PROfile of DEpressive SympToms in Parkinson’s disease: a multinational, multicenter, observational study in which 24 centers in 8 European countries participate. Data collection is completed and yields the following baseline demographics. Number of enrolled patients n=1023, constituting the full analysis set, per protocol set comprised n=1016 patients, n=7 were protocol violators. All 1016 patients did meet the predefined MMSE criteria for inclusion. Full analysis set 58.8% were men and 41.2% were women. Age distribution: 20–40 y 1.0%, 40–60 y 23.9%, 60–80 y 69.1%, 80–100 y 6.0%. Early and advanced patients 51.7% and 48.3% respectively. Mean (SD) UPDRS total score: 34.9 (17.6); composed of: UPDRS part I 2.0 (2.0); UPDRS part II 11.0 (6.1); UPDRS part III 21.9 (12.0). Depression was present in 27.8% of the patients, 20.8% on antidepressive therapy. Hoehn & Yahr “on” stage 1 – 23.1%, stage 2 – 45.7%, stage 3 – 45.7%, stage 4 – 25.8%, stage 5 – 0.2%. This database is used for extensive statistical analysis.

I. Barone P et al. Mov Disord 2006; 21 suppl 15: P S48, S476

**P1123**

**METHYLPHENIDATE IMPROVES COGNITION AND REDUCES FALL RISK IN OLDER ADULTS WITH COGNITIVE DECLINE: SINGLE DOSE, PLACEBO CONTROLLED, DOUBLE-BLIND STUDY**

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**Background:** Impaired executive function (EF) and attention has been associated with fall risk and gait instability, especially while dual tasking during walking.

**Objectives:** To test the hypothesis that a single dose of methylphenidate (MPH) enhances usual gait variability (markers of fall risk), improves cognitive function, and reduces negative effect of dual tasking.

**Methods:** A randomized, double-blind, placebo-controlled, crossover study was conducted in 17 subjects (mean age: 75 yrs) with impaired performance in EF or attention (based on a computerized neuropsychological battery), and a history of falls. Gait and cognitive function were evaluated before and two hours after a single dose of MPH (20 mg) or placebo, in sessions separated by 1 week.

**Results:** MPH treatment significantly improved (reduced) stride and swing time variability, during usual walking and while performing serial 3 subtractions (dual tasking). For example, in response to MPH, swing time variability decreased from 4.4±0.9% to 3.9±0.7% during usual walking (p=0.047) and from 6.8±2.5% to 3.7±0.5% during serial 3 subtractions (p=0.002). The placebo did not significantly effect stride time or swing time variability during both walking conditions. MPH also significantly improved EF (from 88.9±2.6 to 95.7±2.3; p=0.001) and attention (from 86.1±4.4 to 99.8±2.8; p=0.006), while having no effect on memory (p=0.92). Improvement in EF in response to MPH correlated with improvement in gait variability (e.g., r=0.60; p=0.015 for usual walking swing time variability and r=0.77; p=0.001 during serial 3 subtractions).

**Conclusions:** These results demonstrate the potential of using cognitive-enhancing pharmacologic agents to improve gait and reduce fall risk.

**P1124**

**FREEZING OF GAIT IN OLDER ADULTS WITH HIGH LEVEL GAIT DISORDERS: ASSOCIATION WITH IMPAIRED EXECUTIVE FUNCTION**

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Freezing of gait (FOG) is frequently observed in high level gait disorders (HLGD), but its relationship to disease progression and cognitive function is unknown. To study this relationship, episodic gait disturbances, affect and cognitive function were assessed in 25 patients with HLGD (mean age: 78.2±5.0 yrs). After a mean of 32.2±4.2 months, 22 patients were reassessed. FOG was observed in 20% of the patients at baseline and in 40% at follow-up. The presence of FOG was associated with significant mobility disturbances, functional deterioration as well as poor performance on the frontal neuropsychological assessment battery (dementia rating scale – initiation sub-score) at follow-up. Depression, anxiety and fear of falling were not correlated with the presence of FOG at baseline or follow-up. These results indicate that FOG is common in HLGD, and that it is associated with significant functional disability and specific frontal cognitive disturbance of initiation.

**P1125**

**THE NEGATIVE EFFECT OF FATIGUE ON QUALITY OF LIFE IN PATIENTS WITH PARKINSON’S DISEASE**


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**Background:** Fatigue is a frequent and important symptom in Parkinson’s disease (PD) patients, often unrecognized or neglected. It is a multidimensional construct, with physical and mental aspects. The aim of our study was to explore how fatigue influences quality of life (QoL) in PD patients.

**Methods:** The sample consisted of 175 PD patients from Eastern Slovakia (52% males, mean age 68.2±9.2 years, mean disease duration 7.4±6.7 years). The Multidimensional Fatigue Inventory (MFI, 5 dimensions), the Parkinson’s Disease Quality of Life Questionnaire (PDQ-39 summary index) and the Unified Parkinson’s Disease Rating Scale (UPDRS) were used. Demographic data...
were obtained in a structured interview. Multiple linear regression analysis was used to analyse the data.

Results: Quality of life was significantly influenced by the mental fatigue domain (ß = 0.32, p ≤ 0.01) and by worse functional status (ß = 0.46, p ≤ 0.001). The worse the fatigue and the functional status, the poorer the quality of life. The proposed model explained 48% of the variance in QoL.

Discussion: In addition to worse functional status, fatigue appears to be an important contributor to poor quality of life in PD patients. The mental components in particular seem to have a strong impact on patients' lives. Taking into account the multidimensionality of fatigue, interventions should be developed leading to strategies improving specific aspects of fatigue and quality of life in PD patients.

P1126
PRAMIPEXOLE IS HIGHLY EFFICACIOUS, REGARDLESS OF BASELINE IRLS SCORE
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Objective: Investigators sought to confirm the efficacy of the dopamine agonist pramipexole across the range of restless legs syndrome (RLS) severity.

Methods: Data were analyzed from 3 multicenter studies (3, 6, and 12 weeks) in which pramipexole was given at fixed or optimally titrated doses of 0.125 or 0.25 to 0.75 mg/day. All trials were double-blind and placebo-controlled, and patients met all criteria of the International RLS Study Group, with a baseline score ≥ 15 on the International RLS Study Group Rating Scale (IRLS). At the end of each treatment period, IRLS was reassessed. Change in score was analyzed for 2 subgroups: patients with RLS having baseline scores either ≥ 24 (severe) or ≤ 24 (moderate).

Results: The numbers of patients with ≥ 1 postbaseline evaluation and received ≥ 1 dose of pramipexole or placebo were 86 and 21 (3-week study), 224 and 114 (6-week study), and 254 and 85 (12-week study), respectively. In all, 246 pramipexole recipients (43.6% of 564) and 101 placebo recipients (45.9% of 220) had baseline IRLS scores ≥ 24. Among them, pramipexole was superior to placebo across all trials, with mean IRLS decreases (adjusted for age and baseline score) exceeding those for placebo by 11.7 (p = 0.0020), 9.4 (p < 0.0001), and 5.2 (p = 0.0128), respectively. For all other subjects, with baseline scores of ≤ 24, pramipexole again was superior to placebo, by 7.9 (p = 0.0001), 3.2 (p = 0.0236), and 3.6 (p = 0.0045).

Conclusion: Across 3 double-blind, randomized trials in RLS, the benefit of pramipexole was significant, regardless of whether patients’ baseline IRLS score was above or below 24.

P1127
DEEP BRAIN STIMULATION OF THE SUBTHALAMIC NUCLEUS AFFECTS VISUAL PROCESSING IN PARKINSON'S DISEASE: A PILOT FMRI STUDY
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Deep brain stimulation of the subthalamic nucleus (STN DBS) improves motor functions in patients with Parkinson’s disease (PD). As previous studies suggested, STN DBS effects outreach the motor system. Hence we tested if STN DBS can influence visual functions. Six patients with advanced PD (H-Y stage: II-III) had electrodes implanted in the STN bilaterally. Before the implantation of the internal neurostimulator, the externalized electrode leads were connected to an external neurostimulator placed outside the MRI scanner. The patients then underwent a 1.5T functional magnetic resonance imaging (fMRI) using visual stimulation with black-and-white pattern reversal stimuli in three ways: i) during left STN DBS, ii) during right STN DBS, and iii) with DBS switched off bilaterally. Random effect analysis was used for statistical processing. The results were visualized at P < 0.001 significance level uncorrected. Compared with DBS off, the left STN DBS increased activation of both occipital lobes in the lingual gyrus (BA 18). Significant activation difference in this area was also noted while comparing the left and right STN DBS. Conversely, no change in activation was related to the right STN DBS as compared with DBS off. Hyperactivation of the secondary visual cortex during visual stimulation we observed during left STN DBS agrees with previous findings of STN DBS-related changes in EEG alpha rhythm and alteration of visual evoked potentials. The results of the present study then support the hypothesis that STN DBS effects reach far beyond the motor system.

P1128
NON-MOTOR SYMPTOMS IN EARLY PARKINSON'S DISEASE
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Background: Parkinson’s disease (PD) is a chronic neurodegenerative disease of unknown origin and the specific mechanisms underlying the various symptoms are poorly understood. Besides the motor symptoms, non-motor symptoms (NMS) are sometimes present before diagnosis and almost inevitably emerge with disease progression. They are often poorly recognized and inadequately treated.

Aim: To investigate the appearance and influencing factors of NMS in Chinese patients with early PD.

Methods: Pittsburgh Sleep Quality Index (PSQI), Epworth Sleepiness Scale (ESS), Fatigue Severity Scale (FSS), Parkinson Disease Quality of Life questionnaire (PDQL), Hamilton Depression Rating Scale for Depression (HDRS) and Scales for Outcomes in Parkinson’s disease-AUT (SCOPA-AUT) were evaluated, as well as the Unified Parkinson’s Disease Rating Scale (UPDRS), Hoehn-Yahr Scale and the Schwab and England disability scale were performed.

Results: The incidence of sleep disorders, somnolence, fatigue and depression are 65.5% (35/55), 27.3% (15/55), 70.9% (39/55) and 80.0% (44/55) separately. The average score of PDQL and SCOPA-AUT are 137.60±22.06, and 22.33±11.33. Stepwise regression indicated UPDRS total score, UPDRS activity of daily living score and the Schwab and England disability score associated with NMS. The higher UPDRS total score and UPDRS activity of daily living score, lower Schwab and England disability score, the more frequent of NMS. Fatigue and patients’ quality of life are significantly better in groups treated with levodopa combine dopamine agonist (Trastal).

Conclusions: The scope of NMS is broad and they are frequent in patients with early PD. Attention focuses on the recognition and quantitation of NMS will form the basis of improved treatments.
P1129
NUTRITIONAL STATUS OF PARKINSON’S DISEASE PATIENTS
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Objective: To assess the dietary pattern and risk of malnutrition among Parkinson’s disease patients using Mini-Nutritional Assessment (MNA).

Subject: 45 subjects (30 male and 15 female) Parkinson’s disease patients of both sexes and all ages in all stages of the disease, attending movement disorder clinic of AIIMS were recruited.

Methods: Usual dietary intake was assessed by three non-consecutive 24 hours recalls. Nutritive values were calculated by using food composition table compiled by NIN. Nutritional status of patients was assessed by Mini nutritional assessment tool to evaluate the risk of malnutrition in order to prevent an early nutritional intervention when needed.

Results: According to MNA, 31% of the patients were assessed to be malnourished (<17), 67% were at the risk of malnutrition (17–23.5) and 2% were considered well nourished (>24). Mean MNA score of the entire study group was 18.7±7. In total 9% of the patients had BMI <18.5 (underweight), 55% had BMI between 18.5–25 (normal), 36% had BMI between 25–30 (overweight). Mean daily energy was found to be below RDA for males (1849 kcal+89) and for female (1731 kcal+308). Mean daily intake of protein was found to be below RDA for males (57 g+12) whereas for females mean daily protein intake was adequate (54 g+14). Mean daily intake for Calcium and niacin intake for iron, thiamine, riboflavin and vitamin-C was found to be above recommended dietary allowances.

Conclusion: Poor nutritional status as measured by the Mini-Nutritional Assessment was associated with increased in-hospital mortality.

P1130
FROZEN GAIT IN PARKINSON’S DISEASE (PD): THE FRENCH DopAMIP SURVEY
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Objectives: To describe the prevalence and clinical presentation of PD patients with frozen gait.

Methods: Cross-sectional survey in 419 PD patients randomly selected using standardized clinical examination (UPDRS) and self-questionnaires for anxiety/depression (HADS scale), sleep quality (Pittsburg scale), quality of life (PDQ 39), drug consumption. Patients with frozen gait (PDF) were defined as those with a score ≥1 on UPDRS item 14 in the “ON” condition. They were compared to PD patients without frozen gait (NonPDF).

Results: 40% (166) reported frozen gait. PDF patients had a longer disease duration (8±5 vs. 4±4 years, p<10-4), earlier age at onset (62±10 vs. 65±11, p=0.02), more frequent motor complications (52% vs. 28%, p<10-4), more predominant symptoms on left hemi-body (48% vs. 37%, p=0.02), more severe total UPDRS (45±16 vs. 26±13, p<10-4) than non-PDF patients. Resting tremor (item 20) was the sole UPDRS item not different between the 2 groups (2.5±2.5 vs. 2.6±2.5, p=0.3). PDF patients had worst depressive (7.8±3.7 vs. 5.9±3.8, p<10-4) and QoL scores (32±13 vs. 23±13, p<10-4) while there was no difference for anxiety and sleep quality scores. PDF patients had longer treatment duration (7±5 vs. 4±3, p<10-4), received higher L-dopa equivalent daily dose (1180±860 vs. 793±715, p<10-4). More PDF patients received amantadine (13% vs. 5%, p=0.003), and less received selegiline (10% vs. 19%, p=0.01). No difference was observed for agonists.

P1131
ROPINIROLE 24-HOUR PROLONGED RELEASE IS EFFECTIVE IN PATIENTS WITH ADVANCED PARKINSON’S DISEASE AS MEASURED BY TREATMENT RESPONSE AND DISEASE SEVERITY
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Objective: To evaluate the efficacy of ropinirole 24-hour prolonged release when used as adjunctive therapy in patients with advanced Parkinson’s disease (PD), by disease severity at baseline.

Methods: In the EASE-PD adjunct study (101468/169), patients with PD not optimally controlled with L-dopa were randomized to adjunctive treatment with ropinirole 24-hour (n=202) or placebo (n=191), once-daily for 24 weeks. Initial dose was 2.0mg/day, titrated to a maximum of 24.0mg/day. At 8.0mg/day and at each subsequent increase, L-dopa dose reduction was required. Primary endpoint: mean change in daily “off” time at Week 24 last observation carried forward (LOCF). To evaluate any relationship between the magnitude of treatment effect in terms of daily “off” time and baseline Unified Parkinson’s Disease Rating Scale (UPDRS) total motor score, an analysis of covariance (ANCOVA) was conducted (post-hoc; adjusted for country, baseline “off” time and baseline UPDRS total motor score).

Results: Ropinirole 24-hour significantly reduced “off” time, compared with placebo, at week 24 LOCF (adjusted mean treatment difference: −1.7 hours; p<0.001). Baseline UPDRS motor scores were similar between groups (mean ~30 points). There was a statistically significant interaction between treatment effect and baseline UPDRS total motor score (p=0.0444). The magnitude of the treatment difference for ropinirole 24-hour versus placebo for change in “off” time increased with increasing baseline disease severity (increasing UPDRS total motor score). Mean dose (SD) of ropinirole at last visit was 18.8 (6.26) mg/day.

Conclusions: The magnitude of the response to ropinirole 24-hour increases with increasing disease severity.

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P1132
SAFETY OF ANTIDEPRESSANT THERAPY IN PARKINSON’S DISEASE (PD) PATIENTS TREATED WITH RASAGILINE
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Background: A rare side effect of serotonergic psychotropic drugs is serotonin toxicity (ST); combining drugs that enhance intra-synaptic serotonin levels raises additional theoretical concern. Rasagiline, a selective and irreversible MAO-B inhibitor is indi-
cated for the treatment of early and moderate-advanced PD. During the clinical development of rasagiline, certain antidepressants were used at doses common for treatment of depression in PD.

Objective: To examine safety of concomitant rasagiline+antidepressant therapy.

Methods: 15 major (confusion, emotional lability, fever, sweating, myoclonus) and minor (hypotension, hypertension, tachycardia, diarrhoea, agitation, ataxia, nervousness, sleep disorder, dyspnorea, hyperventilation) ST-related adverse events (AEs) were assessed. Fisher Exact 2-tailed tests were used to compare AE incidence rates (per 100 subjects) in rasagiline+antidepressant vs. rasagiline-only groups. Possible ST (4 major or 3 major + 2 minor AEs) and terminations due to AEs were followed.

Results: Of 1361 patients given rasagiline, 316 received an antidepressant for a (median time 367 days; range 1-3061 days). For most AEs, incidence rates were not statistically different (p>0.05) for rasagiline+antidepressant vs. rasagiline-only patients. Incidence rates were significantly higher for confusion (2.9 vs. 1.5; p=0.02), sleep disorder (10.1 vs. 6.3; p=0.0005), and dyspnorea (2.9 vs. 1.6; p=0.04), all known AEs of antidepressants and symptoms of depressive disorders. No cases of ST were observed and terminations due to AEs were not greater in rasagiline+antidepressant patients.

Conclusions: Antidepressant therapy did not increase ST-related AEs or discontinuations due to AEs in rasagiline-treated patients. No specific cases of ST were identified. Our data suggest that rasagiline can be safely used with various antidepressants.

P1133
MOTOR DIFFERENCES BETWEEN PARKINSON’S DISEASE PATIENTS WITH AND WITHOUT MILD COGNITIVE IMPAIRMENT
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Background: Relationships between specific motor subtypes and especially postural instability gait difficulty (PIGD) subtype and dementia in Parkinson’s disease (PD) have been investigated in several studies. However, these relationships between motor symptoms and mild cognitive impairment in Parkinson’s disease (PD-MCI) are still unclear.

Objective: To compare the total motor score and predominant motor subtype in PD patients with and without mild cognitive impairment (MCI).

Methods: We investigated 46 PD patients without MCI, 59 patients with PD-MCI and 25 normal controls. All subjects underwent a comprehensive neuropsychological assessment, as well as quantitative ratings of motor symptom severity and functional status. The motor subtype of parkinsonism was classified into tremor-dominant (TD), indeterminate, or PIGD subtype based on items in the Unified Parkinson’s Disease Rating Scale (UPDRS), subscales II and III.

Results: Compared to PD patients without MCI, PD-MCI patients showed significant deterioration in total UPDRS (p=0.04). The PIGD-subtype was more common in PD-MCI group compared with PD without MCI group, in which TD subtype was more represented.

Conclusion: This cross-sectional study has demonstrated that non-dopaminergic postural instability gait difficulties motor symptoms are more common in PD-MCI patients compared with PD without MCI. These findings should contribute to the assessment of dementia risk profile in PD.

P1134
EFFECT OF ADJUNCT RASAGILINE ON DOPAMINERGIC AND NON-DOPAMINERGIC MOTOR FEATURES OF PARKINSON’S DISEASE (PD)
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Background and aims: Rasagiline, a novel MAO-B inhibitor, has shown efficacy as adjunct to levodopa in PD patients with motor fluctuations. In the LARGO study, rasagiline significantly improved UPDRS-Motor scores during ON time (p<0.001) and practically-defined OFF time (p<0.05). Entacapone, as active comparator, was significantly effective during ON only. Recently, Levy et al (Arch Neurol 2005) clustered UPDRS-Motor features of PD by dopaminergic/non-dopaminergic status. Here, we assessed LARGO data using this classification system.

Methods: The LARGO study (n=687) investigated efficacy of rasagiline 1.0 mg/day vs. placebo, in levodopa-treated PD patients. Post-hoc analyses were made during ON time (n=668), and in practically-defined OFF (substudy; n=105). UPDRS-Motor scores were analysed after grouping into 2 categories and 6 subdomains: dopaminergic (subdomains – tremor, rigidity, bradykinesia, facial expression), and non-dopaminergic (subdomains – speech, axial impairment). Bonferroni correction for multiple comparisons was performed (p<0.0031).

Results: During ON time, both rasagiline and entacapone produced significant benefits in UPDRS-Motor score vs. placebo in the dopaminergic category (p<0.001). In dopaminergic subdomains, rasagiline significantly improved tremor (p<0.01) and bradykinesia (p<0.001), with benefits in rigidity and facial expression (non-significant after Bonferroni correction). In contrast to entacapone, the benefit of rasagiline on bradykinesia was also significant during OFF (p<0.001), with a trend for improved facial expression and speech.

Conclusions: In levodopa-treated patients, once-daily rasagiline produced significant benefits in dopaminergic motor features of PD in both ON and OFF, with a trend towards benefit in speech during OFF. Such effects may be clinically meaningful to patients with motor fluctuations – maintaining movement and communication.

P1135
FALLS IN PARKINSON’S DISEASE: THE FRENCH DOPAMIP SURVEY
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Fall is a frequent but poorly studied problem in Parkinson’s disease (PD). We describe the prevalence and clinical features of PD patients with falls (PDF patients) defined as those with UPDRS item 13≥2 in the “ON” condition) in a cross-sectional survey of 419 ambulatory PD patients (mean age 69±9yrs, mean disease duration 6±4yrs, HY median score 2) using UPDRS and self-questionnaires assessing anxiety/depression symptoms (HADS scale), sleep quality (Pittsburgh scale), quality of life (PDQ 39). PDF patients were compared to patients without falls. There were 20% (87) PDF patients. PDF patients were more frequently females, older (72±9 vs. 68±9yrs), had more frequently home care assistance, longer disease duration (8±5 vs. 4±4yrs, p<0.01), more frequent motor complications (55% vs. 32%, p<0.01), more orthostatic hypotension (24% vs. 9%, p<0.01), more severe total UPDRS
P1136
DISEASE-SPECIFIC RISK FACTORS OF FALLS IN PD PATIENTS – A PROSPECTIVE STUDY
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Aim of the study: To identify predictors of falling in PD patients during a 12 month prospective follow-up study.

Methods: 108 moderately advanced PD patients reported occurrence of falls during 1 year observation. According to the number of prior falls patients were analysed as: non-fallers, rare fallers (≤3 falls/year) and frequent fallers (>3 falls/year) group. All patients underwent a multidisciplinary assessment for exclusion of non-parkinsonian causes of falls and evaluation of disease severity (UPDRS, H&Y), type of PD (Postural Instability Gait Disturbances-PIGD vs. Tremor-dominant), disability (Schwab-England), gait disturbances (Freezing of Gait-Questionnaire-FOG-Q, festination) and postural instability.

Results: 93 patients completed the one year observation and 45 (48%) of them reported 233 falls. 23% of non-fallers reported falls in prospective observation. 41.5% of rare-fallers reported no falls, but 27.5% increased falling. 20% of frequent fallers observed decreased falling but no one stop falling. In univariate logistic regression analysis showed older age (OR=1.04), higher H&Y stage (OR=2.8), higher UPDRS total score (OR=1.04), PIGD type of PD (OR=4.5), lower Schwab-England score (OR=1.09), higher FOG-Q score (OR=1.20), festination (OR=3.3), postural instability (OR=2.8), previous falls (OR=8.7) predispose for falling. Multivariate logistic regression model revealed that only age (OR=1.07), higher FOG-Q (OR=1.19) and history of prior falls (OR=7.1) but not PIGD and H&Y were independent risk factors of falls.

Conclusion: More than 20% of non-fallers and rare fallers started to fall or reported an increased number of falls in the following year. History of prior falls is the strongest predictor of falls besides old age and FOG-Q.

P1137
POWER OF CLINICAL TESTS TO IDENTIFY FALLERS AND NON-FALLERS AMONG PARKINSON’S DISEASE PATIENTS IN RELATION TO THEIR MEDICATION STATE
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The aim of this study was to determine the ability of various clinical tests to identify fallers and non-fallers among Parkinson’s disease (PD) patients in relation to their medication state. 80 PD patients from three movement disorders centres participated. Two groups of fallers (n=35) and non-fallers (n=45) were formed on the basis of individual fall history. The groups were compared on balance tests performed during OFF-medication and ON-medication states. The following measures were evaluated: 1) the UPDRS III score, 2) the Pull Test (item 30 of the UPDRS III), 3) the PIGD score (sum of the items 27–30 of the UPDRS III), and 4) the Push & Release Test (P&R). The overall accuracy of the identification of fallers and non-fallers was determined by binomial logistic regression. For the OFF-medication state statistical analysis revealed an accuracy of identification of 72.5% for the UPDRS III score, 77.5% for the PIGD score, and 85% for both the Pull Test and the P&R Test. For the ON-medication state the accuracy was 68.5% for the UPDRS III score, 72.5% for the PIGD score, 76.3% for the Pull Test, and 87.5% for the P&R Test. This study showed that the Pull test and the P&R Test have the most power in identifying fallers and non-fallers among PD patients in the OFF-medication state. However, the P&R Test is more accurate than the Pull Test for patients in the ON-medication state, a feature that makes the test more widely applicable in routine clinical practice.

P1138
ROPINIROLE 24-HOUR PROLONGED RELEASE DELAYS THE ONSET OF DYSKINESIA COMPARED WITH CARBIDOPA/LEVODOPA IN PATIENTS WITH PARKINSON’S DISEASE TREATED WITH LEVODOPA
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Objective: To evaluate the time to onset of dyskinesia during adjunctive treatment with ropinirole 24-hour prolonged release, or additional levodopa, in patients with Parkinson’s disease (PD) not optimally controlled with levodopa.

Methods: This randomized, double-blind, parallel-group, flexible-dose study (protocol 101468/228) included patients with PD (HY stage I–III) who were on ≤600 mg levodopa therapy for ≤3 years, and demonstrated lack of symptom control (e.g. mild wearing-off, simple on/off fluctuations). Patients were randomized to adjunctive treatment with ropinirole 24-hour once-daily (n=105; 2–24 mg/day) or carbidopa/levodopa three-times-daily (n=104; 50–1000 mg/day) for 2 years. Initial doses were titrated to optimal therapeutic effect. No reduction in baseline levodopa dose was allowed. Primary endpoint was time of onset of dyskinesia.

Results: Overall, 21 patients developed dyskinesia (ropinirole 24-hour n=3 [3%]; carbidopa/levodopa n=18 [17%]). There was a statistically significant delay in the onset of dyskinesia for patients treated with ropinirole 24-hour, compared with carbidopa/levodopa (p=0.001). The study was terminated for reasons unrelated to safety or tolerability. Post-hoc analysis with censoring of observations after termination of the study also showed a significant delay in the onset of dyskinesia in the ropinirole 24-hour group (p=0.002). At week 104 LOCF the mean blinded doses (SD) of ropinirole 24-hour and supplemental carbidopa/levodopa were 10.0 (6.15) and 284.1 (222.33) mg/day, respectively.

Conclusions: This study demonstrates that adjunctive therapy with ropinirole 24-hour compared with carbidopa/levodopa prolongs the time to onset of dyskinesia in patients with mild-to-moderate PD already treated with levodopa.

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P1139
LONG-TERM FOLLOW-UP USE OF LEVTIRACETAM TO TREAT TICS IN CHILDREN AND ADOLESCENTS WITH TOURETTE SYNDROME
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Tics are a common disorder in children. Some drugs used for this indication have problematic side effects such as tardive dyskinesia. Thus, therapeutic options with better safety profiles are needed. Levetiracetam is an antiepileptic drug reported to be useful for the treatment of patients with tics. We obtained follow-up evaluations in patients ≤18 years of age to determine the effects of up to 4 years of treatment with levetiracetam. 70 patients age ≤18 years with tics and Tourette syndrome were enrolled in this prospective, open-label study. The initial dose of levetiracetam was 250 mg/d. The dosage was titrated over 3 weeks to 1,000 to 2,000 mg/d. Clinical outcomes were assessed with the Clinical Global Impression Scale, Yale Global Tic Severity Scale, and Revised Conner’s Parent Rating Scales, including the Conner’s Teacher Rating Scale- Revised and the Conner’s Parent Rating Scale-Revised. Behaviour and school performance were also recorded. Follow-up evaluations were obtained every 3 months for more than 4 years. After 4 years, patients were still being treated with levetiracetam monotherapy for their tics. All 70 showed improvements in tics based on the scales used. A total of 49 patients improved with regard to behaviour and school performance. Levetiracetam was generally well tolerated. Three patients discontinued because of exaggeration of pre-existing behavioural problems. Two patients were unable to complete their follow-up evaluations because of relocation. Levetiracetam may be useful in treating tics in children and adolescents. Given its established safety profile, levetiracetam is a candidate for additional evaluation.

P1140
TWO CASES OF PORPHYRIA AND ATYPICAL HAND AND HEAD TREMOR
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We report on two cases (aged 19 and 36) of porphyria with concomitant hand tremor in both and head tremor in one case. The diagnosis of porphyria was established on biochemical grounds. In both cases tremor severity increased after physical effort or mental stress. There was negative family history and no other neurological pathological signs (apart from the head tilt in one case). EMG conduction studies did not reveal neuropathy, autonomic pathological signs (apart from the head tilt in one case). The clinical and neurophysiological characteristics of tremor suggest tremor type similar to the observed in essential tremor patients. To our knowledge this is the first description of porphyria and tremor not related to neuropathy.

P1141
RAPID PROGRESSION OF PARKINSON’S SYMPTOMS MAY BE THE FIRST MANIFESTATION OF CENTRAL NERVOUS SYSTEM TUMORS IN PARKINSON’S DISEASE: A REPORT FROM TWO CASES
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In this report we present two patients with Parkinson’s disease (PD) presenting with rapid progressive parkinsonian symptoms. The clinical examination revealed no specific neurological signs suggestive of other neurological disorders. The first patient, a 77-year-old man with a 12 year history of PD treated with combination of levodopa and dopamine agonist presented with increased rigidity, especially in axial muscles and pain related to the musculature of the spine. No further signs were detected after a complete neurological examination and the condition was considered as progression of parkinsonism and consequently the levodopa dose was increased. One month later the gait deteriorated rapidly and he developed signs of altered pyramidal function. The diagnostic work-up revealed an intraspinal schwannoma in the thoracic column and he was operated. The second patient, a 75-year-old man, treated with levodopa for a relatively moderate PD in 7 years until he developed marked akinesia. Despite treatment with increased doses of levodopa, he got more rigid with prolonged off-periods. At time of hospitalization he was unable to walk independently, but the clinical neurological examination only revealed aggravation of parkinsonian signs. MRI of the brain revealed an intracerebral lesion which was later confirmed as glioblastoma multiforme. These two patients demonstrate the importance of considering other underlying neurological disease in patients with rapid progression of parkinsonian symptoms.

P1142
PARKINSON’S DISEASE AND ESSENTIAL TREMOR: DIFFERENCES BETWEEN ACCELEROMETER WAVES
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Background: Parkinson’s disease tremor and essential tremor are main aetiological causes of pathological tremor. It is difficult to make a differential diagnosis of these disorders on their beginning. Accelerometry documents the dominant frequency of a tremor and its amplitude. It is also possible to restore an accelerometer wave of the motion.
Aims: To search differences between accelerometer waves of Parkinson’s disease tremor and essential tremor.
Methods: 40 persons (PD n=20, ET n=20, M:F=1:1:1, mean age 59±SD 10 years, disease duration 8±6.7 years) were tested. International criteria were used to diagnose a disorder. Postural tremor was recorded from thumb with a dual-axis accelerometer device. Time of registration was 30 seconds. Visual analysis of waves was done.
Results: Differences in rhythm and in amplitude of tremor between two groups were revealed. PD waves characterize with less rhythmic picture of tremor and constant variations of its ampli-
tude. ET waves have a more regular form of tremor and less marked variations of its amplitude.

Conclusion: There are differences between accelerometer waves of Parkinson’s disease tremor and essential tremor. The efficacy of waves analysis in differential diagnosis of early stages of PD and ET should be investigated.

P1143

PATIENTS’ PREFERENCE FOR ROTIGOTINE TRANSDERMAL PATCH FOR TREATMENT OF PARKINSON’S DISEASE. RESULTS OF A SINGLE-ARM, PROSPECTIVE, MULTINATIONAL TRIAL

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Objective and background: Rotigotine (Neupro®) transdermal patch is approved in the EU for treatment of Parkinson’s disease. This trial investigated patient satisfaction when it was given to PD patients with early morning akinesia.

Methods: In this open-label, multinational trial with up to 12 weeks duration, patients received rotigotine up to 16mg/24h. Motor performance (UPDRS III) was assessed before the first morning dose and at least 12h after the last oral medication the previous evening. In addition, patient satisfaction with the patch was assessed by a self-developed questionnaire.

Results: A total of 54 patients were exposed to the rotigotine patch. Compared to baseline, early morning UPDRS motor scores improved by 11.44±0.97 (SE) points (PPS, p<0.0001). The majority of patients (95%) were either “satisfied” or “very satisfied” with the patch while only 41% expressed similar satisfaction from the oral mode of drug delivery. 82% “agreed” or “strongly agreed” to use a skin patch over oral medication. The aspects subjects liked the most were “did not stay on for the entire day” (56%) and “symptom relief did not last all day” (28%). In contrast, only 4% of patches were reported to be detached.

Conclusions: Rotigotine transdermal patch up to 16 mg/24h was generally well perceived by PD patients as an easy to use and comfortable mode of treatment.

P1144

EFFECTS OF ROTIGOTINE TRANSDERMAL PATCH ON EARLY MORNING AND NIGHT TIME MOTOR FUNCTION IN PATIENTS WITH PARKINSON’S DISEASE

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Objective and background: Rotigotine (Neupro®) is approved in the EU for treatment of Parkinson’s disease. Given the stable plasma levels of rotigotine achieved with the transdermal delivery, we investigated the rotigotine effects on night time and early morning motor function.

Methods: In this open-label, prospective, multinational trial, subjects received once-daily rotigotine in doses up to 16 mg/24h. Baseline and end of maintenance (4 weeks) UPDRS III (motor) scores were evaluated in the morning, ensuring at least 12h off any oral anti-parkinsonian medications. In addition, tapping rates were measured in the evening and in the morning and the number of nocturias and night-time akinesia, as well as dystonia and cramps were measured (NADCS score, Stocchi et al., 1998).

Results: 54 patients were randomized in this study. Rotigotine improved early morning “off” state UPDRS III scores by 11.44±0.97 (SE) points (PPS, p<0.0001). Both morning and evening average tapping rates increased (by 26.8±3.3 and 18.7±3.2 taps/min, respectively, p<0.0001) indicating improved upper limb motor performance. The difference between the evening and morning tapping rates was reduced (from 11.6±2.3, p<0.0001 at baseline to 2.4±2.9 taps/min, p=0.42), indicating better control of early morning upper limb motor performance. The mean NADCS score decreased by 2.11±0.17 (p<0.0001), indicating improvement in night time motor disturbances. The number of nocturias decreased by 0.71±0.09 (p<0.0001). The most common adverse events were application site reactions and nausea (20% and 19%).

Conclusions: Rotigotine at doses up to 16 mg/24 h improved nocturnal and early morning motor symptoms and nocturia in this trial.

P1145

HOSPITALISATION IN PARKINSON’S DISEASE AND OTHER PARKINSONIAN SYNDROMES

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Objective: The objective of this study is to provide a profile of patients with Parkinson’s disease (PD) and other parkinsonian syndromes (PS) who required admission to hospital. PD and PS are often associated with other disorders, typical of the disease or of the age of patients. However, little is known about the hospital inpatient care of patients with PD and PS.

Methods: The features of a geographically defined population of PD and PS hospitalized patients were reviewed over a 6 year period. Patients with PD and PS (ICD 9 code 332.0, 333.0, 332.1) were identified from a database of a General Hospital (Vimercate) with a drainage population of approximately 180,000. Department of admission, reason of admission and clinical outcome were collected.

Results: The total number of patients exposed to analysis was 265 (mean age was 75.8 years, 49.7% male) accounting for 373 hospital admissions. The mean duration of stay was 9.6 days. Comorbid conditions. Infections, cardiovascular diseases, falls, and vascular (14%), urological (8%), psychiatric (5%). Outcome was death in 13% of cases, mainly due to infectious and cardiovascular diseases (47% and 27% respectively).

Conclusions: Extrapyramidal disorders are an important cause of comorbid conditions. Infections, cardiovascular diseases, falls, psychiatric complications accounted for the majority of hospital admissions. Mortality rate is high.

P1146

TRANSDERMAL ROTIGOTINE SHOWS NO INDICATION FOR QT C PROLONGATION IN A THOROUGH QT/QTc STUDY CONDUCTED IN PATIENTS WITH ADVANCED PARKINSON’S DISEASE

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Background: Potential effects of transdermal rotigotine in therapeutic and supratherapeutic doses on cardiac repolarisation were
investigated in a thorough QT/QTc study in patients with advanced Parkinson’s disease using a parallel-group, placebo and positive (moxifloxacin 400 mg iv) controlled design. **Methods:** After two baseline ECG recording days (day- and night-time, reflecting a 24-hour dosing interval), patients were randomized to either rotigotine (n=66) or placebo (n=64) patch for a dose escalation phase (4 mg/24 h – 24 mg/24 h) with weekly increments of 4 mg/24 h followed by a taper phase of 10 days. Patients in the placebo patch arm received moxifloxacin infusion in a randomized cross-over fashion with matching placebo on days 32 and 39 whereas rotigotine patch treated patients received placebo infusion on both days. Continuous 12-lead ECG recordings were obtained at 5 different dose steps (8 mg/24 h – 24 mg/24 h) and on moxifloxacin/placebo infusion days. After computer ECG processing, manual measurement of QT intervals was performed by two independent cardiologists with reconciliation by a senior cardiologist under blinded conditions. QT values were corrected for heart rate using individualized (QTcI) and population-based heart rate correction formulae. **Results:** Cross-over comparison of moxifloxacin vs. placebo resulted in maximum mean QTcI prolongation of 13.5 ms (confidence interval: 11.8; 15.2 ms) demonstrating assay sensitivity. Differences of time matched changes from baseline between rotigotine and placebo showed mean effects around zero with 1-sided 95% confidence intervals far below 10 ms for each time point of assessment. **Conclusions:** These data indicate that there is no effect of rotigotine in therapeutic and supratherapeutic doses on cardiac repolarisation. © 2007 EFNS European Journal of Neurology 14 (Suppl. 1), 32–163
opening dystonia in both on/off states. He underwent bilateral STN DBS; his dystonia improved almost 100% at first month post-DBS. Patient#2 is a 73yo gentleman with medically refractory blepharospasm, lower facial dystonia, and torticollis. He underwent bilateral GPI-DBS. Consistent subjective benefits were delayed till 6 months post-DBS. Patient#3 is a 56yo gentleman with medically refractory spasmodic dysphonia, writers cramp, and blepharospasm/lower facial dystonia. He underwent bilateral GPI-DBS, with consistent subjective effects delayed till 6 months post-DBS. Patient#4 is a 63yo lady with medically refractory tardive dystonia (blepharospasm, orofacial dystonia, and anterocollis). She underwent bilateral GPI-DBS. At last follow-up 3 months post-DBS, she reports 10% improvement. 6 months post-DBS, Burke-Fahn-Marsden dystonia scale scores (BFMDSS) for patients #1, 2, and 3 were 100%, 47%, and 25% better respectively (mean=57%). Patient#4 is 3 months post-DBS, with 9% improvement of BFMDSS. Patients#1&2 have been followed beyond 6 months, with BFMDSS improved 100% (2.5 years post-DBS) and 76% (1 year post-DBS) respectively.

Conclusions: Patients with Meige syndrome may respond to bilateral DBS. Meige due to PD responds promptly and dramatically to STN-DBS even long-term. Meige in non-PD patients may have a delayed response to GPI-DBS, with increasing benefits during the first year.

P1150
INHIBITION OF GLYCOGEN SYNTHASE KINASE-3BETA REDUCES L-DOPA-INDUCED NEUROTOXICITY AGAINST NEURONAL CELLS
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Background and objectives: Neurotoxicity of L-3,4-dihydroxyphenylalanine (L-dopa), used for the treatment of Parkinson's disease, still remains controversial. Although there are much more reports suggesting that long-term treatment of L-dopa causes neuronal death, recently increasing evidences have proposes that L-dopa might be neuroprotective rather than neurotoxic. We investigated the effect of L-dopa on SH-SY5Y human neuroblastoma cells depending on its concentration. And, we also studied whether glycogen synthase kinase (GSK)-3β activation is related to L-dopa-induced neurotoxicity.

Method: To evaluate the effect of L-dopa on SH-SY5Y human neuroblastoma cells, we treated several doses of L-dopa and GSK-3β inhibitor for 24h. To investigate the role of GSK-3β in L-dopa-induced neurotoxicity, we simultaneously treated several doses of L-dopa and GSK-3β inhibitor for 24h.

Results: MTT (3-[4,5-dimethylthiazol-2-yl]-2,5-diphenyltetrazolium bromide) assay, trypan blue staining, cell counting kit-8, and DAPI staining showed that L-dopa decreased SH-SY5Y cell viability in high concentration. In the study to investigate the neurotoxic mechanisms of L-dopa, expression and activity of GSK-3β were significantly increased in a concentration-dependent manner and treatment of GSK-3β inhibitor prevented L-dopa-induced cell death.

Conclusion: These results suggest that L-DOPA induces neuronal cell death in high concentration that the neurotoxic effect of L-dopa might be partly mediated by GSK-3β activation, and that inhibition of GSK-3β reduces L-dopa-induced neurotoxicity.

P1151
STANDARDIZED MORTALITY RATIO, ABSOLUTE EXCESSIVE RISK AND INDEXES FOR SEASONAL CHANGE IN THE DEATHS OF PARKINSON'S DISEASE PATIENTS IN THE PLOVDIV REGION, BULGARIA FROM 2002–2004
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Parkinson's disease (PD) is rarely the cause of death, most such patients pass away due to concomitant illnesses. The mortality indexes for PD are difficult to determine and analyze, as the primary cause of death of the patients often remains undetermined.

Objective: To determine the additional death risk for patients with PD and to compare it with the referral population, analyzing the seasonal variations in mortality.

Patients and methods: The deaths of PD patients between 2002 and 2004 were determined through the database developed by our team. It contained the demographic and clinical information of PD patients in the Plovdiv region – a total of 2274 men and women, among a population of 715,904. Of that number 2030 patients were previously registered as PD patients, while 244 were newly discovered. A total of 617 deaths of different causes were registered among them for the period.

Results: The values of the standardized mortality ratio (SMR) were 2.7 (95% CI 2.5; 3.01), absolute excessive risk (AER) – for a two year period 0.12, and SMR 3.6 (95% CI 3.37; 3.95), AER –0.19 for a three year period. A higher mortality index was discovered for the autumn-winter period, when the physical activity of PD patients is greatly reduced.

Conclusions: 1. PD patients have 2–3 times higher mortality as compared to referral population.
2. The worsening of the mobility of PD patients in the autumn–winter period increases the mortality probably due to an increase in inflammatory diseases, traumas and complications.

P1152
HEMI-ASTERIXIS FOLLOWING STROKE
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Objective: Hyperkinetic abnormal movements following acute stroke are unusual. Asterixis, a negative form of myoclonus, is usually associated with toxic, metabolic and systemic disorders; nevertheless unilateral asterixis usually points to a focal lesion of the central nervous system.

Methods: We report the clinical-radiological characteristics of 2 patients that on examination during the acute phase of stroke showed hemi-asterixis (videos).

Results: The patients had similar clinical-epidemiological features (table). Imaging, neurovascular and cardiological studies revealed multiple cardioembolic ischaemic infarcts of the posterior cerebral artery territory (temporo-occipital infarctions in both patients and a cerebellar ischaemic lesion in one of them) (Figure). In both cases, the ventral-postero-lateral thalamus was also involved.

Discussion: Post-stroke hyperkinetic abnormal movements are unusual neurological manifestations, and hemi-asterixis following acute stroke is even less frequently reported. Unilateral asterixis is
usually associated with thalamic lesions (ventral and posterolateral thalamus) though any structural lesion of the cerebellum—brainstem—thalamo—frontal lobe system can produce abnormal control of limb posture maintenance and enhance myoclonic activity.

**P1153**

**DATSCAN SPECT STUDY OF 41 PATIENTS WITH TREMOR DISORDERS**

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**Background:** The differential diagnosis of tremor disorders remains difficult in many cases. Since its introduction in Europe in 2003, 123I-FP-CIT SPECT has shown promising results in the differentiation between essential tremor (ET) and Parkinson’s disease (PD).

**Aim:** To assess the contribution of DaTSCAN SPECT to the differential diagnosis of tremor in the region of Varna, Bulgaria.

**Methods:** 123I-FP-CIT SPECT was performed in 41 patients. In 16 cases the clinical diagnosis was ET, and in 25 it was definite or probable PD. Imaging results were classified as normal or abnormal by visual assessment.

**Results:** SPECT showed normal results in all 16 patients, clinically diagnosed as ET, and in 3 of those with PD. The remaining PD cases were determined as abnormal. Sensitivity of the method was 88% for the diagnosis of PD, and the specificity for ET was 100%.

**Conclusion:** Our results demonstrate high sensitivity and specificity, similar to those reported in the literature, thus confirming the accuracy and usefulness of 123I-FP-CIT SPECT in the differential diagnosis of tremor disorders.

**P1154**

**RESTLESS LEGS SYNDROME IN PATIENTS ON CHRONIC HAEMODIALYSIS**

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**Background and aims:** To evaluate the frequency of RLS and investigate possible associations between the syndrome and demographic characteristics and risk factors, etiology of renal disease, biochemical variables, duration of renal replacement therapy, comorbidities and treatment.

**Methods:** We interviewed 280 patients on dialytic therapy in 6 haemodialytic units (Athens, Alexandroupolis, Heraklion, Patra, Rhodes and Tripolis) during the last 3 years, according to the criteria elaborated by the International RLS Study Group. Univariate comparisons of the abovementioned parameters of patients with and without RLS were performed using the z- and t-criterion (in case of subgroups size <30) as well as chi-square test. P-values of 0.05 were considered to be statistically significant.

**Results:** 22.14% of the sample was positive for RLS. Weight and comorbidities (especially heart disease, diabetes mellitus, vascular cerebral strokes and hyperlipidemia) are significantly associated with RLS. Haematocrit value, antidepressant drugs and diabetic nephropathy were found significantly higher in patients with than those without RLS. Generally, etiology and duration of renal disease are not significantly associated with RLS.

**Conclusions:** RLS is common in haemodialysis population. The factors which significantly affect the accession of RLS are interrelated and they pertain to the cardiovascular system. Furthermore, the good mood of the patients seems to reduce RLS frequency. However, a more intensive analysis is required in order to reveal the associated pathogenesis.

**P1155**

**ENTACAPONE AND PRAMIPEXOLE**

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**Objective:** To determine the continuation rates and reasons for discontinuation of entacapone and pramipexole in the treatment of Parkinson’s disease (PD).

**Methods:** Medical records of all the patients with PD treated at the Department of Neurology, Tampere University Hospital were retrospectively reviewed. The Kaplan-Meier method was used to evaluate treatment continuation.

**Results:** 138 patients with PD were included. Of these, 79 patients were/had been on entacapone and 94 on pramipexole. The proportions of patients still on treatment after one, three and six years were 86%, 79% and 74%, respectively, for entacapone, and 78%, 63% and 63%, respectively, for pramipexole. Reasons for discontinuation of entacapone were adverse effects in 11 patients (13.9%) and efficacy was not optimal in 2 patients (2.5%). The main adverse effect of entacapone leading to discontinuation was diarrhea in 6 patients (54.5%). Reasons for discontinuation of pramipexole treatment were adverse effects in 14 patients (14.9%) and efficacy was not optimal in 8 patients (8.5%). The main adverse effects of pramipexole requiring discontinuation were hallucinations in 3 patients (21.4%) and confusion in 3 patients (21.4%).

**Conclusions:** Both entacapone and pramipexole seem to be useful in the treatment of PD in most of the patients, and a vast majority of patients continue even after three years. Adverse effects were the main reasons for discontinuation both for entacapone and pramipexole. However, both treatments were in general well tolerated.

**P1156**

**ARIPIPRAZOLE-INDUCED DYSTONIA AFTER PROLONGED NEUROLEPTIC TREATMENT; A SIDE EFFECT POSSIBLY RELATED TO DOPAMINERGIC HYPERSENSITIVITY**

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Atypical antipsychotics are known to induce less acute extrapyramidal side effects when compared to classical neuroleptics. Both neuroleptic types are potent dopaminergic D2-antagonists. The recent antipsychotic aripiprazole is different since it not only has several properties of the atypicals (e.g. 5-HT2A antagonist) but also behaves as a partial agonist of dopaminergic D2 receptors. This last property could explain the lower rate of extra-pyramidal side effects noted in clinical trials. We observed a 54 y.o. woman who had been treated for many years with different neuroleptics (olanzapine, risperidone, amisulpride) and who developed severe
significant effect of treatment with rivastigmine on neuropsychiatric after treatment. In the executive tests (CAMCOG-exe) a tendency assessed with NPI.

6 months treatment with a decrease in mean score from 12.7 (SD 6.4) to 5.7 (SD 9.1), (p=0.02). The neuropsychological examination was made. A significant decrease in neuropsychiatric symptoms also NPI. After treatment for 6 months a new neuropsychological assessment of the effect of treatment in several cognitive areas (impulsive traits). The properties of a partial agonist largely depend on the receptor expression level and on the receptor reserve (low or high receptor subtype densities). Fundamental studies on the fundamental consequences of receptor regulation should help to understand the underlying mechanisms of a switch from antagonists to partial agonists.

P1157
EVALUATION OF THE EFFECT OF TREATMENT WITH RIVASTIGMINE IN DEMENTED PARKINSONIAN PATIENTS USING NEUropsychological ASSESSMENT AND THE NEUROPSYCHIATRIC INVENTORY (NPI)
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The aim of the present study was to evaluate the effect of rivastigmine in doses of 3 to 12 mg/day in patients with Parkinson’s disease and dementia and/or hallucinations over a treatment period of 24 weeks and to evaluate the effect of the treatment in several cognitive areas and in neuropsychiatric symptoms. 20 patients were examined with the following program: Mini Mental Status examination (MMSE), Neuropsychiatric inventory (NPI), Unified Parkinson Disease Rating Scale (UPDRS), Hoehn and Yahr, a battery of bloodsamples relevant for the diagnosis of dementia, a CT scan and finally a neuropsychological examination including the following tests: Dart reading test at first examination, CAMCOG R incl. MMSE, CAMCOG executive, word fluency (S-words and animals), category cued recall and Stroop colour-word test. The patients were followed every month during rivastigmine treatment with UPDRS II and III, vital signs including blood pressure, at 6 months also NPI. After treatment for 6 months a new neuropsychological examination was made. A significant decrease in neuropsychiatric symptoms assessed with the NPI score was found after the 6 months treatment with a decrease in mean score from 12.7 (SD 12.4) to 5.7 (SD 9.1), (p=0.02). The neuropsychological assessment did not show any significant difference in score before and after treatment. In the executive tests (CAMCOG-exe) a tendency towards a better performance was found (p=0.06). We report a significant effect of treatment with rivastigmine on neuropsychiatric symptoms in PD patients with dementia and/or visual hallucinations assessed with NPI.

P1158
TYPES OF HAND TREMOR IN DYSTONIC PATIENTS
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Background: Hand tremor is a relatively frequent sign in focal dystonia. Two types of tremor in dystonic patients (DP) were identified: ‘dystonic tremor’ occurring in a body part affected by dystonia and ‘tremor associated with dystonia’ when tremor is present in a body part not affected by dystonia (ET-like tremor). There is no study concerning enhanced physiologic (EP) tremor or any other types of tremor in DP.

Objectives: To assess incidence and character of hand tremor in clinical evaluation and computer analysis in DP.

Material and methods: 51 DP were included: 27 with torticollis and 24 with blepharospasm. Severity of dystonic symptoms was assessed by Toronto Scale in torticollis and by Jankovic Rating Scale in blepharospasm. Severity of hand tremor was assessed by Simple Tremor Severity Scale. Objective computer assessment was performed using Digitizing Tablet, three-axial accelerometer and EMG. Load test with 500g was performed in order to identify enhanced physiologic tremor.

Results: In neurological examination tremor was found in 45.1% of DP: 40.7% with torticollis and 50.0% with blepharospasm. Unilateral hand tremor occurred in 21.7% of DP; bilateral hand tremor occurred in 78.3% of DP. In computer analysis tremor was identified in 39.2% of DP: 37.0% with torticollis and 41.6% with blepharospasm. In DP 65% had ET-like tremor and 35% had EP tremor. In patients with ET-like tremor 38.5% had it in both hands and 61.5% in one hand. Among patients with EP tremor 57.1% had it in the right hand and 42.9% in the left hand.

Conclusions: In dystonic patients unilateral ET-like tremor type predominates.

P1159
ANXIETY AND DEPRESSION IN PATIENTS WITH CERVICAL DYSTONIA
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Background and aims: Anxiety and depression are the two strongest predictors of quality of life in patients with cervical dystonia. Early intervention by identifying and treating these co-morbidities could result in a significantly enhanced quality of life for these patients. The objective of our study was to look at the prevalence of anxiety and depression in patients with cervical dystonia (group 1) compared to general population (staff volunteers) (group 2) and patients with other neurological (group 3) and non-neurological cardiac (group 4) conditions.

Methodology: To screen for anxiety and depression, 50 subjects from each group were asked to fill in a validated questionnaire, the Hospital Anxiety and Depression scale questionnaire (HADS). Scores of 8 or more were taken as “significant”.

Results: By multivariate analysis, a statistically significant difference was noted in the prevalence of anxiety between patients with cervical dystonia and the general population (p<0.05) and patients with non-neurological illness (p<0.05). An excess proportion of patients with cervical dystonia had significant anxiety (64%) compared to 44% in general neurology, 32% in non-neurology and 20% in the general population. Similar trends to anxiety were noted in all 4 groups for depression but these were statistically not significant.

Conclusion: There is a higher prevalence of anxiety among patients with cervical dystonia. Results suggest an association between cervical dystonia and anxiety in excess of that seen with chronic illness due to other causes. These results highlight the need for mental health professionals in service delivery for patients with cervical dystonia.
P1160
PRAMIPEXOLE DID NOT INDUCE ORTHOSTATIC HYPOTENSION OR AFFECT BLOOD PRESSURE OR PULSE IN PATIENTS WITH RESTLESS LEGS SYNDROME (RLS)
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Background and aims: Whether treatment with dopamine agonists might be associated with a clinically significant decrease in systolic and diastolic blood pressure (SBP, DBP) or orthostatic hypotension in patients with RLS is unknown. We assessed these outcomes in patients treated with pramipexole (0.125–0.75 mg QD) for RLS.

Methods: Vital sign and adverse event data from 3 double-blind trials lasting 3–12 weeks were pooled for analysis. An orthostatic reaction was defined as a decrease from supine to standing in SBP of ≥20 mmHg and DBP of ≥10 mmHg.

Results: Mean changes from baseline in blood pressure and pulse were clinically non-significant and similar in the placebo and pramipexole groups (Table). Frequency of orthostatic hypotension reported as an adverse event (AE) was also similar: 0.5% (3/575) for pramipexole and 0.4% (1/223) for placebo. Finally, frequency of any hypotension AE (including orthostatic) was 0.7% (4/575) for pramipexole and 0.4% (1/223) for placebo. An orthostatic reaction, whether reported as an AE or not, occurred in a greater percentage of placebo than pramipexole patients at baseline (1.4% [3/221] vs. 0.4% [2/563]) and at the final assessment (2.3% [5/221] vs. 0.9% [5/563]).

Conclusions: The risk for blood-pressure-related problems in pramipexole-treated RLS patients was low and similar to placebo in this large dataset.

Table. Changes in Vital Sign Means From Baseline to Final Assessment

<table>
<thead>
<tr>
<th>Treatment</th>
<th>SBP (mmHg)</th>
<th>DBP (mmHg)</th>
<th>Pulse (bpm)</th>
<th>SBP (mmHg)</th>
<th>DBP (mmHg)</th>
<th>Pulse (bpm)</th>
</tr>
</thead>
<tbody>
<tr>
<td>Pramipexole</td>
<td>-0.3</td>
<td>-0.3</td>
<td>0.9</td>
<td>-0.4</td>
<td>-0.2</td>
<td>1.6</td>
</tr>
<tr>
<td>Placebo (N=223)</td>
<td>-1.6</td>
<td>-0.2</td>
<td>0.5</td>
<td>-0.4</td>
<td>-0.4</td>
<td>0.6</td>
</tr>
</tbody>
</table>

P1162
ASSESSMENT OF THE USEFULNESS OF TREMOR PARAMETERS AND THEIR SYMMETRY
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Objective: The aim of the study was spectral analysis of tremor with determination of indexes for identification of abnormal tremor and distinction among different types.

Material: 96 patients, mean age 54.9 yrs with tremor: parkinsonian (PT) – 44, essential (ET) – 39, cerebellar (CT) – 13 patients; 26 healthy subjects were in the control group.

Method: The tremor was recorded by biaxial accelerometer mounted on the dorsal of the right and left hand consecutively. Spectral analysis was performed. Assessment included: shape of spectrum, process of frequency change within time, intensity of tremor, the frequency of peak, central frequency, standard deviation from central frequency and harmonic index. The tremor parameters were compared between groups of patients and controls, analysing: separating data from right and left hand, averaging values of both hands, data from more and less trembling hand, odds of values between sides. The values of parameters were also compared between the hand with higher intensity and the hand with less intensity.

Results: In ET and CT we observed symmetry of frequency and asymmetry of intensity. In PT both frequency and intensity were asymmetric. In ET intensity values were high in two hands, while in PT and CT intensity value of the less affected hand was similar to control group.

Conclusions: The most important value in differentiation of pathological and normal tremor seems to be standard deviation from central frequency and harmonic index. In discrimination of different types of pathological tremor the assessment of indexes symmetry may be helpful.
P1163
CEREBELLAR EFFECTS OF ALCOHOL ON THE NMDA-MEDIATED REGULATION OF GLUTAMATE AND GLYCEROL IN THE HARMALINE MODEL OF ESSENTIAL TREMOR
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Background: ET is a progressive disorder affecting mainly the olivocerebellar circuits. Little is known about the regulation of glutamate in cerebellar nuclei in the harmfuline model. We tested the hypothesis that harmfuline infused in cerebellar nuclei impairs glutamatergic transmission and that ethanol exerts an effect on the NMDA-mediated regulation of glutamate. We also studied the effects upon glycerol, a marker of turn-over of lipids in membranes.

Methods: Harmaline 1mM was infused in lateral cerebellar nuclei of Wistar rats (left side; coordinates: +2.3/−11.6/−5.0) using microdialysis (2 microL/min; collection every 10 min). In group 1 (5 rats), NMDA 10 mM was administered locally 50 minutes later. In group 2 (n=5 rats), ethanol 20mM was co-administered.

Results: Both in group 1 and 2, the analysis of variance showed a timing effect (p<0.001). Glutamate concentrations reached a plateau after the beginning of harmfuline infusion. The comparison of glutamate concentrations during NMDA infusion revealed a significant inter-group difference at 100 min. Concentrations of glutamate were 81.47±6.05% and 46.72±9.16% of baseline values, respectively in group 1 and 2 (p=0.013). Glycerol levels increased similarly in both groups with NMDA (group by time interaction: p=0.998).

Discussion: Ethanol reduces the extra-cellular concentrations of glutamate following infusion of NMDA in cerebellar nuclei. The lack of difference in glycerol levels argues against a direct effect of ethanol upon the turn-over of lipids in membranes in the harmfuline model.

P1164
EXCITOTOXICITY OBSERVED IN PARKINSON’S DISEASE MIGHT BE RELATED TO CHANGES IN THE HIGH- Affinity NA+/K+-DEPENDENT GLUTAMATE RE- UPTAKE IN THE SUBSTANTIA NIGRA PARS RETICULATA
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To develop new therapeutic strategies that prevent the progression of Parkinson’s disease (PD), one has to identify the molecular mechanisms that regulate the generation, survival, and differentiation of nigral dopaminergic neurons. One of the mediators of neuronal death in PD is excitotoxicity, i.e. neuronal cell death as a result of overstimulation of glutamate receptors. Increased activity of the subthalamic nucleus has been observed in animal models for PD and may result in increased glutamate release at the level of the output structures of the basal ganglia, i.e. substantia nigra pars reticulata (SNr) and entopeduncular nucleus (EP). Extracellular glutamate levels are determined not only by the neuronal and glial release but also by the re-uptake through the high-affinity Na+/K+-dependent glutamate transporters. GLT-1 and GLAST are the glial glutamate transporters responsible for the bulk of glutamate reuptake. We used immunohistochemistry, semi-quantitative Western blotting and in vivo microdialysis to study the expression and activity of these transporters in the SNr of intact and 6-OHDA lesioned rats. Activity – determined by measuring the increase in extracellular glutamate concentrations after blocking the glutamate transporters in vivo – as well as expression – detected using transporter-specific antibodies – of GLT-1 and GLAST are indeed affected in function of time after 6-OHDA lesioning. If further studies reveal a causal relationship between these changes in glutamate transporter expression and neurodegeneration in our model, these transporters might be an interesting starting point for the development of new therapeutic strategies for the treatment of PD.

P1165
THE STUDY OF NEUROPROTECTIVE DRUGS IN THE STRIATAL AND THE MFB 6-HYDROXYDOPAMINE RAT MODEL FOR PARKINSON’S DISEASE
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Current Parkinson’s disease research focuses on investigating treatment strategies that are able to slow down the dopaminergic neuronal cell death. The 6-hydroxydopamine (6-OHDA) rat model is ideal for studying the possible neuroprotective effects of certain drugs since different degrees of denervation can be established. Injection of 6-OHDA in the medial forebrain bundle (MFB) results in a complete lesion (±90%), whereas administration of this neurotoxin in the striatum creates only a partial lesion (±50%). Although differences can be detected more easily in the MFB lesion model, the neuroprotective action of certain drugs requires the presence of remaining dopaminergic neurons. Therefore it is useful to screen potential neuroprotective drugs in both models. In these models we have adapted our methodological approach to obtain maximal data from one animal. After determining motor behaviour using the cylinder test followed by amphetamine-induced rotation (Rotame- ter), we sacrifice the rat, take out the striatum and post-fixate the caudal part of the brain for tyrosine hydroxylase immunostaining. The use of a sucrose-solution with protease inhibitor for homogenization of the striatum allows us to determine the DA content with HPLC and also the protein content (GDNF, GAP43,…) in the same sample. Different techniques (Western blotting, ELISA,….) can be applied, depending on the characteristics of the protein. Using this approach we are currently investigating the neuroprotective effects of different ligands of the renin-angiotensin system.

P1166
MINOCYCLINE REDUCES RADICAL FORMATION AND PI UPTAKE IN ROTENONE-AFFECTED ORGANOTYPIC STRIATAL CULTURES
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One approach for Parkinson’s disease (PD) therapy is the substitution of dopamine deficit with L-dopa or the use of antioxidative or anti-inflammatory compounds. Minocycline, a broad-spectrum antibiotic, efficiently inhibits microglial activation and contributes to increased neuronal survival in PD. Rotenone as a complex I inhibitor represents a model compound to investigate mitochondrial dysfunction in neurodegenerative diseases. In our study we...
used minocycline to examine its counteraction to rotenone-induced damages in striatal slice cultures of rats. We investigated the effect of minocycline on rotenone-affected organotypic striatal slices from 8 week old mice. Treatment of minocycline alone (0, 0.1, 1, 10, or 100 μm) did not alter propidium (PI) uptake or NO and superoxide radical formation. In striatal slices, rotenone caused a decrease of cell viability detected by propidium iodide (PI) staining, and an increase of NO and superoxide radical formation. When co-treated with different minocycline concentrations for 48h, minocycline caused a significant decrease of PI uptake (15%), NO (10%), and superoxide radicals (16%). Thus minocycline exerts protective properties against mitochondrial impairment in striatal slice cultures. It is still unclear, whether direct antioxidant properties of minocycline, the reduction of microglia-released NO and superoxide radicals, or another mechanism is the chief virtue of the drug on mitochondrial impairment, but organotypic striatal cultures may provide an important tool to investigate the beneficial action of minocycline on complex I inhibition.

Background and aims: Charles Bonnet Syndrome (CBS) is characterized by visual hallucinations secondary to visual loss without cognitive dysfunction. The hallucinations in Parkinson’s disease are usually associated with dopaminergic mechanisms, but CBS can rarely be responsible for this condition. We report a Parkinson’s disease patient whose complex hallucinations improved after the surgery for his bilateral advanced stage cataract.

Case: Seventy three years old, male Parkinson’s disease patient for 5 years was admitted to our movement disorders out patient clinic for his complex hallucinations. Patient has been given L-Dopa treatment as a total dose of 500 mg/day and was quite well under this treatment (Hoehn Yahr stage =2a, UPDRS III (on) =17). Cognitive examination was in normal range and the patient had an insight for his hallucinations. In examination, there was bilateral advanced stage cataract which was affecting the visual acuity (bilateral VA=20/100). Cerebral magnetic resonance evaluation was normal. His complaints were completely improved after an bilateral cataract surgery, although he was under the same treatment for Parkinson’s disease.

Conclusions: Visual acuity problems can be responsible for the visual hallucinations. CBS have to be always in mind for the hallucinations in Parkinson’s disease patients.
P1170

**A PATIENT WITH STIFF PERSON SYNDROME AND NEGATIVE ANTI-GAD ANTIBODIES**

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Stiff person syndrome is a rare disorder of the central nervous system characterized by progressive rigidity and painful episodic spasms which are most prominently affecting paravertebral muscles and proximal limb muscles. According to past knowledge there are two variants of this syndrome. In most cases it is presented as autoimmune variant with positive antibodies against glutamic acid decarboxylase (GAD). The paraneoplastic variant is very rare and is connected with antimphiphysin antibodies. Co-occurrence of both antibodies is unlikely. Authors describe a case of the 49-year-old woman who 3 months before admission to the hospital started to feel painful spasms and stiffness in the neck, right shoulder and right arm, which after some time extended to the right leg. Her symptoms were triggered by tactile, auditory and sight stimuli. Magnetic resonance imaging of the brain and spinal cord was unremarkable, as well as cerebrospinal fluid (CSF) analysis. Electromyographic finding supported the diagnosis of stiff person syndrome. Anti-GAD antibodies were negative, but positive antimphiphysin antibodies were revealed in serum and CSF. As a result of long-term and extensive diagnostic treatment a ductal invasive carcinoma of the left breast was revealed. In conclusion we want to stress out that special attention in patients with stiff person syndrome should be given to etiological factors, since this rare syndrome can be the first manifestation of breast cancer, asking for quick, extensive and careful diagnostic verification.

P1171

**QUANTITATIVE 1H MAGNETIC RESONANCE SPECTROSCOPIC IMAGING FOR DETERMINATION OF THERAPEUTIC EFFICACY IN STALEVO-TREATED PATIENTS WITH PARKINSON’S DISEASE (PD)**

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**Background and aims:** We propose the characteristics of a local metabolic state of brain in non-demented patients with PD.

**Methods:** 3 groups of patients are studied by 1H MRS with 1.5T Magnetom Vision (SIEMENS). The 1st group includes 120 non-demented patients with PD aged from 48 to 70 years. The 2nd group consists of 75 healthy volunteers in the age from 18 to 73 years. 1H spectra are recorded in both hemispheres in the occipital and frontal lobes, in the lentiform nucleus, putamen and substantia nigra and in the temporoparietal cortex with the SVS STEAM method: TR/TE=1365,1500/135,20 ms, VOI=8 cm³, NS=128.

**Results:** In patients of the 1st group the significant decrease of NAA and Cr and the increase of Cho peak areas in sampled regions are observed. There is a significant reduction in NAA/Cr ratios in the right and left averaged temporoparietal cortex in patients of the 1st group compared with the patients of the 2nd group. Examining 1H data in the right and left temporoparietal cortex of patients of the 1st group compared with the patients of the 2nd group. Examining 1H data in the right and left temporoparietal cortex of patients of the 1st group compared with the patients of the 2nd group. Examining 1H data in the right and left temporoparietal cortex of patients of the 1st group compared with the patients of the 2nd group.

**Conclusions:** We found a significant reduction in NAA/Cho ratios from the putamen contralateral to the most affected side. In untreated patients, PG reduced putaminal NAA/Cho ratios may reflect loss of nigrostriatal dopamine terminals or alternatively indicate a functional abnormality of striatal putaminal neurons, such as membrane dysfunction due to striatal deafferentation.

**Conclusions:** This study suggests that NAA/Cho ratios may be affected by STALEVO-therapy and NAA/Cho values may provide an indicator (a reversible marker) of neuronal dysfunction in the striatum. This study gives a new insight into brain biochemistry in patients with PD.

P1172

**PECULIARITIES OF THE BRAIN BIOCHEMISTRY IN NON-DEMENTED PATIENTS WITH PARKINSON’S DISEASE: 1H MRS STUDY**

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**Background and aims:** We propose the quantitative indicators for the characteristics of the peculiarities of the brain metabolism in patients with PD after single dose of STALEVO (Levodopa/Carbidopa/Entacapone (150/50/200)) treatment.

**Methods:** 3 groups of patients are studied by 1H MRS with 1.5 T Magnetom Vision (SIEMENS). The 1st (TPG) includes 10 patients with PD. The 2nd (PG) includes 10 untreated subjects with PD. The 3rd (VG) group consists of 20 healthy volunteers. For all subjects, spectra are recorded in the putamen with STEAM method: TR/TE=1500/135, 155, 175, 200, 270 ms. For subjects of TPG and PG the spectra are obtained in the putamen both ipsilateral and contralateral to the worst affected side.

**Results:** We found a significant reduction in NAA/Cho ratios from the putamen contralateral to the most affected side in the PG, but not the STALEVO-treated TPG groups compared with VG. There were no significant differences in NAA/Cr or Cho/Cr ratios. In untreated patients, PG reduced putaminal NAA/Cho ratios may reflect loss of nigrostriatal dopamine terminals or alternatively indicate a functional abnormality of striatal putaminal neurons, such as membrane dysfunction due to striatal deafferentation.

**Conclusions:** This study suggests that NAA/Cho ratios may be affected by STALEVO-therapy and NAA/Cho values may provide an indicator (a reversible marker) of neuronal dysfunction in the striatum. This study gives a new insight into brain biochemistry in patients with PD.

P1173

**ROTIGOTINE EXHIBITS ANTIDEPRESSANT PROPERTIES IN THE RAT MODEL OF BULBECTOMY**

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**Background and aims:** Rotigotine (Neupro®) is a non-ergolinic D3, D2, D1 dopamine agonist for the treatment of idiopathic Parkinson’s disease. Dopamine agonists may have antidepressant properties. This study investigated the effects of rotigotine in bulbectomized rats, a known model of depression.

**Methods:** The olfactory bulbs of male Sprague-Dawley rats (R. Janvier, France) were removed under anaesthesia. After 14 days, bulbectomized and sham-operated rats were randomly treated with vehicle (s.c.), a slow release formulation of rotigotine (0.1, 0.3, 0.6, 1 and 5 mg/kg s.c. once every 2 days) or with imipramine (16 mg/kg i.p., once daily) for 14 days. On day 29, a 3-min open-field session evaluated the ambulation (number of lines crossed). Only animals with a complete bulbectomy but lacking any brain damage were included in the analysis (Kruskal-Wallis test, Mann-Whitney-Wilcoxon test).
Results: Bulbectomized, vehicle-treated animals displayed a significant increase in ambulation compared to sham-operated animals. Chronic imipramine reversed the hyperambulation of bulbectomized animals (no effects on sham-operated animals). Chronic treatment with rotigotine at 0.1 and 0.3 mg/kg caused a significant decrease in hyperambulation of bulbectomized animals at 0.3 mg/kg with an efficacy similar to that of imipramine. At doses of 0.6 to 5 mg/kg, rotigotine had no effect on hyperambulation. In sham-operated animals, chronic treatment with rotigotine induced a dose-dependent increase in ambulation being significant at 5 mg/kg.

Conclusion: Using a chronic, sustained administration, rotigotine exhibits a U-shaped antidepressant activity with a maximal efficacy at 0.3 mg/kg, a dose that did not modify ambulation of non-bulbectomized rats suggesting antidepressant activity.

P1174
ADAGIO: A PROSPECTIVE, DOUBLE-BLIND, DELAYED-START STUDY TO EXAMINE THE POTENTIAL DISEASE-MODIFYING EFFECT OF RASAGILINE IN PARKINSON’S DISEASE (PD)
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Background and aims: Rasagiline is a novel MAO-B inhibitor indicated for early and moderate to advanced-stage PD. Laboratory and clinical studies suggest it may have a neuroprotective, disease-modifying effect. The TEMPO study showed that PD patients receiving rasagiline for one year had significantly less functional decline than those receiving 6 months placebo followed by 6 months rasagiline. Here, we report on status of the ongoing ADAGIO (Attenuation of Disease progression with Azilect GIVen Once-daily) study.

Design and methods: ADAGIO is a multi-centre, double-blind, placebo-controlled, parallel-group study prospectively examining the potential disease-modifying effects of rasagiline in patients with early, untreated PD. Patients from 120 centres in 14 countries were randomized to early-start treatment (72 weeks rasagiline, 1 or 2 mg once daily) or delayed-start treatment (36 weeks placebo followed by 36 weeks rasagiline, 1 or 2 mg once daily [active treatment phase]). Primary endpoint is change in baseline from Total-UPDRS during the active phase. Secondary endpoints include change from baseline for the last observed value of Total-UPDRS in the active phase and need for additional PD treatment.

Results: Enrolment for ADAGIO is complete with 1176 patients randomized. 718 patients (61.1%) are male, mean age is 62.2±9.6 years, mean PD duration is 5.4±4.6 months, mean total UPDRS score is 20.4±8.5, and mean UPDRS-motor score is 14.2±6.4. Currently, 610 patients are in the active phase; initial results are expected in late 2008.

Conclusions: ADAGIO, one of the largest double-blind trials in PD patients that is prospectively examining potential disease-modifying effects of rasagiline in early PD, has completed enrolment.

P1175
SAFETY AND TOLERABILITY OF ROPINIROLE 24-HOUR PROLONGED RELEASE IN PATIENTS WITH EARLY AND ADVANCED PARKINSON’S DISEASE
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Objective: To evaluate the safety and tolerability of ropinirole 24-hour prolonged release in early and advanced Parkinson’s disease (PD).

Methods: EASE-PD monotherapy (protocol 101468/168) was a 36-week, double-dummy, three-period crossover study comparing ropinirole 24-hour and ropinirole immediate release (IR) as monotherapy in early PD. EASE-PD adjunct (protocol 101468/169) was a 24-week, parallel-group study comparing ropinirole 24-hour and placebo, as an adjunct to L-dopa in advanced PD. Both were multicentre, randomized, double-blind studies. From a starting dose of 2 mg/day, ropinirole 24-hour was titrated to optimal therapeutic response (maximum 24 mg/day). In the monotherapy study, ropinirole IR was titrated from 0.75 mg/day (maximum 24 mg/day). In the adjunct study, L-dopa dose reduction was required beyond 8 mg/day of ropinirole 24-hour.

Results: The adverse event (AE) profile was similar for both formulations. In the monotherapy study (n=161), AEs were reported by 54% and 56% of patients receiving ropinirole 24-hour and IR, respectively. Nausea, somnolence and dizziness were the most common AEs. Withdrawals were low in both groups (5% 24-hour; 6% IR). In the adjunct study (n=393), AEs were reported by 64% and 55% of patients receiving ropinirole 24-hour and placebo, respectively. The most frequently reported AEs were dyskinesia, nausea and dizziness. Withdrawals due to AEs were low (5%) in both groups.

Conclusions: Ropinirole 24-hour prolonged release is generally well tolerated as monotherapy in early PD, and as an adjunct to L-dopa in advanced PD.

Acknowledgement: Study supported by GlaxoSmithKline Research & Development and SkyPharma.

P1076
WILSON’S DISEASE WITH NEUROLOGICAL MANIFESTATIONS AND NORMAL CEREBRAL MRI
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Purpose: The aim of this study is to evaluate the data of cases with Wilson’s disease, with neurological manifestations, but normal neuroimaging.

Methods: We retrospectively evaluated all case records of patients diagnosed in our department with Wilson’s disease between January 1996 and December 2006. Diagnosis data, evolution under treatment were collected and compared over the time.

Results: Wilson’s disease with neurological symptoms was diagnosed in 18 patients, but normal cerebral MRI in only 3 patients. The clinical data at admission showed: neurological manifestations in all patients, psychiatric manifestations in 2 patients and hepatic involvement with increasing dimensions in 2 patients, but with normal function. The cerebral MRI was performed after a period of evolution between 8 months and 2 years. All data for copper metabolism was positive for Wilson’s disease, but patients included in the study did not have Kayser-Fleischer ring. All patients were treated with D-penicillamine, and even though the urinary copper increased, the neurological symptoms persisted in the same grade.

Conclusions: 1. Normal cerebral MRI in Wilson’s disease with neurological manifestations is not very frequent; 2. Kayser-Fleischer ring is absent in all these cases and maybe this sign is correlated with accumulation in brain substance; 3. D-penicillamine is not efficient for this form of Wilson’s disease.
4. Considering all these, we could say that the symptoms of this form of Wilson’s disease are secondary to functional not structural involvement of brain substance;
5. To confirm these hypotheses, larger comparative studies are necessary.

P1177

RESTLESS LEGS SYNDROME PREVALENCE AMONG MEDICAL STUDENTS AT KAUNAS MEDICAL UNIVERSITY

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The aim was to analyze the frequency of restless legs syndrome (RLS) among medical students, to reveal the influence of unpleasant feelings in the legs over the respondent’s quality of life.

Method: Random students sample was asked to fill in the unique questionnaire. Results were analyzed using MS Excel and SPSS 9.0 programs. Results were considered significant if p<0.05.

Results: A questionnaire was distributed to 300 participants; it was completed by 177 (59%) students, 75.1% female and 24.9% male. 65 (36.7%) respondents complained of unpleasant feelings in the legs (74% female and 26% male); 5 (7.7%) of them stated having symptoms typical to RLS (80% female and 20% male). The unpleasant feeling in the legs was strong in 60% of respondents. 41% of respondents said their unpleasant feeling in the legs awake them from the sleep, females awake more often, but no significant differences were estimated between sexes (p>0.05). 6.1% of respondents felt discomfort for their unpleasant feeling in the legs; in 13.9% it interfered with the quality of life. All students having symptoms typical to RLS pointed their quality of life was not affected.

Conclusions:
1. 36.7% of respondents complained of unpleasant feelings in the legs, 7.7% of them stated having symptoms typical to RLS.
2. The quality of life of all students having symptoms typical to RLS was not affected.
3. Most of respondents (80%) did not do anything in order to relieve the unpleasant feeling in the legs and only 20% of them took exercise.

P1178

BILATERAL CORTICAL GREY MATTER CHANGES SUPPORT THE SENSORY ENDOPHENOTYPE HYPOTHESIS IN FAMILIAL ADULT ONSET PRIMARY TORSION DYSTONIA: A VBM STUDY

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Background: Regional volumetric grey matter changes and loss of normal somatotopy have been described in adult onset primary torsion dystonia (AOPTD). Abnormal spatial discrimination thresholds (SDTs) are found in patients with AOPTD and as an endophenotypic trait in unaffected relatives.

Objective: Our hypothesis was that unaffected relatives of patients with AOPTD who have abnormal SDTs would have morphological changes in the striato-thalamo-cortical circuit compared to those with normal SDTs and unrelated controls.

Methods: Voxel based morphometry (VBM) was used to analyse high-resolution T1-weighted MRI images. 31 unaffected subjects from 5 multiplex AOPTD families were recruited. Images of 14 unaffected relatives with abnormal SDTs were compared with those of 14 unaffected relatives with normal SDTs and unrelated control subjects. Paired t-tests were performed with correction for multiple comparisons using a false discovery rate (FDR) of 0.05.

Results: No difference in grey matter volume (GMV) was observed comparing family members with normal and abnormal SDTs. A post-hoc comparison of all 31 family members with 17 healthy control subjects revealed significant bilateral increase in GMV in the primary sensory cortex following FDR correction. An increase in putaminal GMV was identified bilaterally which was not significant after correction.

Conclusion: VBM did not identify a group abnormality specific to relatives with abnormal SDTs. SDT testing may not have sufficient specificity as a sensory endophenotype or statistical power may be an issue. However, all unaffected relatives of patients with AOPTD do display evidence of a structural endophenotype involving the primary sensory cortex and possibly the putamen.

P1179

TYPES OF HAND TREMOR IN HEMIFACIAL SPASM PATIENTS (HFS)

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Background: Tremor commonly accompanies focal dystonia and may occur in other involuntary movements. There is no report describing tremor in HFS patients.

Objective: To assess the occurrence and characteristic of hand tremor in hemifacial spasm (HFS) patients.

Methods: 34 HFS patients and 20 age and sex matched healthy controls were included in the study. Patients with other possible causes of tremor (hyperthyroidism, calcium blockers and other tremorogenic drugs, alcohol abuse, etc.) were excluded. Rest, postural and kinetic tremor were assessed after half-hour repose clinically and objectively using four different methods: three-axial accelerometry, EMG, three-dimensional system of digital cameras and quantitative computerized tremor analysis on the graphic digitizing tablet. To identify enhanced physiological tremor the mass loading test (MLT) was performed.

Results: In both, clinical and objective examinations postural and kinetic tremor in both hands was found in 47% of HFS patients and in 15% of the controls. Enhanced physiological tremor was diagnosed in 18.8% patients (mean frequency: 9.9±2.6 Hz; mean reduction of frequency in MLT: 3.9±1.7 Hz), ET-like type of tremor in 25% patients (mean frequency: 8.9±2.2 Hz), and mixed tremor (ET-like type of tremor in one hand and enhanced physiologic type of tremor in the other) in 43.8% of patients. One patient fulfilled criteria for ET. One patient revealed features of psychogenic tremor. The occurrence of tremor was related to severity of HFS(x2=9.6, p=0.002) but not to age and HFS duration.

Conclusions: Hand tremor, mostly diagnosed as enhanced physiological or ET-like tremor, occurs in nearly 50% of HFS patients.

P1180

ESTIMATION OF QUALITY OF LIFE IN PATIENTS WITH PARKINSON’S DISEASE

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Background and objectives: To investigate the influence of education on patients with Parkinson’s disease (PD) with regard to quality of life (QoL), daily activity, anxiety and depression.
Design and methods: All patients (n=142) with PD were divided into two groups: basis and control. Basic group patients had one lesson a week combined with medical treatment for 12 months. The control group only had medical treatment. Every lesson included three parts: information about disease; psychology training, and physical training. Both groups were estimated as to movement disorder (UPDRS), anxiety and depression disorder (HADS) and QoL (SF36) (estimations conducted once a month).

Results: The estimation of movement disorder has shown increased daily activity: 63% in the basic group and 17% in the controls, and improved index of anxiety and depression: 82% of the basic group and 34% of the controls. Altogether, QoL improved in 87% of patients in the basic group and in 28% of controls.

Conclusion: Systematic training in special schools improves QoL of patients with PD.

P1181
LOCKED-IN SYNDROME IN A PATIENT WITH PARKINSONISM-HYPERPYREXIA
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P1182
THE RELATIONSHIP BETWEEN TREATMENT OF PARKINSON’S DISEASE AND VITILIGO (CASE REPORT)
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P1183
LONG-TERM APPLICATION OF BOTULINUM TOXIN AS ALTERNATIVE TO SURGERY FOR TREATMENT OF HEMIFACIAL SPASM
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P1184
PAIN SYNDROMES IN PARKINSON’S DISEASE
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P1185
QUALITY OF LIFE, MAGNET USE AND THE RELATION WITH VAGUS NERVE STIMULATION IN PATIENTS WITH EPILEPSY
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Introduction: Epilepsy has a great influence on quality of life. Improvement of quality of life (QoL) is mostly correlated with reduction in seizure frequency. Vagus nerve stimulation (VNS) for refractory epilepsy reduces seizure frequency. Furthermore, with extra on-demand stimulation with the use of a magnet, patients can prevent or halt epileptic seizures. The aim of this study was to investigate 1) whether VNS leads to an improvement of QoL and 2) whether the magnet has an influence on seizure frequency.

Methods: We assessed 1 year outcome of seizure frequency, seizure severity, QoL (using the QOLIE-89), magnet use, and its effect among patients with epilepsy receiving a VNS-system.

Results: Between 2002 and 2006, 40 patients receiving the VNS-system had completed the questionnaires at baseline and 1 year after VNS. A medically relevant (>40%) decrease on seizure frequency during VNS was observed in 69%. Seizure severity was markedly reduced in 62% and 54% reported to have an improved post-ictal period. Among all patients QoL significantly improved (p=0.04) after 1 year of VNS. The magnet was used in 90% of the patients. It is most often effective in 50% of the patients and occasionally effective in 31%. Patients who indicated that the magnet worked had a significant (p=0.024) reduction in seizure frequency. The effect of the magnet on seizure severity was not found to be significant (p=0.155).

Conclusion: VNS reduces seizure frequency and post-ictal period and improves the overall QoL. The magnet is often successfully used to control seizure frequency.

P1186
EEG VERSUS SEEG IN A PATIENT WITH APPARENT BITEMPORAL SEIZURES AND HIPPOCAMPAL SCLEROSIS
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Temporal lobe epilepsy is frequently associated with hippocampal sclerosis (HS). In patients with unilateral lesion, HS facilitates the presurgical evaluation since the epileptogenic zone is located on the atrophic side in almost all the cases and improves surgical outcome. However, some patients have ictal scalp-EEG recordings localized to the opposite temporal lobe, raising the following question: is the epileptogenic zone contralateral to HS or is scalp-EEG expression mistaking? A 34-year-old left-handed man was referred for the evaluation of pharmaco-resistant epilepsy. The patient presented during the last 20 years simple (anxiety, déjà vu feelings and taste hallucinations) and complex partial seizures (lose of consciousness, oro-alimentary, verbal and motor automatisms followed by postictal confusion) complicated twice a year by secondarily generalisations. On interictal EEG, bitemporal spikes predominated on the right side. Ictal scalp-EEG showed in 60% of seizures a left temporal lobe expression, while MRI identified a right HS. SPECT examination showed a bitemporal hyperperfusion and PET revealed a right mesial and polar, and left meso-temporal hypometabolism. SEEG recordings were undertaken to solve these discordant data. The spatiotemporal organisation of ictal discharges defined the region of seizures origin at the right mesio-temporal region. Half of the seizures spread secondarily widely to the left temporal lobe, while the discharge remained restrained to the mesial part of the right temporal lobe, explaining the mistaking scalp expression. We review the literature and discuss the predictive value of the unilateral HS for the ipsilateral SEEG seizure onset despite bitemporal scalp-EEG discharges.
P1187
PROSPECTIVE SCREENING OF MIGRAINE CRITERIA IN BELGIAN PATIENTS WITH EPILEPSY
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Introduction: Migraine is thought to be more prevalent in patients with epilepsy but limited data are available. In this Belgian multicenter study the comorbidity of migraine and epilepsy was prospectively analysed.

Methods: During a 4 week period every epilepsy patient (>6 years old) from a series of Neurology departments in Belgium, was interrogated about the occurrence of migraine (based on the ICHD-II migraine criteria) using a specifically designed questionnaire.

Results: In 237 patients (119F/118M; mean age: 32 years; range: 6–82) the questionnaire was completed and a full data set was available for analysis. 76/237 patients were younger than 18, 161/237 were >18 years old. Mean age of epilepsy onset was 17 years (range: 0–71). 36/237 (15%) patients with a mean age of 30 years (range: 8–72) (27F/9M) were diagnosed with migraine. In 11/36 this diagnosis was new. The mean age of migraine onset was 19 years (range: 7–45). 5 patients had migraine with aura. 10/36 patients (28%) reported to have at least 1 first degree relative with epilepsy and 16/36 (44%) to have at least 1 first degree relative with migraine.

Conclusion: In this Belgian multicenter study, 15% of epilepsy patients were diagnosed with migraine. These results suggest a higher prevalence of migraine in epilepsy patients compared to the normal population.

P1188
ESTIMATION OF POPULATION PHARMACOKINETICS OF FREE-LEVELS OF ANTI-EPILEPTIC DRUGS IN ADULT EPILEPTIC PATIENTS
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Objective: To define the pharmacokinetic profile of anti-epileptic drugs (AEDs) in adult Omani epileptic patients and to improve dosing schedules through population pharmacokinetic analysis using the non-linear mixed effects modelling (NONMEM) program.

Method: Steady-state trough free-carbamazepine (F-CBZ) and free-phenytoin (F-PHE) serum concentrations, AED dosing history, and associated information were collected prospectively. The analysis for CBZ assumed a one-compartmental open model with first order absorption and elimination. The F-CBZ clearance (CL) (modelled independently of dose) and volume of distribution (Vd) were estimated. For F-PHE, the maximum metabolic rate (Vm) and Michaelis-Menten constant (Km) and their interindividual variability were estimated.

Results: Inclusion criteria were met by 48 CBZ (total of 149 dose/serum concentration pairs) and 29 PHE-treated patients (total of 63 dose/serum concentration pairs). Patients were taking either CBZ (200–1200 mg/day) or PHE (100–500 mg/day) in monotherapy. The population estimates for CL and Vd were 13.2 SD 0.6 L/h and 525 SD 44 L, respectively. However, CL increased as a function of dosing rate and consequently was modelled as a linear function of steady state concentration. The population estimates of F-PHE for Vm and Km were 9.1 mg/kg/day and 7.3 mg/L, respectively. The models were prospectively validated in two groups of additional patients. The predictions were good and unbiased.

Conclusion: Based on a desired steady-state F-CBZ serum concentration of 1.8 mg/L the recommended daily dose of CBZ in monotherapy was 9.4 mg/kg/day. For a desired steady-state F-PHE concentration of 1.5 mg/L the recommended daily dose was 6.09 mg/kg/day.

P1189
SURGICAL OUTCOME OF EARLY ONSET HEMIPEARESIS AND EPILEPSY
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Background: Epilepsy associated with HHE syndrome (hemiparesis, hemiconvulsion, and epilepsy) have generally been thought to be medically intractable and difficult to treat surgically. We performed this study to reveal the surgical outcome of these patients especially according to the ictal onset pattern.

Methods: Patients with a history of early onset hemiparesis with epilepsy who had undergone surgical treatment at the Seoul National University Hospital Comprehensive Epilepsy Center from 1995 to 2002. Diagnostic criteria of early onset hemiparesis included convulsions followed by hemiparesis, and late epilepsy. Multidisciplinary presurgical evaluations were performed including MRI, video-EEG monitoring, FDG-PET, Wada test, and ictal SPECT if possible. Patients with a presumed epileptogenic zone outside the medial temporal area underwent implantation of intracranial electrodes to identify the exact location of the ictal onset zone.

Results: 25 patients were included. Mean age was 29.8 (19–60). All had a history of febrile convulsion. The mean age at onset of febrile convulsion and hemiparesis was 18.0 months (1–48). The mean age at onset of late epilepsy was 9.9 years (0.5–40). 8 were left-handed and one was ambidextrous. The mean follow-up period after surgery was 5.6 years. 11 of 13 medial TLE patients became seizure-free, while only 4 of 12 neocortical or multifocal epilepsy patients became seizure-free (p=0.004).

Conclusions: In patients of early onset hemiparesis with epilepsy, various ictal onset zones can be possible. The medial TLE diagnosed by various diagnostic modalities, in spite of hemiatrophy on brain MRI, showed a good surgical outcome. Surgical treatment can be recommended for these selected patients.
P1190

CHANGES IN SOCIAL ATTITUDES TOWARDS EPILEPSY IN MAJORCA. TWO DECADES OF SOCIAL EVOLUTION

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Background: Social consideration about epilepsy has been an added factor as controversial as the existence of psychopathological features in this disease. Epilepsy can generate deep effects in the self-perception of patients suffering from this disease. It is necessary to take into account those psychosocial factors that determine the impact of the disease.

Objectives: The aim of this study is to assess the actual state of the social attitude about epilepsy in the island of Majorca, in relation to different social and demographic factors. A second objective is to analyze if there has been any change, and in what sense, in the social attitude about epilepsy and the epileptic patient in Majorca.

Methods: 729 residents in Majorca were statistically selected according to the characteristics of the Majorcan population. For the interview a questionnaire was elaborated, based on a previous one designed and used in a first survey by several of the authors in 1982. This questionnaire allowed us to describe three profiles of social attitude: stigmatizer, integrative and inconsistent attitude.

Results and discussion: We found a clear integrative attitude and a practical absence of the stigmatizer. But we also found an important level (about 40%) of inconsistent attitude about epilepsy. Respective to the comparison of the social attitude between the two surveys, we found a clear increment of integrative attitude, the actual absence of stigmatizer attitude but the persistence of the inconsistent attitude. This impelled us to design psychosocial interventions to improve the situation.

P1191

LONG-TERM SURVIVAL OF STATUS EPILEPTICUS IN SERBIA: WHAT HAPPENS WITH PATIENTS A DECADE AFTER THE FIRST EPISODE?

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Background and aims: To determine long-term survival in patients with status epilepticus (SE).

Methods: We evaluated long-term survival in a cohort of patients treated for the first episode of SE between January 1, 1988 and December 31, 1997 at the Institute of Neurology CCS, Belgrade, Serbia. Patients were followed at yearly intervals until death or study termination. On the prevalence day (December 31, 2006), patients were categorized as alive or dead based on the last year’s data. Etiology of SE was assigned as acute symptomatic (AS), progressive symptomatic (PS), remote symptomatic (RS), and idiopathic/cryptogenic (I/C).

Results: First episodes of SE occurred in 751 patients. A total of 120 patients (15.9%) died within a 30-day period following SE. Of the 631 patients who survived, data of 207 patients (32.8%) were available on the prevalence date. In the later group, SE was caused by AS etiology in 64 (30.9%), PS in 26 (12.6%), RS in 142 (20.3%), and I/C in 75 patients (36.2%). There were 36 deaths (17.4%): 11 in AS, 16 in PS, 5 in RS, and 4 in I/C group. In 18 out of 36 patients death occurred during the first two years of follow-up. The median duration of survival was significantly (p<0.001) shorter among patients with PS SE (2 years) in comparison to all other aetiologies (10 years).

Conclusions: Approximately 1/5 of patients die within the following 9 years after the first episode of SE. Patients with PS SE have significantly shorter survival in comparison with other SE aetiologies.

P1192

ENTORHINAL CORTEX ATROPHY IN TEMPORAL LOBE EPILEPSY PATIENTS WITH NORMAL HIPPOCAMPAL VOLUMES

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Background: Entorhinal cortex (EC) is reciprocally interconnected with the hippocampus via glutamatergic pathways. To determine whether MRI volumetric measurement of the EC could detect structural damage and lateralize the seizure focus in patients with mesial temporal lobe epilepsy (TLE) in whom no measurable hippocampal abnormalities were found.

Methods: MRI volumetric analysis of the EC was performed using a T1-weighted three-dimensional gradient echo sequence in 18 normal controls and 19 patients with temporal lobe epilepsy and normal hippocampal volumes which was proven by volumetric measurement.

Results: The volume of the EC ipsilateral to the ictal focus was significantly reduced in both left (p<0.01) and right TLE (p<0.05). Bilateral EC volume loss was more common in left TLE compared to that of right TLE (3 of 10 in L TLE vs. 0 of 9 in R TLE), but it showed no significant difference. Lateralization of the ictal focus was possible in 5 of 19 patients (26.3%) by measurement of EC volume. There was significant correlation of the severity of EC volume loss with duration of epilepsy, but not with the other clinical factors.

Conclusion: EC volume loss ipsilateral to the seizure focus supports the presence of structural damage in the EC in mesial TLE with normal hippocampal volumes, and the participation of EC in the pathogenesis of this disorder. The underlying cause of more extensive, bilateral damage in left EC is not clear, but it suggests a different patho-mechanism between two sides of EC evolving to epileptic condition.

P1193

HEADACHES IN EPILEPSY

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Background and aim: Several questions remain unanswered about the association between epilepsy and headaches. The purpose of this study was to investigate the characteristics and prevalence of headaches in patients with epilepsy, and to classify such symptoms according to current international criteria.

Methods: 109 consecutive patients with seizure disorders were asked about headache. For those who confirmed such problems, a semi-structured interview was performed.
Results: Headaches were reported by 65%. One third of them were described as quite severe. Intercital headaches were present in 52%, and 44% had postictal headache. 6% had preictal headache and none had ictal headache. In partial epilepsy, there was an association between laterality of unilateral headaches and interictal EEG abnormalities (p<0.02). Of patients with postictal headache, 42% reported migrainous features, whereas 38% had tension-type headache. In 20% the headache could not be classified. Intercital headache was migraine in 41%, tension type headache in 36%, combined migraine and tension type headache in 9%, and other headaches in 14%. Only three patients were treated for headaches according to a prescription.

Conclusions: Headache, including migraine, appears to be very common in patients with epilepsy. Unilateral headache may represent a lateralizing sign. Seizures often trigger postictal headaches with migraine features, and this is often associated with interictal migraine. Preictal migraines sometimes lead to epileptic seizures. The comorbidity of migraine and epilepsy should receive clinical attention, as it may influence antiepileptic drug choice, and the headache may need specific treatment.

P1194
LIPOPOLYSACCHARIDE INHIBITS AMYGDALA-KINDLED SEIZURES IN RATS
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Central nervous system inflammation in cases such as head trauma, stroke and infection has been associated with the occurrence of epileptic seizures. Microglia, the principle immune cells in the brain, readily become activated in response to injury, infection or inflammation. Activated microglia produce a variety of proinflammatory and cytotoxic factors including cytokines, nitric oxide and arachidonic acid metabolites. The bacterial endotoxin lipopolysaccharide (LPS) induces the activation of microglia and the production of proinflammatory factors including nitric oxide (NO) and prostaglandins. We studied the effects of intrahippocampal administration of LPS on amygdala-kindled seizures in rats. The dose of 5 mg/kg/rat of LPS decreased duration of generalized seizures and related after discharges at 0.5 h and 3 h after administration. Hippocampal level NO following administration of LPS (5 mg/kg) was determined by GMA (Griess Micro Assay) and RNI (Reactive Nitrogen Intermediate) tests. The level was increased 0.5 h after LPS administration. Our results indicate that LPS inhibits amygdala-kindled seizures in rats and NO may in part be involved in this effect.

Keywords: Amygdala kindling; Lipopolysaccharide; Seizure; Nitric oxide

P1195
PHARMACOECONOMIC COMPARISON OF MONOTHERAPY WITH FINLEPSIN, TEGRETOL AND TRILEPTAL IN PATIENTS WITH EPILEPSY
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The application of adequate medical treatment should be based on evidence for efficacy, safety and pharmacoeconomic value of each treatment alternative. The data of the presented study represent the pharmacoeconomic profiles of three of the most widely used anti-epileptic drugs in Bulgaria.

Aim: To compare the pharmacoeconomic adequacy in the usage of Finlepsin (Carbamazepine), Tegretol (Carbamazepine) and Trileptal (Oxcarbazepine), applied as monotherapy in Bulgarian patients

Patients and methods: An open, prospective, pharmacoeconomic study in patients with epilepsy has been performed at the Department of Neurology, Medical University –Plovdiv, Bulgaria. The study design included cost-effectiveness and cost-utility analyses on monotherapy of epilepsy.

Results: A total of 117 patients was examined and followed-up every three months for a period of at least one year. The cost-effectiveness indices for the three drugs were found to be as follows: Finlepsin –107 EURO for every patient with 100% of seizure reduction, for every three months of treatment; Tegretol = 161 EURO, and Trileptal = 280 EURO respectively. Cost – Utility was represented as cost-per-QALY and the values were as follows: Finlepsin – 491.53 EURO, Tegretol – 741.19 EURO and Trileptal – 1219.24 EURO per QALY. The performed sensitivity analysis confirmed the results of the study. Drug effectiveness was similar. The difference in direct and indirect medical and non-medical costs, as well as the different effect on the QOL determines that Finlepsin has the most preferable pharmacoeconomic profile, followed by Tegretol and Trileptal.

P1196
TWO CASES WITH A SUCCESSFULLY TREATED PARTIAL STATUS EPILEPTICUS USING INTRAVENOUS LEVETIRACETAM UNDER CONTINUOUS VIDEO EEG MONITORING
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Background: The treatment of status epilepticus might be problematic due to cardiac co-morbidity or drug interactions. Recently levetiracetam became available as IV solution allowing for rapid infusion in case of status epilepticus.

Methods: Case histories: We present two patients (a 39-year-old male with pancreatitis, a partial status epilepticus (SE) and a prolonged QT interval on his ECG and a 56-year-old female with a partial SE due to two cerebral metastases of an endometrium carcinoma) who had their SE treated with intravenously administered levetiracetam. Both patients had an SE refractory for benzodiazepines and contraindications to (further) loading with phenytoin (PHT), i.e. a prolonged QT interval and a PHT intoxication respectively. We decided them to have levetiracetam (LEV) intravenously administered while under continuous video EEG monitoring.

Results: LEV was found to be very effective in controlling the SE clinically. It is noteworthy that the marked clinical improvement was accompanied by only a moderate change of the EEG. At all times, frequently occurring high amplitude sharp waves, sometimes followed by slow waves were seen. The presence or lack of longer lasting rhythmic series of this activity was the only difference between SE and no seizure at all.

Conclusion: Intravenously administered LEV might be of great value in treating patients with a refractory (partial) SE who have serious contraindications to the standard treatment of SE.
P1197
EFFECTS OF ACUTE AND CHRONIC TREATMENT OF MILNACIPRAN ON THE ANTICONVULSANT ACTION OF CONVENTIONAL ANTIPELLEPTIC DRUGS IN MICE
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The aim of the study was to evaluate the influence of milnacipran, a novel antidepressant, on the anticonvulsant action of four conventional antiepileptic drugs: valproate, carbamazepine, phenytoin or phenobarbital in the maximal electroshock test in mice. The established model of generalized tonic-clonic convulsions in humans. Electroconvulsions were produced by a Hugo Sachs generator (Rodent Shocker, type 221, Freiburg, Germany). An alternating current (50 Hz, 0.2 s, fixed current intensity of 25 mA, and maximum stimulation voltage of 500 V) was delivered via ear-clip electrodes. Adverse effects were assessed in respect of motor impairment (the chimney test) and long-term memory (the passive-avoidance task). Brain concentrations of antiepileptic drugs were evaluated by immunofluorescence. Milnacipran administered acutely enhanced the anticonvulsant activity of valproate and carbamazepine, but not that of phenobarbital or phenytoin. Chronic treatment of the antidepressant did not affect the action of antiepileptics. Milnacipran did not affect the brain concentrations of valproate, carbamazepine, phenobarbital or phenytoin. In respect of undesired effects, milnacipran, antiepileptic drugs (applied at their ED50 values) and their combinations did not impair motor performance or long-term memory. In conclusion, the advantageous profile of interactions and toxic effects between milnacipran and conventional antiepileptics suggest that milnacipran might be a good drug candidate for therapy of depression in epileptic patients.

P1198
OUTCOME OF PATIENTS WITH EPILEPTIC SEIZURES AS THE FIRST SYMPTOM OF ACUTE STROKE
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Background and aims: Early poststroke seizures result from cellular biochemical dysfunction leading to epileptic discharges. Whether seizures worsen the outcome of the stroke is uncertain. We compared the outcome of patients with epileptic seizures as the first symptom of acute stroke and patients without epileptic seizures.

Methods: We analyzed 2256 patients with acute stroke admitted to the University Hospital from 2001 to 2005. In the study group there were 84 patients (3.7%), 46 (54.8%) women and 38 (45.2%) men, mean age 74.6±11.8 years with epileptic seizures as the first symptom of acute stroke. The control group comprised of 100 patients with acute stroke without epileptic seizures admitted during the same period, randomized, age and sex matched to the study group. We analyzed the outcome of the patients in both groups after 6 and 12 months of follow-up.

Results: In the study group after 6 months of follow-up 23/75 (30.6%) patients had died. 9 patients were not available. After 12 months of follow-up 1/52 (1.9%) patients additionally died. In the control group 13/100 (13.0%) patients had died after 6 and 32/100 (32.0%) after 12 months of follow-up. We used Pearson Chi-Square test and found statistically significant difference in outcome between the study and control group after 6 months in women (p=0.005). We found no difference in outcome after 6 months in men (p=0.245), and after 12 months in women (p=0.175) and men (p=0.562).

Conclusion: There is increased mortality during 6 months of follow-up in women with epileptic seizures as the first symptom of acute stroke.

P1199
INVASIVE VIDEO-EEG MONITORING AT THE REFERENCE CENTER FOR REFRACTORY EPILEPSY AT GHENT UNIVERSITY HOSPITAL: 15 YEARS OF EXPERIENCE
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Introduction: Since 1992, invasive video-EEG monitoring has been available at the Reference Center for patients with refractory epilepsy included in the pre-surgical evaluation protocol. In the case of incongruent non-invasive findings, video-EEG monitoring with subdural and intracranial electrodes is mandatory to precisely localise the ictal onset zone and to map surrounding functional cortex prior to resective or disconnective surgery.

Methods: Since 1989, data from all patients included in the presurgical evaluation protocol have been prospectively collected. Data from patients who underwent invasive video-EEG monitoring were reviewed to evaluate different therapeutic interventions that were subsequently performed. Treatment efficacy was assessed after long-term follow-up.

Results: Since 1992, 71 patients underwent invasive video-EEG monitoring. 34/71 (48%) patients underwent resective surgery (RS) of whom 22 became seizure-free; in 5/22 AEDs were completely tapered. 24/71 patients were treated with multiple subpial transections (MST) (2), a combination of MST and RS (3), vagus nerve stimulation (VNS) (8) or continued AEDs without surgical intervention (11). In these 24 patients, seizure-freedom was achieved in 1 patient with MST, in 1 patient with MST+RS and in 1 patient with AEDs. 13/71 patients received hippocampal deep brain stimulation (DBS) of whom 2 became seizure-free; in 5/13, 1 AED could be stopped.

Conclusion: Depending on the results of the invasive video-EEG monitoring, different treatment options were offered. In 50% of patients RS was a treatment option. 2/3 of patients who underwent RS following invasive recording became seizure free. Other treatment options included MST, DBS and VNS. 10% of patients remained on AED treatment only.

P1200
LACOSAMIDE: EFFICACY AND SAFETY AS ORAL ADJUNCTIVE TREATMENT IN ADULTS WITH PARTIAL-ONSET SEIZURES
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Background and aims: To investigate the efficacy and safety of oral adjunctive lacosamide in subjects with partial-onset seizures taking 1 to 3 concomitant antiepileptic drugs (AEDs) in a multicenter, randomized, placebo-controlled trial.
Method: Subjects (n=405) reporting at least 8 seizures with no more than a 21-day seizure-free period during an 8-week baseline were randomized (1:2:1) to placebo, lacosamide 400 or 600 mg/day (bid), respectively. Concomitant AEDs remained stable throughout the trial. Subjects were titrated over 6 weeks to the randomized dose in 100 mg/day per week increments. Treatment was maintained for 12 weeks, followed by blinded transition to an open-label extension trial or discontinuation. Efficacy was evaluated with continuous and categorical intent-to-treat analyses of seizure frequency data (maintenance vs. baseline). Safety was evaluated with adverse events (AEs), ECGs, vital signs, safety labs and body weight.

Results: The median percent reduction in seizure frequency was 20.8%, 37.3%, and 37.8% for placebo, lacosamide 400 and 600 mg/day, respectively. Both doses of lacosamide were statistically significant over placebo in reducing seizure frequency (400 mg/day: p=0.0078; 600 mg/day: p=0.0061). The 50% responder rates were 18.3%, 38.3%, and 41.2% for placebo, lacosamide 400 and 600 mg/day, respectively. Both doses of lacosamide were statistically significant over placebo for the responder rate analysis (400 mg/day: p=0.0004; 600 mg/day: p=0.0005).

AEs that appeared to be dose-related included dizziness, nausea, diplopia, blurry vision, vomiting, tremor, abnormal coordination, and nystagmus.

Conclusion: This trial demonstrated that oral administration of adjunctive lacosamide (400 and 600 mg/day) significantly reduces seizure frequency in patients with uncontrolled partial-onset seizures and is generally well tolerated.

P1202
AN OVERVIEW OF 50 PATIENTS WHO UNDERWENT EPILEPSY SURGERY AT GHENT UNIVERSITY HOSPITAL
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Purpose: Resective surgery is a successful treatment option for patients with medically refractory epilepsy. This study investigated the outcome in the last 50 patients with refractory epilepsy who underwent resective surgery after presurgical evaluation at Ghent University Hospital.

Methods: Data on mean monthly seizure frequency before surgery and at maximum follow-up and type of surgery were collected. Post-operative outcome is reported using the Engel classification.

Results: Between October 2003 and October 2006, 50 patients underwent epilepsy surgery. 13/50 patients underwent surgery in the left temporal lobe; 11/13 patients had a diagnosis of hippocampal sclerosis with consecutive amygdalohippocampectomy, 1/13 had a lesionectomy and 1/13 an amygdalohippocampectomy after invasive EEG-recording. 31/50 patients underwent surgery in the right temporal lobe; 21/31 had a diagnosis of hippocampal sclerosis with consecutive amygdalohippocampectomy, 10/31 patients had a lesionectomy. 5/50 patients were operated in the frontal lobe; 1/5 had a partial lesionectomy, 2/5 had multiple subpial transections and 2/5 had a combination of multiple subpial transection and a lesionectomy. 1 patient had a left hemispherectomy. 4/50 patients were lost in follow-up. Post-operative outcome in 36/46 patients was scored class I according to the Engel classification of which 30/36 had Ia (83.3%). 6/46 patients were scored class II, 2/46 patients class III and 2/46 patients class IV.

Conclusion: In this group of 50 patients who underwent epilepsy surgery at Ghent University Hospital, 83% of patients are completely seizure free. These results are compared favourably with the reported results in the literature on surgical outcome in refractory epilepsy patients.

P1203
VAGUS NERVE STIMULATION (VNS) THERAPY FOR THE TREATMENT OF PHARMACORESISTANT EPILEPSY IN CHILDREN ≤6 YEARS: EFFICACY AND QUALITY OF LIFE (QOL) RESULTS
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Objective: To analyse seizure reduction and QOL in children ≤6 years with pharmacoresistant epilepsy treated with adjunctive VNS Therapy.

Patients and methods: Analysis of data from the Patient. Outcome Registry covered 127 children ≤6 years with pharmacoresistant epilepsy treated with adjunctive VNS Therapy.

Results: Comparative data were available for 63 children (M, F) aged 4.28 years (±1.40; median: 4.0; min: 1; max: 6); mean age at onset of epilepsy: 0.97 years (±1.14; median: 0.50; min: 0; max: 6 years).
P1204

EPILEPSY WITH CONTINUOUS SPIKE-WAVES DURING SLOW SLEEP: CLINICAL AND ELECTROENCEPHALOGRAPHIC FEATURES AND RESPONSE TO LEVETIRACETAM ADD-ON THERAPY

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Objective: Treating epilepsy with continuous spike-waves during slow sleep (CSWS) is difficult and can lead to serious neurological problems. This study examined the clinical and electroencephalographic features of CSWS and response to levetiracetam (LEV) add-on therapy.

Methods: Epilepsy patients with unexplained neuropsychological and/or motor deterioration underwent prolonged sleep EEG recordings. From a cohort of 600 children with epilepsy, CSWS was diagnosed in 26. Neurological assessment, epilepsy type, seizure frequency and concomitant antiepileptic drug (AED) treatment were recorded. Efficacy and tolerability of add-on LEV given after failure of other AEDs was assessed.

Results: 26 epilepsy patients (age 3–12 years) with CSWS were included; 12 were cryptogenic; 3 were related to brain malformations and 11 to brain cysts following perinatal problems. All were wheelchair rates of 8% and QOL improvements after 12 months of treatment. VNS therapy remains an interesting option for young children with pharmacoresistant epilepsy.

Conclusion: Adjunctive VNS therapy in children ≤6 years was associated with a median seizure reduction of 51%, seizure-free-dorm rates of 8% and QOL improvements after 12 months of treatment. VNS therapy remains an interesting option for young children with pharmacoresistant epilepsy.

P1205

PSYCHOCGIC NON-EPILEPTIC SEIZURES, DIAGNOSTIC DIFFICULTY, CLINICAL, LABORATORY, AND NEUROPHYSIOLOGY STUDY

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Psychogenic non-epileptic seizures (PNES) account for 10–40% of patients referred to epilepsy centres. Distinguishing between PNES and epileptic seizures is a very difficult task facing the clinician.

Patients and methods: This study included 20 epileptic patients and 20 patients suffering from psychogenic non-epileptic seizures. All patients were subjected to the following, detailed medical and neurological history and examination, psychometric tests including intelligence assessment and Minnesota Multiphasic Personality Inventory and the following investigations: Routine laboratory investigations, pre- and post-ictal creatinephosphokinase, routine EEG, prolonged video EEG recordings with the use of induction technique, auditory event related potentials (P300) using oddball paradigm done in three sessions, preictal, postictal (within 6 hours from the onset of fits), and interictal (6–48 hours from the onset of fit), and CT brain for the epileptic group.

Results: The comparative studies included demographic and neurological history variables, seizure semiology, psychological testing, serum CPK and event related potentials measurements. These comparative studies revealed highly significant difference between the two groups regarding age at onset, duration of fits, seizure semiology. MMPI-II and P300 evidenced powerful techniques in differentiation.

Conclusion: The combination of more than one of these variables particularly P300 and MMPI-II raised the diagnostic accuracy of PNES even without video EEG.
P1207
LACOSAMIDE INTERACTS WITH COLLAPSIN RESPONSE MEDIATOR PROTEIN 2 (CRMP-2)
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Objective: Lacosamide (R-2-acetamido-N-benzyl-3-methoxypropionamide) is an investigational drug currently being evaluated in Phase III clinical trials for epilepsy and diabetic neuropathic pain. In preclinical studies lacosamide has shown activity in a wide range of animal models for both indications. The aim of the current experiments was to identify the molecular mode of action.

Methods and results: Since lacosamide did not show high affinity interaction with a large range of receptors in radioligand binding assays, a proteomic approach was used to identify putative binding partners of lacosamide. Using lacosamide analogs for affinity labelling collapsin-response mediator protein 2 (CRMP-2), a protein involved in neuronal differentiation and axonal outgrowth, was identified as a possible target. In a radioligand binding study with CRMP-2 expressed in Xenopus oocytes, binding of lacosamide to CRMP-2 was confirmed with an affinity of about 5 μM. In functional experiments lacosamide (1–100 μM) inhibited neurotrophin (BDNF, NT-3)-induced axonal outgrowth of primary neurons without effects on basal growth. This is in line with published findings that inhibition of CRMP-2 attenuated neurotrophin induced axonal outgrowth of cultured neurons.

Conclusions: These studies indicate that CRMP-2 is one of the molecular targets of lacosamide. Together with the findings that lacosamide selectively enhances sodium channel slow inactivation (see corresponding abstract), these results suggest that lacosamide has a dual and novel mode of action. Since neurotrophins play an important role in the pathophysiology of epilepsy and chronic pain, the interaction of lacosamide with CRMP-2 might have disease modifying effects. This, however, remains to be proven.

P1208
SUDDEN DEATH IN EPILEPSY: TWO CASE REPORTS
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Object: Sudden unexpected death in epilepsy (SUDEP) refers to an event either unexpected or unexplained where all circumstances and even autopsy fail to identify the cause of death. Several hypotheses have been proposed for SUDEP, including arrhythmias and central respiratory failure, but none has reached a definite acknowledgement.

Method: We report clinical and post-mortem data of two young ladies referring to our epilepsy clinic, who suddenly died during nocturnal sleep.

Results: The patients were female, aged 23 and 32 years, suffering from cryptogenic and idiopathic epilepsy, with complex partial and nocturnal generalised seizures, respectively, one on maintenance therapy with carbamazepine and valproate, and the other without medication – by her own decision, with a satisfactory controlled fit frequency. One patient had presented a witnessed seizure some hours before death. In both cases patients’ position at discovery, prone lying with the face pressed against the pillow, was suggestive of a recent seizure with prolonged post-ictal phase, which probably impeded recovery of a normal breathing position. Post-mortem examination showed signs of acute asphyxia (labial ecchymosis, subserosal petechiae, pink foam into larynx and trachea, acute pulmonary oedema and emphysema, mastoidal petechiae). Brain examination showed only unspecific findings.

Conclusion: A general diagnosis of SUDEP was unsuitable in the reported cases, as either circumstances of the event and post-mortem examination were strongly suggestive of a positional asphyxia. Diagnosis of SUDEP should therefore be reserved to cases in which autopsy does not allow a precise causal definition.

P1209
PREDICTING THERAPEUTIC RESPONSIVENESS TO THE KETOGENIC DIET BY SPECTRAL AND ENTROPY ANALYSIS OF INTERICTAL EEG RECORDED BEFORE KETOGENIC DIET
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Background and aims: The rate of successful responses to ketogenic diet (KD) in children with intractable seizures is variable, and a credible predictor for the responsiveness has not been reported. We hypothesized that the baseline status of the dynamics of interictal EEG (iEEG) before KD, might determine the responsiveness to KD.

Methods: We examined whether the power spectral indices and sample entropy (SampEn) of the iEEG recorded before starting KD were different between responders and non-responders to KD and could predict the responsiveness. 30 segments of the iEEG of 30-3 epochs in the responder group and 19 segments in the non-responder group were analyzed.

Results: In the responder group, compared to the non-responder group, the spectral powers from the delta- to beta-frequency bands and SampEn were significantly larger and smaller, respectively, in diffuse brain areas. Discriminant analysis using a combination of the alpha- and beta-frequency powers and SampEn in the P7 electrode could correctly identify 23/30 (76.7%) responder segments and 19/19 (100%) non-responder segments.

Conclusions: The spectral powers and SampEn measured in the iEEG before KD were different between responders and non-responders, and when these elements were used in combination, they could successfully predict the responsiveness to KD, especially the non-responsiveness.
P1210
INTERCONNECTIONS BETWEEN THE LEVELS OF OVARIAN STEROID HORMONES, PITUITARY GONADOTROPIC HORMONES AND FREQUENCY OF EPILEPTIC SEIZURES

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Purpose: To determine correlations between the levels of ovarian steroid hormones, pituitary gonadotropin hormones and frequency of epileptic seizures.

Methods: 46 female patients with idiopathic epilepsy and 15 controls, aged 13–55 years were examined from 2004–2006 in the Department of Neurology of Riga 1st hospital. All patients underwent the following blood hormonal level tests: follicle stimulating hormone, luteinizing hormone, estradiol, progesterone, prolactin, total testosterone both in the follicular and in the luteal phases of menstrual cycle. Special patients questionnaires were used for collecting anamnestic data.

Results: Abnormalities of ovarian and pituitary gonadotropic hormone levels were detected in 73.91% cases. Stimulating influence of oestrogen level higher than 200 ng/ml on increase of epileptic seizure frequency during luteal phase was established. In cases with low progesterone levels during the luteal phase of the cycle the seizure frequency had tendency to be increased. A strong positive correlation between seizure frequency and oestrogen-to-progesterone ratio above 100 exists. The higher the deficit of progesterone, the higher the blood level of luteinizing hormone during the luteal phase.

Conclusions: Oestrogen-to-progestosterone ratio above 100 during the luteal phase of menstrual cycle indicates that only a high predominance of the estradiol level contrary to the progesterone level is a proconvulsive factor for females with epilepsy. The decreased progesterone level in cases with high level of luteinizing hormone, suggests the existence of feed-back mechanism provided with low ovarian functioning.

P1211
ORAL LACOSAMIDE: EVALUATION OF EFFECT ON CONCOMITANT ANTI-EPILEPTIC DRUG PLASMA CONCENTRATIONS IN SUBJECTS WITH PARTIAL-ONSET SEIZURES

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Background and aims: Steady-state plasma concentrations of concomitant antiepileptic drugs (AEDs) were evaluated for potential pharmacokinetic interactions with lacosamide (LCM) that could have influenced the significant reduction in seizure frequency observed in the randomized controlled trial SP755.

Methods: Subjects (n=477) taking 1 to 3 AEDs were randomized and titrated to a dose of 200 or 400 mg/day oral LCM or placebo; treatment was then maintained for 12 weeks. Plasma concentrations of the concomitant AEDs determined at baseline and during LCM administration were compared using summary statistics.

Results: Mean change (μg/mL) from baseline at the end of maintenance was 0.5, 0.5 for carbamazepine; 3.6, 0.2 for levetiracetam, and −0.1, 0.0 for lamotrigine in the placebo and 400 mg/day LCM groups, respectively. LCM also did not affect mean concentrations of concomitantly administered TPM, VPA, or PHT. Mean OXC-MHD concentrations appeared to be slightly lower (~4.2 μg/mL) in the LCM 400 mg/day group but not in the LCM 200 mg/day group. LCM 200 and 400 mg/day produced statistically significant reductions in seizure frequency from baseline to maintenance (p=0.0223 and 0.0325, respectively). The 50% responder rate over placebo was significant for LCM 400 mg/day (p=0.0063). Dose-related adverse events were dizziness, nausea, and vomiting.

Conclusions: Lacosamide administration did not affect the mean plasma concentrations of concomitant AEDs; thus, the observed reductions in partial seizure frequency in this trial were due to lacosamide and not the result of any increase in concomitant AED plasma concentration(s).

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P1212
STEREOTACTIC RADIOFREQUENCY ABLATION FOR INTRACTABLE EPILEPSY ASSOCIATED WITH HYPOTHALAMIC HAMARTOMA

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Background and aims: The gelastic seizures associated with hypothalamic hamartomas are notoriously difficult to control with anticonvulsants medications. Surgical resection of the hamartoma may be helpful if resection is complete but there is the risk of significant morbidity. We tried radiofrequency ablation of hypothalamic hamartoma in two children with intractable seizures.

Methods: We made stereotactic radiofrequency ablation of hamartoma in two children, in whom multiple antiepileptic drugs and gamma-knife surgery failed to reduce the seizures. An 8-year-old boy who had 5 to 7 gelastic seizures per day since the age of 3, and a 9-year-old girl who had also several partial seizures or gelastic seizures per day since 8 months old, underwent volumetric MR imaging of the brain. The MR images were reconstructed and radiofrequency lesions were planned. Radiofrequency of 80°C were administered for 60 seconds on 5 to 6 overlapping lesions each.

Results: During the ablation, no serious complication had occurred. The 8-year-old boy is free of seizure for 6 months after the radiofrequency ablation and the 9-year-old girl has experienced nearly 50% of seizure reduction at 2 months follow-up and they both had no other symptoms associated with the ablation.

Conclusions: We report two cases of intractable seizures with hypothalamic hamartoma. They had a dramatic seizure reduction after radiofrequency ablation of hamartoma without harmful side effect. The radiofrequency ablation could be a safe and effective treatment of gelastic seizures associated with hypothalamic hamartoma.

P1213
POSTERIOR HEMI-HEMIGALENCEPHALYPHY: ELECTROCLINICAL AND IMAGING FINDINGS IN SEVEN PATIENTS

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Purpose: Hemi-galenalencephaly is a rare developmental brain malformation characterized by abnormal hypergrowth of one cerebral hemisphere.

Methods: Subjects had seizures, focal neurological deficits, or both. Seven patients, 3–18 years old, were divided into two groups, I, II, according to the initial localization of the hemi-galenalencephaly.

Results: Medications for seizures had little effect, but surgical resection may control seizures, and the neurological deficits may improve.

Conclusions: Hemi-galenalencephaly should be suspected in patients with such lesions. The diagnosis of hemi-galenalencephaly is made on the basis of clinical and imaging findings.
hemi-hemimegalencephaly (HH) involves occipital, parietal and temporal lobes. We aimed to analyse electroclinical and imaging features of HH.

**Methods:** We reviewed 7 patients (3w/4m) with HH from our department database. All patients were clinically examined, underwent high resolution MRI, EEG recordings and neuropsychological testing. One patient underwent surgery.

**Results:** Mean age of patients was 14 years (6–25 years) at assessment time. Mean age at seizure onset was 1.1 years (1–2 years). All patients had medically refractory epilepsy. 6 suffered from partial seizures: 3 with temporal lobe and 3 with multifocal epilepsy. All of those had SPS and CPS, secondary generalisation was observed in 5 patients. 1 had Lennox-Gastaut syndrome. Seizure frequency varied from daily to sporadic attacks. 4 had focal and 3 had diffuse slowing on interictal EEG, in 3 of those interictal epileptiform potentials were registered. All patients but one had mild to severe neurological deficits, delayed developmental milestones and prominent cognitive problems. On MRI, patients had enlarged posterior cerebral quadrant associated with increased white matter volume, simplified gyral pattern, high T2 signal and dysmorphic occipital horn. The majority of patients (6/7) had left-sided HH. One patient, operated on with temporal lobe resection and parieto-occipital disconnection, has been seizure free for two years after surgery.

**Conclusions:** Posterior HH displays a distinct syndrome with typical imaging and clinical features. Drug resistant patients may be amenable to resective surgery.

**P1214**

**GLUCOSE TRANSPORTER TYPE 1 (GLUT-1) DEFICIENCY SYNDROME CAN BE MISTAKEN FOR PRIMARY GENERALIZED EPILEPSY**

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**Background:** The clinical spectrum GLUT-1 deficiency syndrome has increasingly been widened since its discovery in 1991 by de Vivo (1). Most children have early paroxysmal epileptic and non-epileptic episodes, acquired microcephaly, spastic ataxia and developmental delay, others have movement disorders. The question of mild phenotypes that could be mistaken for primary generalized epilepsy has been raised in the literature but not clearly answered.

**Case study:** This 10-year-old girl presented at 5 years with atypical absences and myoclonic jerks since early infancy. Longer periods of “disconnection” or sudden need to sleep were also reported. Head circumference and neurological exam were normal. Development was unremarkable but increasing learning difficulties were documented. Valproate was inefficient but she improved with ethosuximide and clobazam. EEG records showed 5–15 sec runs of bifrontal, sometimes lateralised, or generalised irregular 2–4 c/s spike and waves or polyspike and wave with variable predominant frontal (triangular delta) slowing of the background activity. 24h-EEG (10years): striking decrease of epileptic discharges and normalisation of background activity after meals. CSF/blood glucose ratio: mildly decreased (0.42; normal >0.46). A mutation of the gene SLC2A1 gene confirmed GLUT-1 deficiency. Ketogenic diet was recently introduced.

**Conclusion:** GLUT-1 deficiency can indeed present with early myoclonic and atypical absence epilepsy but no other neurological abnormalities. Learning difficulties can easily be attributed to uncontrolled epilepsy. Distinctive clinical and EEG clues can lead to more invasive investigations and diagnosis.

**References:** 1 Wang et al. GLUT-1 Deficiency syndrome: Clinical, genetic and therapeutic aspects Ann Neurol 2005;57:11–118

**P1215**

**PRENATAL FACTORS AND DEVELOPING OF EPILEPSY IN CHILDREN**

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The role of prenatal and perinatal factors for epilepsy is still under discussion. The aim of the presenting study was to try to find such correlations according to prenatal factors and subsequent epilepsy. We collected data about the pregnancy and delivery period of 2370 children, who were born during a one year period (1991) in one hospital. After 13 years their mothers were questioned according to development of any neurological problems of their children. For further analysis two groups were excluded: I=2026 cases, about which only data from medical history were obtained and group II=517 cases with data not only from medical histories but also from questionnaire. Children with seizures were divided into three subgroups (epilepsy, one epileptic seizure, febrile seizures). The first step of the analysis was to compare group I and II and find if group II is representative. Then the comparison between subgroups with seizures and group II was done. Factors according to pregnancy, any health problems of the mothers, delivery, etc. were analyzed. Meconium stained amniotic fluid occurred statistically more often in the group with epilepsy. Gestosis, diseases of mothers during pregnancy, using some drugs were found more often in the group with epilepsy, but the difference was not statistically significant. At least two of the analyzing factors occur statistically more frequent in the group with epilepsy.

**Conclusions:** This work shows the possible correlation between the course of pregnancy and delivery on developing epilepsy not only in the early neonatal period but also during late childhood.

**P1216**

**PREDICTOR FOR DEPRESSIVE DISORDER DEVELOPMENT IN PATIENTS WITH EPILEPSY**

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**Introduction:** Depression is one of the most common comorbidities in epilepsy. There is a two-way relation between depression and epilepsy: patients with epilepsy run higher risk for depression and vice versa.

**Aim:** To examine possible predictors which favour the development of depressive disorder in epileptic patients.

**Material and methods:** We have prospectively studied 476 epileptic patients, both sexes, chosen at random at the Neurology Clinic’s Epileptic Counselling Department.

**Results:** There have been 53.4% of males with mean age of 36.7±12.9 years, while females were slightly younger 33.3±12.5 years. Approximately 80% had high school diploma, significantly more males were employed (p<0.0001) and married (p=0.0001). First seizure in females occurred between the age of 13 and 18, and in males much later (x2=31.249, p<0.0001). Beck scale showed depressive symptoms in 33.6%, while the Hamilton scale score showed the presence of depression in 38.8% of patients, with significantly higher frequency of depressive disorder in females.
**Conclusion:** Depressive disorders were significantly more present in female epileptic patients, predominantly with partial complex symptomatology, middle aged, and seizures occurred much earlier in life in females than in males. Females were unemployed and not married. Appropriate recognition of depressive disorder and multidisciplinary approach contributes to a significant improvement of quality of life in epileptic patients.

**P1217**

**A CASE OF AICARDI SYNDROME WITH FAVORABLE PROGNOSIS**

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Aicardi Syndrome (AS) is an X-linked dominant disorder defined by a radio-clinical triad associating early-onset infantile spasms, agenesis of the corpus callosum, and pathognomonic chorioretinal lacunae. The prognosis of AS is generally poor with severe psychomotor impairment and intractable seizures. We report a particular case of typical AS in a 36-year-old female. Magnetic resonance imaging showed agenesis of the corpus callosum. Ophthalmological examination revealed extensive chorioretinal lacunae. The patient experienced her first generalised tonic-clonic seizure at the age of 22 and she is actually seizure free since the age of 29. Her cognitive functions are normal. Therefore, the clinical picture of AS is broader than its original description. Few patients may have a favourable outcome as already reported in the literature. Learning disabilities should not be considered inevitable and the prognosis is not in all the cases poor.

**P1218**

**TOLERABILITY AND EFFICACY OF ZONISAMIDE IN REFRACTORY FOCAL EPILEPSY. A SPANISH EPILEPSY UNIT EXPERIENCE**

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**Background:** Symptomatic or probably symptomatic focal epilepsy (FDE) are common types of epilepsies in adults with high rate of drug resistance. This drives usually to polytherapy and to the use of new antiepileptic drugs (AED). Zonisamide (ZNS), with extensive experience in the US and Japan, has recently arrived in Europe, and becomes a new choice for FDE. 

**Methods:** Observational Study; epilepsy Unit Databank; consecutive adult outpatients included (2005–2007). We studied the efficacy and tolerability of add-on ZNS, in patients with FDE. Tolerability was studied in terms of withdrawal due to adverse-effects. We specifically studied the efficacy of ZNS as add-on therapy with other AEDs. Patients ought to be treated with stable ZNS dosages for at least three months. ZNS efficacy was classified as: class 1: seizure free; class 2: reduction of 50–99% in seizure frequency; class 3: reduction of 1–49% in seizure frequency; class 4: no changes in seizure frequency.

**Results:** 30 patients with FDE, male: 13. female: 17. average age: 50.3y; epidemic syndromes: Temporal Lobe Epilepsy (TLE) with Hippocampal Sclerosis: 15 patients (50%) (one was unsuccessfully operated. The rest refused or were not electable for surgery). Frontal Lobe Epilepsy: 6. lesonal neocortical TLE: 5. Non lesional TLE: 4; etiology: hippocampal sclerosis: 15, development abnormalities: cortical dysplasia: 5, heterotopia: 2, tuberous sclerosis: 1, dual pathology: 2. cryptogenic: 7. tolerability: withdrawal rate: 16.6% (5 patients); seizure frequency increase: 1; dizziness: 1; erectile dysfunction: 1; anorexia: 1; weakness: 1 (3 were also on CBZ). Efficacy: Mean time on ZNS: 71 days. Mean Dosage: 197 mg/day. Efficacy: Class 1: 2; class 2: 3; class 3: 8; class 4: 12.

**Conclusion:** Zonisamide is partially effective for refractory partial epilepsy as add-on therapy, as well as well tolerated and safe.

**P1219**

**DISTURBANCE OF BONE MINERAL DENSITY IN EPILEPTIC WOMEN**

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**Purpose:** To determine bone mass changes in women with long-term epilepsy depending on seizures type and antiepileptic drugs (AED). 

**Method:** We analysed 20 women (36±2.5 years) on monotherapy with various forms of epilepsy. The duration of disease was 16.4±4.71 years. The duration of AED treatment was 13.6±4.95 years. They were compared with control (10 women without epilepsy). BMD was evaluated by x-ray bone densitometry.

**Results:** Among epileptic women 30% had 3 degree osteopenia, 35% – 1 degree osteopenia; 25% – border between low and normal BMD; 10% – higher BMD than age norm. In control group 10% had a decreased BMD (1 degree osteopenia). The connection between BMD changes and epilepsy onset age was determined. Women with teen age epilepsy onset and AED treatment had lower BMD (3 degree osteopenia) than women with later onset (1 degree osteopenia). Their biological age was 10–15 years higher than their real one; integral cortical index was 0.57±0.011 (0.65±0.011 in control group). 80% of patients with osteopenia had symptomatic epilepsy with partial, secondarily-generalised seizures and were on enzyminducing AED therapy (carbamazepine). A correlation was established (coefficient of correlation 0.78) between disease duration, anticonvulsants using, degree of bone mass changes.

**Conclusions:** BMD decrease among epileptic women on a long-term AED treatment was demonstrated (65%) in comparison with control (10%) that shows considerable disturbance in bone mass metabolism and necessity of its correction.

**P1220**

**DEVELOPING A PREDICTION MODEL FOR OUTCOMES FROM STATUS EPILEPTICUS**

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**Background:** There is scant data exploring factors that predict outcome in patients with convulsive status epilepticus, less is known about these in Asians.

**Aim:** To study the usefulness of a statistical method applying logistic regression to create a discriminant model in determining potential prognostic markers.

**Methods:** A retrospective study, reviewing adults admitted to the National University Hospital Singapore, from January 2002 to December 2005 with convulsive status epilepticus. 62 episodes were analysed. Using age, male gender, Chinese ethnicity, educational subnormality, past history of epilepsy, use of anticonvulsants...
prior to admission, seizure duration and unabated seizures upon arrival in the emergency room as discriminant factors, a model using logistic regression was constructed. Poor outcome was defined by MRS ≥3 at discharge.

**Results:** Using our model, a receiver operator curve (ROC), curve of 0.936, sensitivity 95.5%, specificity 91.7%, positive predictive value (PPV) 97.7%, negative predictive value (NPV) 84.6% predicting poor outcome was established. Predictive ability for patients with a preadmission MRS <3 was: ROC 0.887, sensitivity 85.7%, specificity 91.7%, PPV 92.3% and NPV 84.6%. Independent analysis identified blood glucose level >7 mmol/L with poor outcome (ROC 0.737, sensitivity 67.4%, specificity 80.0%, PPV 93.5% and NPV 36.4%).

**Conclusion:** Our study suggests clinical features obtainable at the time of presentation can be applied into a statistical model to predict clinical outcomes in status epilepticus. Hyperglycaemia was associated with a worse prognosis possibly related to its proconvulsant properties. A scoring system could be devised and validated prospectively which would aid management of refractory patients.

**P1221**

**STATUS EPILEPTICUS IN THE ELDERLY: AETIOLOGY, CLINICAL MANIFESTATION AND PROGNOSIS**

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**Purpose:** Status epilepticus (SE) is a neurological emergency that needs prompt diagnosis and treatment. Incidence of SE in the elderly is associated with secondary complications and significant mortality.

**Method:** We retrospectively identified 102 patients older than 60 years, who were admitted with SE at the Department of Neurology of Sibiu, between January 2002 and December 2006. We investigated characteristics of patients, aetiology of SE, therapy and factors affecting morbidity and mortality of SE.

**Results:** The mean age of patients was 70.5, ranging from 60 to 84. 76 were male and 26 were women. 46 of patients presented “de novo” SE. 48 of patients showed a generalised tonic-clonic SE, 16 myoclonic SE, 32 focal motor SE, and 6 non-convulsive SE (NCSE). Etiologic factors for SE were: cerebrovascular diseases in 76 patients, hypoxic and metabolic factors in 22 patients, tumours were found in 10 patients, dementia in 7 patients. SE was controlled with one medication in 94 patients, only 8 patients needed general anaesthesia. 5 patients died because of an ischemic or hemorrhagic insult; 6 patients died because of secondary complications (infection, sepsis, cardiac failure).

**Conclusion:** Our results revealed that older age, cerebrovascular diseases, SE “de novo”, generalised convulsive SE (tonic-clonic and myoclonic) and secondary complications, increased mortality of SE in the elderly.

**P1222**

**LONG-TERM SAFETY OF ZONISAMIDE IN CHILDREN WITH EPILEPSY: A MULTICENTRE, OPEN-LABEL EXTENSION STUDY**

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**Background and aims:** The long-term safety of zonisamide in children with epilepsy was evaluated in a long-term extension study of a previous study (Study 225).

**Methods:** 20 children with epilepsy aged 5–11 years (Group 1) and 9 aged 12–18 years (Group 2), who had completed the previous study continued to receive their maximum tolerated doses of zonisamide (up to 12 mg/kg/day or a maximum of 600 mg/day; mean dose range 9.0–12.9 mg/kg/day). Adverse events (AEs) and clinical laboratory tests were assessed monthly for 3 months, with a final visit at 6–12 months.

**Results:** Overall, 28 (96.6%) patients had at least one new AE during the extension study, most commonly affecting the central nervous system (72.4%). Most were mild to moderate in severity. No patients withdrew due to an AE and none died during the study or within 30 days of the last zonisamide dose. Treatment-related, treatment-emergent AEs occurred in 18 (62.1%) patients (60% of Group 1 and 66.7% of Group 2). 5 subjects (4 from Group 1, 1 from Group 2) experienced 10 episodes of new serious, non-fatal AEs (convulsion, encephalopathy, dehydration, pneumonia, status epilepticus); 2 were considered to be related to zonisamide (status epilepticus and encephalopathy). There were few clinically relevant laboratory abnormalities, although 75% of patients had plasma bicarbonate concentrations below the normal reference range (NRR) and 29% had plasma chloride concentrations above NRR during treatment.

**Conclusions:** Long-term treatment with zonisamide was generally well tolerated in children with epilepsy.

**Funding:** This work was supported by Eisai.
P1224
ADVANTAGES OF LEVETIRACETAM AS MONOTHERAPY IN TREATING EPILEPTIC SYNDROMES OF EARLY CHILDHOOD, CHARACTERISED BY PSYCHOLOGICAL DISORDERS

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Objective: To assess efficacy and tolerability of levetiracetam (LEV) monotherapy, and its effects on cognitive function, in patients with early childhood epilepsies.

Methods: Children, age 2-36 months, with confirmed epilepsy, were treated with LEV administered either as initial monotherapy, titrated to optimal dose (30-60-80 mg/kg/day) over 2-4 weeks, or added to previous antiepileptic drug (AED) therapy for 2-4 weeks and transitioned to LEV monotherapy (30-80 mg/kg/day) over 2-8 weeks. After 3 months of LEV treatment, efficacy was assessed as seizure frequency reduction; tolerability, by evaluating adverse events (AEs). Psychomotor/cognitive development was assessed after 3-6 months and compared with patients with similar epilepsies, effectively controlled with other AEDs.

Results: 21 children (9 female, 12 male) were included. 8 (age 3-24 months) received initial LEV monotherapy, and 13 (age 8-30 months) transitioned to LEV monotherapy due to inefficiency or intolerable AEs with previous AEDs. Psychological disorders were diagnosed in 19 patients. Overall, 90.5% (19/21) patients responded to LEV monotherapy (≥50% seizure frequency reduction); 71.4% (15/21) patients achieved seizure freedom, either after a few days (n=8) or weeks (n=7). LEV monotherapy was ineffective in only 9.5% (2/21) patients. LEV was well tolerated; AEs were reported in 2 patients (hypereexcitability, sleep disorders), necessitating slower titration. Psychomotor/cognitive function improved substantially in all patients with psychological disorders who responded to LEV treatment (n=19).

Conclusions: LEV monotherapy was effective and well tolerated in patients with a variety of early childhood epilepsies, and resulted in significant cognitive improvement in patients with psychological disorders, suggesting a direct psychotropic effect.

P1225
QUALITY OF LIFE IN PATIENTS WITH EPILEPSY AFTER TRANSITION FROM VALPROATE TO TOPIRAMATE MONOTHERAPY

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Objective: To evaluate quality of life (QUOLIE-10), tolerability and weight change in patients with epilepsy after transition from valproate (VP A) to topiramate (Topamax®, TPM) monotherapy.

Methods: Multicenter open-label non-interventional trial (TOP-MAT-EPY-405). Patients ≥12 years of age with epilepsy were eligible. TPM dose was 100 mg/day. Mean seizure frequency decreased from 6/month at baseline to 1.4/month at endpoint (p<0.0001). 81% of patients completed the study. All QUOLIE-10 items including subscores mental health, role functioning, and severity of epilepsy improved (p<0.0001). Mean baseline BMI slightly improved from 26 to 25.5 kg/m² at endpoint, mean weight decrease was 1.9 ± 3.7 kg. TPM was well tolerated: 26% of patients reported treatment-related adverse events (AEs). AEs ≤5% were paraesthesia (9%), memory difficulties (5%) and weight decrease (8%). 12% of patients discontinued treatment due to an AE. The only additional cognitive side effect reported was speech disorder in 4% of patients. Tolerability of TPM was rated as ‘good’ or ‘very good’ in 80% by physicians.

Conclusion: Transition from CBZ or OXC to topiramate mono-therapy was associated with a significant improvement in quality of life and was well tolerated.

P1226
QUALITY OF LIFE IN PATIENTS WITH EPILEPSY AFTER TRANSITION FROM CARBAMAZEPINE OR OXCARBAZEPINE TO TOPIRAMATE MONOTHERAPY

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Objective: To evaluate quality of life (QUOLIE-10), tolerability and weight change in patients with epilepsy after transition from carbamazepine (CBZ) or oxcarbazepine (OXC) to topiramate monotherapy (Topamax®, TPM).

Methods: Multicenter open-label non-interventional trial (TOP-MAT-EPY-405). Patients ≥12 years of age with epilepsy were enrolled. Main reasons for CBZ/OXC discontinuation were side effects (80%) and/or lack of efficacy (75%). At endpoint, median TPM dose was 100 mg/day. Mean seizure frequency decreased from 6/month at baseline to 1.4/month at endpoint (p<0.0001). 81% of patients completed the study. All QUOLIE-10 items including subscores mental health, role functioning, and severity of epilepsy improved (p<0.0001). Mean baseline BMI slightly improved from 26 to 25.5 kg/m² at endpoint, mean weight decrease was 1.9 ± 3.7 kg. TPM was well tolerated: 26% of patients reported treatment-related adverse events (AEs). AEs ≤5% were paraesthesia (9%), memory difficulties (5%) and weight decrease (8%). 12% of patients discontinued treatment due to an AE. The only additional cognitive side effect reported was speech disorder in 4% of patients. Tolerability of TPM was rated as ‘good’ or ‘very good’ in 80% by physicians.

Conclusion: Transition from CBZ or OXC to topiramate mono-therapy was associated with a significant improvement in quality of life and was well tolerated.

P1227
ARE THERE DIFFERENCES IN PATIENTS SWITCHING FROM PHENYTOIN, VALPROIC ACID, CARBAMAZEPINE OR OXCARBAZEPINE TO TOPIRAMATE? RESULTS FROM A PROSPECTIVE, OBSERVATIONAL STUDY

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Objective: To assess feasibility and tolerability of levetiracetam (LEV) monotherapy, and its effects on cognitive function, in patients with early childhood epilepsies.

Methods: Children, age 2-36 months, with confirmed epilepsy, were treated with LEV administered either as initial monotherapy, titrated to optimal dose (30-60-80 mg/kg/day) over 2-4 weeks, or added to previous antiepileptic drug (AED) therapy for 2-4 weeks and transitioned to LEV monotherapy (30-80 mg/kg/day) over 2-8 weeks. After 3 months of LEV treatment, efficacy was assessed as seizure frequency reduction; tolerability, by evaluating adverse events (AEs). Psychomotor/cognitive development was assessed after 3-6 months and compared with patients with similar epilepsies, effectively controlled with other AEDs.

Results: 21 children (9 female, 12 male) were included. 8 (age 3-24 months) received initial LEV monotherapy, and 13 (age 8-30 months) transitioned to LEV monotherapy due to inefficiency or intolerable AEs with previous AEDs. Psychological disorders were diagnosed in 19 patients. Overall, 90.5% (19/21) patients responded to LEV monotherapy (≥50% seizure frequency reduction); 71.4% (15/21) patients achieved seizure freedom, either after a few days (n=8) or weeks (n=7). LEV monotherapy was ineffective in only 9.5% (2/21) patients. LEV was well tolerated; AEs were reported in 2 patients (hypereexcitability, sleep disorders), necessitating slower titration. Psychomotor/cognitive function improved substantially in all patients with psychological disorders who responded to LEV treatment (n=19).

Conclusions: LEV monotherapy was effective and well tolerated in patients with a variety of early childhood epilepsies, and resulted in significant cognitive improvement in patients with psychological disorders, suggesting a direct psychotropic effect.
Objective: To describe differences in effectiveness and safety profile in patients treated with the most commonly prescribed AEDs in Germany transitioning to topiramate monotherapy (Topamax®, TPM).

Methods: Multicenter, open label, observational study (TOPMAT-EPY-0001) examining patients ≥6 yrs diagnosed with epilepsy and prior insufficient treatment with PHT, OXC, CBZ or VPA monotherapy and planned transition to TPM. Patients were followed up for 16 weeks after initiation of TPM.

Results: The ITT analysis included 407 patients (53% female), mean age (±SD) over all groups was 45.8±16.8 yrs. Patients on VPA or PHT were younger at diagnosis than patients on CBZ or OXC (p<0.005), but epilepsy duration was longer in the PHT treated group (p<0.001).

75% of patients transitioned to TPM due to lack of efficacy, 61% due to insufficient tolerability (Chi2-test: p=0.067). TPM median dose at end point was 100 mg/day. Seizure frequency decreased from 2.35±5.4 per 4 weeks retrospectively to 1.14±4.05 (Wilcoxon-test: p<0.001). 64.2% of all patients had ≥50% seizure reduction, 41.8% were seizure-free during the entire documentation period. Treatment-related AEs (≥3% out of 58 AEs) were: tiredness, nausea, weight loss, dizziness, lack of concentration, restlessness, ataxia, exantheme, and development of seizures. 15.8% discontinued TPM due to AE (3.1%) or "unknown" (8.9%). 87% of physicians rated the effectiveness of TPM "very good" or "good" regardless of previous AED.

Conclusion: Transitioning to TPM was associated with a substantial seizure reduction and good tolerability regardless of the AED previously used.

P1228
EFFECTIVENESS OF TOPIRAMATE IN PATIENTS WITH EPILEPSY TRANSITIONING FROM CARBAMAZEPINE OR OXCARBAZEPINE - RESULTS OF AN OPEN-LABEL, NON-INTERVENTIONAL TRIAL
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Objective: To explore seizure frequency and tolerability in patients with epilepsy treated with topiramate (TPM; Topamax®) transitioning from carbamazepine (CBZ) or oxcarbazepine (OXC).

Methods: Multicenter open-label non-interventional trial following epilepsy patients ≥12 years previously unsuccessfully treated with CBZ (72.1%) or OXC (27.9%) for 26 weeks after transitioning to TPM. Baseline was a 12-week retrospective seizure frequency.

Results: 140 patients (54% female; mean age 47±18 yrs) were enrolled. 72.1% of patients had unsuccessfully been treated with CBZ, 27.9% with OXC. Mean (±SD) duration of epilepsy was 14.3±13.7 yrs; patients had an average of 2.2 AEDs (range 1–10) prior to observation. 84% had seizures during the 12-week retrospective baseline. Most frequent seizure types at baseline were GTC (52%), complex partial (25%), and simple partial (16%). Main reasons for transition from CBZ/OXC to topiramate were insufficient efficacy (75%) and/or side effects (80%). At endpoint, the median TPM dose was 100 mg/day. 73% of patients finally received TPM monotherapy. Mean (±SD) seizure frequency decreased significantly from 6.21/month at baseline to 1.45/month during the observation period. The responder rate (≥50% seizure reduction) during the last 3 months was 91%, 62% were seizure-free during this period. 19% of patients discontinued TPM (12% due to AE, 3% due to insufficient efficacy). The only treatment-emergent adverse events reported in ≥5% were paraesthesia (9%) and weight decrease (8%).

Conclusion: In patients previously unsuccessfully treated with CBZ or OXC, topiramate was well tolerated and associated with a substantial reduction in seizure frequency and a high seizure-free rate.

P1229
EFFECTIVENESS OF TOPIRAMATE IN PATIENTS WITH EPILEPSY TRANSITIONING FROM VALPROIC ACID – RESULTS OF AN OPEN-LABEL, NON-INTERVENTIONAL TRIAL
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Objective: To evaluate seizure frequency and tolerability in patients with epilepsy treated with topiramate (TPM, Topamax®) transitioning from valproic acid (VPA).

Methods: Multicenter open-label non-interventional trial following patients aged ≥12 years with epilepsy previously unsuccessfully treated with VPA. Patients were prospectively followed up for 20 weeks after transitioning to TPM. Baseline was a 12-week retrospective seizure frequency.

Results: 147 patients (59% female; mean age 42 years (±SD 19) were followed. Mean duration of epilepsy was 9 years (range 0–60 yrs). 77% had seizures during baseline. Most frequent seizure types at the retrospective baseline were generalized tonic-clonic (52%), complex partial (23%), and simple partial (12%). Main reasons for transition from VPA to TPM were insufficient efficacy (61%) and/or side effects (81%). Mean dose of VPA at first administration of TPM was 1286±629 mg. Median TPM dose was 125 mg/day at endpoint. Mean (±SD) seizure frequency decreased significantly from 32±248 seizures/month during baseline to 3±16 seizures/month during the maintenance period (p<0.001). Responder rate (≥50% seizure reduction) during the last three observation months was 75%, 51% of patients remained seizure-free during this period. 16% of patients discontinued TPM, 8% due to an adverse event (AE), and 3% due to insufficient efficacy. Treatment-emergent AEs (TEAE) were reported in 14% of patients. TEAEs in ≥3% were paraesthesia (4%) and weight decrease (5%). 70% of patients received TPM-monotherapy at endpoint, 77% continued TPM-therapy.

Conclusion: In patients previously unsuccessfully treated with VPA, topiramate was well tolerated and was associated with a substantial reduction in seizure frequency and a high seizure-free rate.

P1230
PEDIATRIC EEG DATABASE: A FOCUS ON ABNORMAL EEG
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Background and aims: Development of EEG database sets up a stage for recording retrospective and prospective data that can be useful in future studies.

Methods: We retrospectively reviewed all paediatric EEG data from Jan 2002 to Jun 2006, age range between 1–14 years. We
recorded demographic data, reason for EEG, EEG findings, if abnormal; type of abnormality, frequency and types of epileptiform discharges. All this information was initially recorded pro forma and later on analyzed by SPSS version 13.

Results: There were 3744 EEGs carried over 4.5 years, in paediatric age group. 67.5% (n=2527) were normal and 32.5% (n=1217) were abnormal. Most EEGs were done during awake state constituting 48.8% (n=594) followed by sedated asleep state 35.2% (n=429). Commonest reason for EEG referral was seizures with and without loss of consciousness, 72.5% (n=883). Of the abnormal EEGs 78.4% (n=954) had epileptiform discharges. Epileptiform discharges that were recorded showed that 24.1% (n=230) had focal spike and slow waves discharge, 19.3% (n=185) had focal sharp and slow wave discharge, 19.2% (n=184) had focal spikes, 8.8% (n=84) had focal sharp waves and the rest had generalized epileptiform discharges.

Conclusion: We conclude that 71.4% of patients had focal epileptiform discharges signifying that possibly partial epilepsy is the commonest epilepsy in this age group. We can now build up a prospective EEG database that can help us and other centres to further classify underlying epilepsy syndromes that can be treated with appropriate AEDs and improve quality and quantity of life in epilepsy patients.

P1231
STATUS EPILEPTICUS IN A NEUROINTENSIVE CARE UNIT
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Background and aims: Generalized epileptic status is a critical clinical situation with an overall mortality rate of 20% in adults. The aim of the study was to analyse the management of generalised epileptic status in a neurointensive care unit during 8 years.

Methods: A retrospective analysis of 122 cases of generalised epileptic status was performed in the patients hospitalised in the neurointensive care unit of the Tartu University Hospital from 1997-2004.

Results: In 44 (36%) patients, this was the first seizure episode in their lifetime. In 22 (46%) patients, epilepsy had been diagnosed previously. For 56 (46%) patients, symptomatic epilepsy after perinatal brain damage including stroke, trauma, and meningitis, was diagnosed. Epileptic status was considered to be related to alcohol abuse in 59% of patients. In most cases, prehospital treatment was started with benzodiazepines or phenytoin. 114 (93%) patients were intubated and artificial ventilation introduced, in 83% for less than 24 hours. Despite of the anticonvulsant treatment, seizures recurred in 20% of the cases, mostly in patients with alcohol abuse, or stroke. After the termination of seizures, the patients were referred to other departments of the hospital. One patient with symptomatic epileptic seizures secondary to stroke died.

Conclusions: The prehospital management of epileptic status was adequate. Alcohol abuse was the risk factor for epileptic status in a high proportion of the patients.

P1232
SERIAL EEG FINDINGS IN MASSIVE CARBAMAZEPINE TOXICITY
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The clinical aspects of carbamazepine toxicity has been well described. However reports on its electrophysiological findings remain few to date. We describe a case of massive carbamazepine toxicity followed by an uneventful recovery. A previously healthy 21-year-old man was found comatose with seizures. EEG showed continuous generalized and rhythmic high amplitude delta waves with frequency of 0.5 to 1Hz on first day and generalized alpha activity the next day. At day 1 carbamazepine level was 71.1 mg/L. Continuous slow activity of 1 to 2 Hz was noted at day 4 with carbamazepine level of 21.3 mg/L. Based on previous observations, our serial EEG changes may represent an evolutionary pattern in massive carbamazepine toxicity. Burst suppression was documented with serum level above 80 mg/L, alpha rhythm at 40 mg/L, and slow activity at 20 to 30 mg/L level. Hence, it is possible that our patient represented EEG changes in the intermediate level of toxicity between 80 mg/L to 40 mg/L. By the second day, carbamazepine level may have reduced sufficiently for EEG changes to manifest as generalized alpha rhythm. On the fourth day carbamazepine level declined to 21.3 mg/L, generalized slow activity observed was also consistent with a previous report. We have provided serial evidence to suggest presence of distinct EEG patterns corresponding to measured levels of serum carbamazepine. This report highlights a unique EEG finding associated with a moderately elevated serum carbamazepine level. It may represent a previously unreported transitory rhythm during the course of recovery from massive carbamazepine toxicity.

P1233
ADJUNCTIVE VAGUS NERVE STIMULATION (VNS) THERAPY FOR THE TREATMENT OF PHARMACORESISTANT EPILEPSY IN TWO CHILDREN WITH ANGELMAN SYNDROME
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Angelman syndrome (AS) accounts for up to 6% of all children presenting with severe mental retardation and epilepsy.

Patients and methods: A retrospective analysis of data from Cyberonics’ International Patient Registry showed 2 female patients with Angelman syndrome and refractory epilepsy treated with VNS therapy between June 2000 and April 2003. Patient nr. 1 was 12 years old at implantation and had Lennox-Gastaut syndrome (LGS). This patient was treated with a combination of levetiracetam and valproate and had a follow-up of 34 months. Patient nr. 2 was 8 years old at implantation and had partial epilepsy. This patient was treated with lamotrigine and had a follow-up of 17 months. Both patients were mentally retarded and developmentally delayed with no history of epilepsy surgery.

Results: Patient nr. 1 had 72% seizure reduction; levetiracetam was discontinued and the patient remained only with valproate; patient nr. 2 had no change in seizure frequency or anti-epileptic drug (AED) treatment. Stimulation parameters at the last follow up visit: 1 mA, 250 μs, 20Hz, 30 s, 5 min for patient nr. 1; 1 mA, 250 μs, 30Hz, 14 s, 20 s for patient nr. 2.

Conclusion: VNS therapy was associated with 72% seizure reduction and AED reduction in one child with Angelman syndrome and LGS. Another child with Angelman syndrome and partial epilepsy had no change in seizure frequency or AED treatment. Further investigation of the role of VNS therapy in the treatment of refractory epilepsy associated with Angelman syndrome is needed.
P1234

Efficacy of Levetiracetam Monotherapy for Epilepsy Management in Adults

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Objective: To evaluate the efficacy and tolerability of levetiracetam (LEV) monotherapy in adult patients with newly diagnosed partial epilepsy (PE) and idiopathic generalised epilepsy (IGE).

Methods: 47 cases of newly diagnosed epilepsy (PE=32; IGE=15) from an open-label study were analysed. 43/47 patients achieved LEV for ≥1 year. LEV was uptitrated by 500 mg/day per week and maintenance doses ranged from 1000–3000 mg/day.

Results: After 6 months of LEV treatment, 11/15 (73.3%) of IGE patients achieved seizure freedom, 2/15 (13.3%) demonstrated >75% seizure reduction, 1/15 (6.7%) had >50% seizure reduction and 1/15 (6.7%) showed <50% seizure reduction. Of the PE patients, 23/32 (71.9%) achieved seizure freedom, 4/32 (12.5%) had >75% seizure reduction, 2/32 (6.3%) showed >50% seizure reduction and 3/32 (9.4%) demonstrated <50% seizure reduction. 4 patients (12.5%) discontinued the study; 2 due to ineffective response, 1 self-discharged and 1 for economic reasons. At 12 months, the retention rate was unchanged with 43 patients continuing LEV therapy. A reduction in treatment efficacy was observed in 8/43 patients due to non-compliance, sleep deprivation and/or alcohol stimulation. Intense somnolence was the only dose-dependent side effect, which required slower titration (start dose 125 mg/day, rising 125 mg every 1–2 weeks). There were no severe side effects observed in this study.

Conclusions: These data illustrate the favourable efficacy, tolerability and retention rate of LEV monotherapy as a first-line therapy for PE and IGE.

P1235

Measuring Compound Action Potentials (CAPS) Verifies Vagus Nerve Stimulation (VNS) in Rats

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Purpose: Vagus nerve stimulation (VNS) is an adjunctive therapy for patients with refractory epilepsy. Although the efficacy and safety of VNS has been demonstrated, the mechanism of action remains to be elucidated. The anti-epileptic effect of VNS may be dependent on the type of nerve fibre being stimulated. Therefore, to know which fibres are activated when stimulating the vagus nerve in rats, simultaneous stimulating and recording is performed to obtain stimulus/response curves.

Method: A custom made self-sizing spiral silicone cuff-electrode was implanted around the vagus nerve and a monopolar recording electrode was placed on the nerve. Electrophysiological measurements of compound action potentials (CAP) of the vagus nerve were performed under deep xylazine/ketamine anaesthesia. Several combinations of stimulation parameters (amplitude: 0–2.5 mA, pulse width: 0.08 ms, frequency: 1Hz, pulse duration: 1s) were tested in different configurations (recording electrode placed rostrally/caudally to the stimulation electrode and negative pole of the stimulating electrode placed rostrally/caudally) using a referential montage.

Results: In all configurations, stimulation of the vagus nerve elicited compound action potentials with an obvious fast and slow component and stimulus/response curves could be generated. The fast component probably represents A-fibres, while B-fibres might correspond to the slower component.

Conclusion: Vagus nerve stimulation intensities used in animal research (0.75 mA) would activate the myelinated A- and B-fibres. Further data is needed to measure C-fibre activity. The obtained compound action potentials of these fibres do not imply anti-epileptic properties of VNS, but confirm true vagus nerve stimulation.

P1236

Anti-epileptic Effect of Beta-carotene and Vitamin A in a Pentylentetrazole-Kindling Model of Epilepsy in Mice

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Vitamin A (Vit A) and its derivatives have recently been reported to be implicated in synaptic plasticity. In this study, the possible effect of Vit A and its precursor, β-carotene on acute seizures and kindling, induced by pentylentetrazole (PTZ), was assessed. Vit A and β-carotene were evaluated for their ability to: (1) Elevate the threshold of clonic seizures induced by I.V. infusion of PTZ; (2) Suppress the seizures (clonic and tonic) and lethality induced by I.P. PTZ in full-kindled mice (anticonvulsant effect); 3) attenuate the development of sensitization to convulsive and lethal effects of I.P. PTZ in kindling mice (anti-epileptogenic effect). Diazepam was employed as positive control. Vitamin A and β-carotene showed anti-epileptogenic effect on PTZ-induced tonic seizures and lethality in kindling mice. β-carotene had neither any effect on clonic seizures threshold nor on tonic seizures and lethality induced by PTZ in full-kindled mice; Vitamin A increased the clonic seizures threshold but, had no effect on tonic seizures and lethality induced by PTZ in full-kindled mice. Non-genomic and genomic mechanisms might be involved in the anti-epileptogenic effect of Vit A and β-carotene.

Key words: Vitamin A, Beta-carotene, kindling, full-kindled, threshold.

P1237

Vagus Nerve Stimulation (VNS) Therapy for the Treatment of Pharmacoresistant Epilepsy Associated with Hypothalamic Hamartomas

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Objective: To analyze clinical data and seizure reductions in patients with pharmacoresistant epilepsy associated with hypothalamic hamartomas who were treated with adjunctive Vagus Nerve Stimulation (VNS) therapy.

Patients and methods: Analysis of data from Cyberonics’ International Patient Registry showed 7 patients (6M, 1F) with mean age 15.9 years (±7.03; median 15; range, 6–26). Mean age at onset of epilepsy was 2.8 years (±3.21; median 1.8; range, 0.1–7.8). Gelastic seizures, n=3; partial epilepsy, n=2; generalized, n=1; other, n=1. Mean number of seizures/month over the last 3 months before
Impaired emotion perception is commonly found in patients with frontal lobe dysfunction. We sought to explore the nature of this impairment by comparing two groups of patients known for their frontal involvement, namely, patients with schizophrenia and patients with frontotemporal dementia (FTD). In contrast to previous studies, primarily using static photographs of emotional facial expressions, we developed dynamic stimuli, closely approximating real-life situations. Our task consisted of 21 videotaped scenarios presenting actors expressing sentences of neutral content while enacting one of the six basic emotions or the neutral state. Participants were requested based on paralinguistic cues to identify the emotional state presented. We assessed 21 patients with schizophrenia and 9 patients with early-stage FTD, as well as their respective matched controls. Both patient groups performed more poorly than their respective control groups overall (schiz. vs. control p<0.001 and FTD vs. control p=0.001). Patients with schizophrenia had greater difficulty identifying fear, disgust, surprise and the neutral emotional state. Disgust, anger and fear were often confused with each other, with anger being the most prevalent answer. Impaired emotion perception was present in both FTD and schizophrenia patients, yet discrepant patterns of errors were observed. Our findings may help to provide insight into the pathophysiology of the two disorders and elucidate the way these patients interpret the social world.
P1244
MINIMAL HEPATIC ENCEPHALOPATHY IN PATIENTS WITH LIVER CIRRHOSIS
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Detection of overt hepatic encephalopathy does not represent a major diagnostic challenge. Diagnosis of minimal hepatic encephalopathy is problematic. We studied 41 patients with non-alcohol-induced and alcohol-induced cirrhosis (21 patients with Child A and 20 patients with Child B), admitted at Department of Gastroenterology, Medical University, Plovdiv. Standard neurological examination, psychometric assessment (MMSE, Digit span) and determination of critical flicker frequency (mean flicker) were used. Fine neurological symptoms were found in 17% of patients. Statistically significant differences were found between Child A and Child B patients for mean flicker results F = 7.94, p = 0.008; MMSE F = 4.18, p = 0.04; Digit span (forward f = 14.83, p ≤ 0.001) and backward (f = 16.14, p ≤ 0.001). Correlation analysis did not show significant relationship between the results from MMSE and mean flicker r = 0.003, p = 0.98; as well as the scores from Digit span and mean flicker r = 0.19, p = 0.24 – Digit span forward; r = 0.26, p = 0.11 – Digit span backward. Our results showed that in patients with low-grade hepatic encephalopathy the combination of fine motor deficit with impairment of visual discrimination ability (Critical flicker frequency) is rarer than mild cognitive impairments. In early stages of minimal hepatic encephalopathy both processes are not parallel and simultaneous.

P1245
UNILATERAL REACTION TIME TASK IS DELAYED DURING CONTRALATERAL MOVEMENTS
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A ballistic unimanual movement in a reaction time task paradigm causes a transient interruption of ongoing oscillatory movements of the contralateral hand, as a manifestation of the phenomenon of dual task interference. This effect can be due to inhibitory circuits activated by a voluntary movement. However, no data are available so far on the existence of opposite effects, the delay of simple reaction time by ongoing contralateral movements. Therefore, we examined simple reaction time at rest (rSRT) in comparison to reaction time while performing rhythmic oscillatory movements with the contralateral hand (tSRT). We introduced a startling auditory stimulus (SAS) in a percentage of trials of both conditions to see if the effects of the contralateral movement were still present when reaction time was speeded up by the startling sound. In 8 healthy volunteers, rSRT was significantly delayed with respect to tSRT, with a mean of 125%. Application of a SAS together with the imperative signal induced a speeding up of reaction time similar in both rSRT and tSRT, and the percentage delay of rSRT in trials with SAS was not different with respect to trials with no SAS. Our results suggest that performing rhythmic oscillatory movements with one limb slows reaction time in the contralateral limb and that this effect is likely related to defective preparation of subcortical motor tracts activated by SAS. The effect described here can be of interest for physiological studies of interlimb coordination and may have clinical application in the neurophysiological evaluation of movement disorders.
the plus maze task compared to control rats. In control rats, a drop in hippocampal glucose levels was observed when the rats were placed in the plus maze but no change was observed when the rats were placed in a novel control box. The drop in hippocampal glucose levels during execution of the plus maze task was attenuated in the Parkinsonian patients. This suggests that an increased cerebral blood flow and transport of glucose towards the hippocampus may contribute to the spatial working memory enhancing effect of Ang IV, by compensating for the higher metabolic demands.

P1248
VISUOSPATIAL PERFORMANCE OF PATIENTS WITH PARKINSON’S DISEASE AND ESSENTIAL TREMOR
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Cognitive and motor dysfunction are present both in Parkinson’s disease (PD) and essential tremor (ET). The assessment of cognitive deficit in these disorders might be difficult because motor disability may influence the result of neuropsychological tests. We examined features of visuospatial impairment in PD and ET using motor activity related and motor-independent tests. Visuospatial organization and memory was examined by the full and the motor-independent version of Extended Complex Figure Test (ECFT) in 40 PD, ET and healthy subjects (MMSE≥26). The performance of Parkinsonian patients in the copy, immediate and delayed recall, recognition and matching trials was significantly lower compared to controls; recognition of structural elements and details were affected equally. In ET the copy trial was similar to controls, but the immediate and delayed trials were significantly worse; recognition of details were affected. PD patients tested by the motor-independent version achieved better results compared to those tested by the full version of ECFT, and their performance was significantly worse compared to the respective subgroup of controls. There was no difference between the two subgroups of ET patients and controls. Our results suggest that in PD and ET the impairment of visuospatial organization and memory is caused by different underlying mechanisms. In PD visuospatial organization is more affected than in ET. In Parkinsonian patients the different performance in the two versions of ECFT might be the consequence of motor disability or the distinct impairment of the incidental and intentional memory.

P1249
SWITCHING FROM A UNIVERSAL TO A LANGUAGE-SPECIFIC WAY OF PERCEPTION: ELECTROPHYSIOLOGICAL EVIDENCE OF MATURATION
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Under six months of age, infants are able to discriminate all the phonetic contrasts used in world languages according to universal boundaries. For voicing, the universal values are centred on -30 and +30 ms VOT. For place of articulation, the universal values of F2 and F3 are respectively 1500 Hz and 2500 Hz. After six months of age, infants bound their perception to the phonemes relevant in their mother tongue, switching from a universal to a language-specific way of perception. We studied this warping of the perceptual abilities in infants raised in French-speaking environment, using heart rate deceleration as an index of discrimination and pairs of stimuli either straddling the universal boundaries or the French phonological boundary. The specific interest of French is that, contrary to English in which most of the studies have been performed, the selected phonological boundaries are quite distinct from the universal boundaries. In the first study, 11 infants of 4 months and 9 of 8 months were presented with stimuli extracted from a voicing /dɑ-/tɑ/ continuum and, in the second one, 6 infants of 4 months and 11 of 8 months, were tested with /bɑ-/dɑ/ stimuli. Results evidenced the maturation of perception within the first year of life. Whereas infants of 4 months reacted to the universal boundaries of voicing and place of articulation, infants of 8 months already showed greater discrimination for the original, non-universal French phonological contrasts.

P1250
POST-STROKE DEPRESSIVE SYMPTOMS IN MINOR STROKE: A 36-MONTH FOLLOW-UP
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Introduction: Post-stroke depression is the most frequent psychiatric consequence of stroke and is associated to disability and previous psychiatric disturbances. In order to evaluate the impact of stroke lesion per se, we investigated the incidence, time course and predictors of depressive symptoms (DS) during a 36-months follow-up in patients with mild functional disability (minor stroke).

Methods: All consecutive patients admitted to our stroke unit because of an acute minor stroke (NIHSS ≤5) were enrolled. DS were assessed at 1 month and 2, 6, 12, 18, 24 and 36 months after stroke with the Beck Depression Inventory using a cut-off ≥10 for mild, ≥19 for moderate and ≥30 for severe DS.

Results: We enrolled 138 patients (mean age 65.2±11.05 years; m/f 87/51). 67 (48.5%) patients developed DS during follow-up: 38.8% (26) of patients at 1 month, 9% (6) at 2 months, 15% (10) at 6 months, 16.4% (11) at 12 months, 4.5% (3) at 18 months, 12% (8) at 24 months, and 4.5% (3) at 36 months. 36 patients (53.7%) had mild DS, 21 (31.3%) moderate, and 10 (14.9%) severe. No demographic/clinical parameters or risk factors were associated with DS. The Kaplan Meyer analysis showed that severe DS occur later. Severe DS patients were more frequently treated, and had an earlier resolution of symptoms than mild and moderate ones.

Conclusion: Moderate-severe DS are frequently observed also in not functionally impaired patients. Because of the impact of DS on quality of life, they should be promptly recognized and treated.

P1251
OLFACTORY DYSFUNCTION IN MILD COGNITIVE IMPAIRMENT SUBTYPES
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Background: The early impairment of olfactory identification in Alzheimer’s disease (AD) is caused mainly by degeneration of
medial temporal lobe (MTL) structures. AD is preceded by mild cognitive impairment (MCI) with the average rate of conversion estimated to 15% every year. The aim of this study was to compare the degree of olfactory dysfunction in different MCI subtypes to evaluate its profitability as a potential biomarker of AD.

Methods: 45 MCI patients were classified based on Petersen’s criteria as non-amnestic MCI (naMCI, n=9) and amnestic MCI (aMCI), further divided in hippocampal (aMCI-h, n=11) and non hippocampal (aMCI-nh, n=25) using neuropsychological criteria proposed by Dubois. The mean MMSE in 3 MCI subgroups was 27.8; 26.4 and 27.9, respectively. All MCI subjects and 20 controls underwent a multiple choice olfactory identification test composed of 18 different odours developed in our memory clinic.

Results: The olfactory identification was impaired in both aMCI groups compared to controls and naMCI (p<0.01). The naMCI patients did not differ from controls. There was no significant difference between aMCI-h and aMCI-nh patients.

Conclusion: The olfactory identification is impaired in both aMCI subgroups and is normal in naMCI patients who supports the hypothesis that aMCI represents an early stage of AD, whereas naMCI typically converts to non-AD dementia. We did not find any difference between aMCI-h and aMCI-nh patients which may indicate that smell perception is not selectively hippocampus dependent and refers more widely to MTL.

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P1252

MCI DETECTION IN A GENERAL POPULATION. A LONGITUDINAL APPROACH

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Introduction and objective: Detecting MCI in the general population remains a controversial issue. Although several criteria have been suggested mostly based on cross-sectional cut-off scores, they do not include the longitudinal approach for the correct diagnosis of MCI – the decline in memory domains scores compared to the expected age and education normal pattern. This study proposes a methodology for assessing abnormal decrease in memory domains.

Participants: In a population-based study of cognitive impairment, 1145 subjects (55–79 years of age) were surveyed. After excluding patients with severe depression, alcoholism, mental retardation and dementia, 1090 were included in a two-phase follow-up. In the first phase, 565 were submitted to a health questionnaire and memory tests.

Results: A linear regression model is fitted to the difference in scores two years apart having as independent variables the baseline score, age and education level. Limits for an “abnormal” memory decline may be then set up at 1.5 or 2 standard deviations from the fitted value.

Discussion: The advantage of this method for detecting “abnormal” decline relies on the “regression to the mean”, i.e., participants with low scores at baseline tend to improve their performance and those with high scores tend to decrease. Using this method, a clinical important decline will be spotted, even if test scores are above the established cut-off points. This method improves the predictive validity of memory testing.

P1253

DBS EFFECTS ON OBSESSIVE-COMPULSIVE BEHAVIOUR AND ANXIETY IN TOURETTE SYNDROME PATIENTS. ONE YEAR FOLLOW-UP

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Previous reports of successful deep brain stimulation (DBS) for the treatment of severe Tourette Syndrome (TS) have been documented to date. Few reports to date have measured the neuropsychiatric outcomes. Nineteen cases with TS who were refractory to at least six months of treatment with standard and innovative medications, and to psycho-behavioural techniques, were submitted to DBS. Patients were evaluated before and after surgery according to a protocol which included both neuropsychiatric assessments. The duration of the follow-up assessments ranged from 3–12 months. Comorbid symptomatology as obsessive-compulsive disorder and anxiety decreased after treatment with DBS. DBS is a useful and safe treatment for severe TS with positive effects on co-morbid features of disease.

Key words: Tourette syndrome, Deep Brain Stimulation, Anxiety, Obsessive compulsive behaviour

P1254

CLOCK DRAWING TEST – NEW SCORING SYSTEM

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Clock drawing test (CDT) is used as a screening tool for dementia, however it is interpreted by physicians in a variety of ways. The goal of our study was to simplify the scoring system, as to make it comparable in sensitivity (SE) and specificity (SP) to more widely used Mini-Mental State Examination (MMSE). On the basis of clinical evaluation of a psychiatrist, 158 volunteers were grouped either as “healthy” or “demented”. Both groups were subjected to CDT and MMSE. On CDT 4 point could be obtained, for each of the following: number 12 correct position; numbers 3, 6, 9 symmetrical; each hand in correct position showing 11:10. The results suggest that our system is comparable to more elaborated scoring systems in Slovenian dementia patients. CDT correlates well with the diagnosis of dementia (~0.64) and is strongest in undetermined dementia (~0.86) followed by Alzheimer’s demented (AD) (~0.78) and vascular demented (VD) (~0.77; p<0.001 for all groups). Cut-off score between healthy and demented was set to 3 out of 4 points (SE 89%; SP 90% for AD and VD). Results of both test show good correlation (0.632; p<0.001). With the use of CDT and MMSE, we could improve recognition of patients with mild cognitive impairment (SE 86%, SP 79%) and it is high sensitive screening tool for AD and VD (SE 98%; 100% respectively, SP 79%). Using new scoring system CDT can be accomplished in less than 2 minutes and can be used as a screening tool for substantiating clinical suspicion of dementia.

P1255

THE ROLE OF DIFFUSION TENSOR IMAGING IN THE DETECTION OF WHITE MATTER LESIONS IN PATIENTS WITH MILD COGNITIVE IMPAIRMENT

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Introduction: Numerous neuroimaging studies have been employed in the evaluation of patients with mild cognitive impairment (MCI). Diffusion Tensor Imaging (DTI) is an MRI technique, used to visualize white matter tracts. Quantitative measurements of Fractional anisotropy (FA) and Apparent Diffusion Coefficient (ADC) can also be measured using DTI. The purpose of our study is to examine the role of DTI in the detection of white matter lesions in patients with MCI.

Material and methods: In our prospective study, 8 patients with MCI, (mean age 68 years) and 10 normal volunteers (mean age 72 years) underwent brain MRI including DTI technique. The diagnosis of MCI in our patients was based on Petersen’s criteria (1999). All patients and volunteers also underwent neuropsychological tests (MMSE, 9w-California Verbal Learning Test, Modified Rey). MRIs were performed on a 1.5T MR scanner. Fractional anisotropy and diffusion of the white matter tracts were measured in all patients and volunteers at standard anatomical areas (genu and splenium of the corpus callosum, posterior cingulum, superior longitudinal fasciculus) in both hemispheres.

Results: FA was smaller at the genu in patients compared to volunteers (p=0.019) and diffusion was larger (p=0.028) ADC at the right cingulum was larger in patients than in volunteers (p=0.019) as well as at the left, but not in a statistically significant manner (p=0.056).

Conclusion: Even though the number of our patients is still small, our initial results suggest that DTI can detect white matter changes and may have an important role in the diagnosis of MCI.

P1257 NEUROPSYCHOLOGICAL FACTORS OF DEMENTIA RISK IN POLISH MCI PATIENTS – A PRELIMINARY STUDY

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Background: Mild cognitive impairment (MCI) is an intermediate state between normal aging and dementia. MCI patients have higher risk of developing Alzheimer’s disease. The earliest and the most accurate diagnosis is an important factor in dementia prevention and treatment. The aim of this study was to point out the neuropsychological markers of dementia risk.

Methods: 105 persons aged 48 to 88 (mean 69.32) were diagnosed according to MCI criteria with neuropsychologically confirmed cognitive disorders. Mean MMSE score was 27.25, all subject’s CDR was 0.5. To assess episodic memory information and memory subtest from BIMC and Digit Span Forward was used, Digit Span Backward and Attention from BIMC was used as working memory measure. Semantic memory was measured by verbal fluency and naming of 12 pictures. CDR Sum of Boxes (memory, orientation, judgment, hobby, community affairs, personal care) scores were also considered in this analysis.

Results: After 3 years 23 persons (21.9%) had developed dementia (CDR=1). Baseline neuropsychological assessment revealed that the most significant difference between the groups was working and semantic memory scores (p=0.01). CDR-SB analysis showed that 4 last indicators were on favour in the non-demented group (p=0.05).

Conclusions: Episodic memory disorder is thought to be the most prevailing in baseline examination in demented patients, however in this group it was not significant. The most interesting observation made in this study was that non-cognitive domains of CDR were lower at baseline in the group that developed dementia. Further and more exact analyses are essential.

P1256 CORRELATION OF MICROALBUMINURIA WITH COGNITIVE FUNCTION IN PATIENTS WITH RECENTLY DIAGNOSED ESSENTIAL HYPERTENSION

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Background: While cardiovascular risk factors are typically associated with cerebrovascular disease, hypertension has been implicated in the development of impaired cognitive function. Microalbuminuria represents an index of diffuse endothelial dysfunction in hypertension. We hypothesize that a relationship should exist between microalbumin levels and cognitive function.

Methods: We studied 50 non-diabetic patients aged 40–80 years (mean age 61.3±8.5 years, 27 men and 23 women) with recently diagnosed stage I-II essential hypertension. We used the Mini Mental State Examination (MMSE) as a measure of global cognitive dysfunction. Microalbumin levels (MAU) were measured in all patients and volunteers at standard anatomical areas (genu and splenium of the corpus callosum, posterior cingulum, superior longitudinal fasciculus) in both hemispheres.

Results: Mean office blood pressure (BP) levels were 148/88 mmHg while ABPM levels were 140/90 mmHg. Median MMSE score was estimated as 29 (I.Q. range 27–30) while MAU levels were 10.5 mg/24h (I.Q. range 7.4–14.8). A negative correlation was found between MMSE score and MAU (r=-0.30, p=0.03). When a linear regression analysis model was applied including age, BMI, office BP, ABPM and MAU levels, age (p<0.001) and MAU levels (p=0.007) were the only independent predictors of MMSE score. Finally, a stronger negative relationship was revealed in hypertensives older than 65 years between MMSE score and MAU (r=-0.56, p=0.01).

Conclusions: We found that in early stages of essential hypertension MAU levels correlate with cognitive function. The latter supports the hypothesis of an existing relationship between hypertension and cognitive dysfunction while MAU levels may serve as an index of diffuse endothelial dysfunction, including the cerebrovascular system.

P1258 Abstract cancelled

P1259 A CASE OF WERNICKE-KORSAKOFF ENCEPHALOPATHY FOLLOWING SLEEVE GASTRECTOMY: NEUROPSYCHOLOGICAL EVOLUTION OVER A ONE YEAR PERIOD

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Wernicke-Korsakoff encephalopathy (WKE) is related to a depletion of vitamin B1 (thiamine) usually encountered in alcohol abuse. WKE is also one of the most prevalent neurological complications associated with bariatric surgery (Berger, 2004). Symptoms usually appear 8 to 15 weeks after surgery and substantial recovery generally takes place within 3 to 6 months following the initiation of treatment, but certain residual cognitive deficits may remain. However, little is known about the exact nature of these deficits, as well as their severity and clinical evolution. A 21-year-old woman developed WKE 10 weeks after undergoing a sleeve gastrectomy for treatment of obesity. On examination, she was confused and exhibited neurological signs (nystagmus, pyramidal syndrome, generalized weakness and abolition of reflexes). Magnetic resonance imaging (MRI) showed the typical marked increase signal intensity in the periaqueductal gray matter, mamilary bodies and dorsomedial thalamic nuclei observed in this pathology. She subsequently underwent three extensive neuropsychological evaluations (acute phase, 6 months and one year post-onset). The initial neuropsychological assessment revealed anterograde amnesia, temporal disorientation, tendency to confabulate, cognitive slowing, attentional and executive difficulties. A control MRI performed after 6 months of follow-up indicated a complete regression of the lesions, nevertheless, some neuropsychological performances remained impaired (moderate episodic memory improvement). The evolution of cognitive deficits in this case suggests that prognosis could be less grim than in patients exhibiting WKE related to alcoholism. Nevertheless, memory deficits with potential negative impact on social and professional outcome could persist even when the MRI is back to normal.

P1260
TO FIND OR NOT TO FIND (CATEGORICAL IMPAIRMENTS): EVIDENCE FROM DEMENTIA USING DIFFERENT SEMANTIC TASKS
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Background and objective: The study of categorical dissociations (CDs) between living (LT) and non-living (NLT) domains in Alzheimer’s disease (AD) is a matter of ongoing debate. It could provide us with a better understanding of the organization of semantic memory. CDs consist of the selective impairment of knowledge in one domain (e.g. LT) with respect to another (e.g. NLT), or vice versa. It has been proposed a relationship between the occurrence of CDs and the severity of dementia: CDs are only found in patients with higher levels of impairment. However, some controversy also exists in the way of measuring cognitive impairments (e.g. Mini-Mental State -MMSE- scores or naming ability); the goal of this study was to investigate this topic.

Methods: Observational and transversal cases-control study.

Cases: Probable AD patients (NINDS-ADRDA criteria); controls: cognitive non-impaired subjects. Both groups were evaluated with six tasks from semantic battery Nombela. By averaging patient performance in the six tasks, we calculated an individual “impairment semantic index”.

Results: 32 AD patients and 34 controls with similar demographic characteristics were included after signing of informed consent. We compared individual patient performance (case studies) for each semantic task with control group performance, using statistic procedures by Crawford and Garthwaite (2002).

Conclusion: Results suggest that CDs are relatively extended phenomena, since we found that 29% of patients showed them. We found a relationship between patient “averaged” semantic impairments and occurrence of CDs. Notably, no relationship was found between MMSE patients’ scores and occurrence of CDs.

P1261
TREATMENT WITH MEMANTINE IN HUNTINGTON’S DISEASE
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Objective: To evaluate the effect of memantine in Huntington’s disease (HD).

Material and methods: 4 patients with HD were treated in an open labelled study for 3 months with memantine in a dose of 10 mg twice a day for 88–129 days (4 males, age 42–65 years). UHDRS (motor) and a broad neuropsychological test battery with emphasis on executive measures were applied before and after treatment. FDG-PET scans were carried out before treatment was started and again before end of treatment.

Conclusion: The treatment regimen was well tolerated. UHDRS motor score improved from 28 to 18 (max. 124) in one patient while there was status quo in the three other patients. No differences on neuropsychological parameters before and after treatment were detected. PET scans showed relative-improvement in cortical metabolism compared to thalamus but no changes in striatal FDG metabolism. Quantitative data on the PET scans will be presented.

P1262
BRAIN ACTIVITIES RELATED TO MERE EXPOSURE EFFECT
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Mere exposure effect (MEE) is a phenomenon in which “the repeated exposure of a stimulus object to an individual seems to enhance his attraction to the object”. We intended to identify brain regions that are involved in MEE by using fMRI. The subject first repeatedly viewed a set of visual stimuli. Then he viewed two stimuli, one that he had previously seen and one that was novel. He made a forced choice to indicate which of these two stimuli he preferred (the preference judgment task). In a separate block of trials he again viewed sets of two stimuli, one seen previously and one novel and he made a forced choice to indicate he had seen before (the memory judgment task). This insured that a subject’s preference did not merely reflect his conscious memory of a previously-seen stimulus. Subjects preferred the previously-viewed stimulus more often than chance (57.8%, p<0.03) but they recognized previously viewed stimuli only at chance level. Paired t-test of fMRI results showed that the preference judgment task activated the right inferior frontal gyrus significantly more than the memory judgment task. We propose that this region is responsible for “the judgment to choose preferred stimuli”. Furthermore, event-related analyses of preference judgments showed that when subjects chose the previously-viewed task, the right insula showed a significantly higher activity than when they chose the novel stimulus. In contrast, when they chose the novel stimulus the right temporal pole showed statistically higher activity.
P1263
“WHAT’S THE LATEST NEWS ON TV OR PAPERS?” – DETECTION OF COGNITIVE IMPAIRMENT IN A JAPANESE COMMUNITY
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Background: Dementia is a significant public health problem that is under-recognized in primary care settings. This study examined the usefulness of 3 brief questionnaires in detecting dementia and mild cognitive impairment (MCI) by their home doctors in the Japanese community.

Methods: Consecutive outpatients of 75 Alzheimer’s disease (AD), 15 MCI and 73 normal cognitive aging controls were recruited. 3 neurologists classified into several answer types for each question according to the record on videotape.

Results: For “What’s the latest news on TV or papers?”, the correct answer was 3% in AD, 33% in MCI; “not remember” or no answer was 45% in AD, 27% in MCI; a vague or outdated answer was 13% in AD, 20% in MCI; saving appearances answer was 45% in AD, 27% in MCI, while, 99% of aging controls were classified as correct answer. Using this question, AD patients were identified from controls with 97% sensitivity and 99% specificity and MCI with 86% sensitivity and 100% specificity.

Conclusions: The examination session is a significant stressor. Resistance to stress increases during studies. Women are less resistant to stress, which causes greater frequency of anxiety and depression.

P1265
OF CLOCKS AND MIRRORS: THE BACKWARD CLOCK TEST
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Objective: To report the use of a new clock reading test using a Backward Clock (Accoutrements, Seattle, USA), the mirror image of normal analogue clock, in patients with focal and global cognitive deficits.

Methods and setting: Convenience cohort (n=17), recruited from the Cognitive Function Clinic. Patients were asked to read matched strings of times shown either backward (= Backward Clock, or normal analogue clock viewed in a mirror) or forward (= normal analogue clock, or Backward clock viewed in a mirror).

Results: Patients with dementia (6 AD, 1 FTD) failed to read backward times correctly; most errors were due to reading the long hand according to its position rather than the number to which it pointed. Patients with posterior cortical atrophy (4) could read neither forward nor backward times, indeed could not discriminate any difference between the two clocks. Patients with focal lesions, namely isolated amnesia (3; amnestic MCI, post severe hypoglycaemia) and agnosia (1; developmental prosopagnosia), made only occasional errors on backward times, like a normal aged control (1). One patient with amnesia due to a fornix lesion with addition evidence of executive dysfunction performed at the level of the demented patients.

Discussion/conclusions: The Backward Clock test may be useful in differentiating focal from global cognitive deficits, and hence in the diagnosis of dementia.

P1266
EFFECTIVENESS OF SUBSTITUTIVE HORMONOTHERAPY WITH DYFASTON IN THE MEDICAL TREATMENT OF PSYCHOVEGETATIVE DISORDERS IN FEMALE PREMENSTRUAL SYNDROME
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Aim: Starting from the notion concerning neurohormone aspects of female premenstrual syndrome pathogeny (PSP), and study of it against a background of Dyfaston medication’s influence on psycho-vegetative disorders (PVD) dynamics.

Materials and methods: Dyfaston was used together with traditional therapy PVD by PSP observed in 26 women during the study of functional state of vegetative neural system (FSVN) before and after the treatment. The medication was prescribed consistently for 10 days, one time a day, starting from the 15th day of the menstrual cycle over 3 months. The effectiveness of medication was studied according to the results of study of FSVN system by the procedure of A.M. Wein (2001) with a numerical estimation presented in numbers of the vegetative dystonia syndrome (VDS), vegetative reactivity (VR) and vegetative guarantee of functioning (VGF) and study of uneasiness in the emotional sphere according with Spilberger’s test.

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Results: Against a background of Dyfaston treatment a positive dynamics of all vegetative parameters was observed. Psychological researches according to Spilberger’s test showed decreased reaction uneasiness in the emotional sphere respectively on 35% and 42%.

Conclusions: 1. Substitutive hormone-therapy with Dyfaston allows to improve the subjective symptom data, as well as standardize objective data of PVD observed in patients with PSP, additionally to decrease uneasiness in the emotional sphere. 2. Dyfaston is an effective treatment medication for correcting PVD observed in patients with PSP.

P1267
PERINATAL, INFANCY RISK FACTORS IN CHILDHOOD SCHIZOPHRENIC PATIENTS
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Objective: To identify the perinatal and infancy experiences of the early onset in schizophrenic patients hospitalized in the child and adolescent psychiatric centre.

Material and method: In this case-control study, perinatal and infancy histories of 64 hospitalized schizophrenes (first admission) in the child and adolescent service, of the Ukrainian Research Institute Social Psychiatry and Drug Abuse (Kiev), from 1991 to 2001 were examined and compared with a control group, using interview guidelines according to Diagnostic and Statistical Manual of Mental Disorder, Fourth Edition. Data were analysed according to qualitative and quantitative methods.

Results: Patients listed in the in-patient register as having been first admitted to hospital aged 5–16 years with diagnosis of schizophrenia. This study showed early onset schizophrenia was positively associated with birth trauma, prematurity, low birth weight, birth in winter, abnormality in neurological and motor functioning, early neurological trauma, disturbed social functioning in infancy, and low IQ.

Conclusion: Some experiences (traumatic, neurological, viral infectious) in perinatal and infancy were associated with risk factors for early onset childhood schizophrenia.

P1268
THE EFFECT OF STATINS UPON MEMORY DISORDERS IN PATIENTS WITH STROKE WITH AND WITHOUT HYPERCHOLESTEROLEMIA
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Background and aims: The studies regarding this issue are not clear. Thus, we ourselves purpose to study the influence of this kind of medication upon memory problems in patients with ischemic stroke with or without hypercholesterolemia.

Method: We had under study a batch of 150 patients with ischemic stroke without hypercholesterolemia (lot A) and 150 patients with ischemic stroke with hypercholesterolemia (lot B). For both batches we performed the Rey’s memory test. In lot A, 45 patients (30%) presented memory deficit, while in lot B, we detected 90 patients (60%) with memory disorders. 45 patients out of the first batch and 90 out of the second one were given a daily dosage of 20 mg of the same type of statin, for 15 weeks, after which we put them again through Rey’s memory test.

Results: Hyper cholesterolemia has great importance in generating memory disorders in patients with ischemic stroke. The statins used by us in the study had a significant influence only on memory disorders in patients with both ischemic stroke and hyper cholesterol levels. Even more, memory disorders were much improved in those patients where the cholesterol level went lower.

Conclusions: Hyper cholesterolemia has great importance in generating memory disorders in patients with ischemic stroke. Statins have a significantly positive influence upon memory disorders only in patients with ischemic stroke and hyper cholesterol. The effect upon memory disorders in patients with ischemic stroke without hypercholesterolemia is a non-significant one.

P1269
EMPTY TURKISH SADDLE SYNDROME IN PATIENTS WITH DYSFUNCTION OF THE THYROID GLAND
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Aim: to define clinical peculiarities of neurological changes in the cases when dysfunction of thyroid gland combines with Empty Turkish Saddle Syndrome (ETSS).

Methods: MRI of the brain was performed on 51 patients with dysfunction of thyroid (26 with hypothyroidism and 25 with hyperthyroidism)

Results: ETSS was revealed in 6 patients (23.1%) with hypothyroidism and 8 with hyperthyroidism (32.0%). ETSS exposed with mild or moderate external and/or internal hydrocephaly in 50% cases of hypothyroidism and 75% cases of hyperthyroidism. Headache was an obligatory symptom in all cases and, as a rule, consisted of different types. Patients with hypothyroidism and ETSS in comparison with those who had the same dysfunction of thyroid without ETSS essentially more often suffered from headache of intracranial hypertension (33.3% and 17.6%), venous (66.7% and 22.2%) and tension headache (67.7% and 35%). Headache of intracranial hypertension (75% and 52.9%) and tension headache (62.5% and 35.3%) predominated when hyperthyroidism co-existed with ETSS. Cases of hypothyroidism and hyperthyroidism exposed with ETSS led to deeper mental deficiency. 18 patients had increased levels of thyroperoxidase antibodies and/or thyroglobulin antibodies, ETSS was found in 9 cases in this group that was equal to 50%.

Conclusion. Obtained data demonstrates that ETSS is more often met in patients with dysfunction of thyroid gland than in the general population. Combination of dysfunctions of thyroid gland and ETSS is associated with more serious neurological disturbance.

P1270
NEUROPSYCHOLOGICAL PREDICTIVE FACTORS FOR ACADEMIC SKILLS DEVELOPMENT
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Background: Early identification of specific problems in academic skills development is an important issue. Aim of the study was assessment of effects of tactile, proprioceptive and vestibular processing and intrahemispheric interaction on IQ profile and academic skills.

Methods: 113 healthy school-children of both sexes from 7 to 8 were studied. WISC-R, A. Luria’s neuropsychological battery’s

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subtests (finger pose transferring, reciprocal coordination of hands), tests for assessing balance (Romberg Test, Mann Test, standing on one foot with and without crossed hands) test for assessing tactile gnosia were used. The following academic skills were assessed: reading, writing and arithmetic. Statistical analysis was done by SPSS 15.

Results: The results were divided into two groups: well-functioning and mal-functioning, according to different indicators of tactile, proprioceptive and vestibular processing, and intrahemispheric interaction. Statistically significant differences were revealed between groups with different levels of intrahemispheric interaction in reading (mistakes [Mann-Witney U, p<0.016], time [p<0.012], comprehension [p>0.008]), verbal IQ (Mann-Witney U, p<0.037), performance IQ (p<0.002) and Full IQ (p<0.037). Regressive analysis showed predictive value of intrahemispheric interaction for reading time (p<0.002), full IQ (p<0.012) and performance IQ (p<0.014).

Conclusions: According to intrahemispheric interaction full IQ, performance IQ and reading rate can be predicted. Sharing information between hemispheres and their coordinated functioning besides higher cognitive functions (phonological awareness, visual discrimination etc.) influence acquisition of reading skill.

P1271
MODULATING THE HEMISPHERIC BALANCE IN VISUOSPATIAL ATTENTION WITH TRANSCRANIAL DIRECT CURRENT STIMULATION (tDCS): IMPLICATIONS FOR REHABILITATION AND RECOVERY OF FUNCTION AFTER STROKE
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Background: In humans, cognitive brain functions might be modulated effectively by a recently revived neuromodulatory technique: transcranial direct current stimulation (tDCS) (Paulus, Clin Neurophysiol. 2004). tDCS can be used to induce, depending on polarity, increases or decreases of cortical excitability by polarization of the underlying brain tissue. The purpose of this study was to test if tDCS (57 A/cm², 10 min) modifies the performance in a visual detection task.

Methods: In 18 healthy subjects, we applied tDCS to the left or right parietal cortex, i.e. over P3 or P4 of the International 10-20 EEG system. The direction of the current flow was varied systematically. In addition, sham stimulation was performed.

Results: As the main result, we found that anodal tDCS impaired the detection of visual stimuli in the ipsilateral hemisphere, but facilitated the recognition of contralateral stimuli. The effects were independent from the stimulation site. An opposite pattern was observed following cathodal tDCS. The improvement after cathodal tDCS was smaller in comparison to anodal tDCS.

Conclusion: Our results extend the findings of previous TMS studies. However, the data suggest that both neuromodulatory techniques (tDCS, TMS) may module brain areas to some extent differentially due to the fact that their induced after-effects on cortical excitability are probably of different physiology. In conclusion, our findings show that non-invasive tDCS applied over the parietal cortex can be used to influence the interhemispheric parietal balance. Further investigations have to prove whether tDCS can be used in this way to ameliorate deficits of visuospatial attention in neglect patients.

P1272
THREE CASES OF SUSAC SYNDROME: CLINICAL FEATURES, MRI FINDINGS AND COGNITIVE FOLLOW-UP
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Susac syndrome is a rare retinocochleocerebral microangiopathy, consisting of a clinical triad of encephalopathy, sensorineural hearing loss and branch retinal artery occlusions. Since its first description by Susac in 1979, 98 cases have been reported in various publications that have outlined some aspects of the condition: visual and auditory lesions focusing on the fluorescein angiogram and audiometry findings, global neurological picture and magnetic resonance imaging features, histopathological examination of the brain biopsies, efficacy of different therapies. In spite of these sizeable observations, certain aspects remain unclear, such the potential of cognitive recovery. This study reports three cases of Susac syndrome. Description of the clinical picture emphasizes the brain’s involvement, with a special focus on MRI findings and cognitive follow-up. Patients’ cognitive performance was evaluated on two or three occasions, with a complete neuropsychological assessment. In the acute stage, all patients presented verbal memory impairments with preservation of language and short term memory. Two of them presented dysexecutive syndrome and attentional slowing. In all cases, the cognitive recovery was slow. The last cognitive assessment showed that long term memory performance was normal. In contrast, slight but definite deficits persisted in the domains of complex attention, executive functions and behaviour. The anatomical substrate of cognitive and behavioural impairments after Susac syndrome has still to be determined. The presence of post inflammatory disseminated white matter lesions, some of them under the form of “black holes”, is an obvious candidate. However, in our opinion, brain atrophy is an important factor underlying the cognitive impairment.

P1273
LIMBIC ENCEPHALITIS WITHOUT TUMOUR
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Introduction: Limbic encephalitis is an autoimmune disorder usually leading to detecting of cancer, mostly of the lung. It mainly presents with amnesia, emotional symptoms, and seizures.

Case report: A 41-year-old woman developed global amnesia and dysarthria after returning home from a detoxification cure from cannabis. She had no further deficit, no seizures, and repeated diagnostic work-ups including repeated tumour screening (total-body-CT, total-body-PET, gynecological exam) neurological, immunological and toxicological exams were normal except for MRI and cerebral PET. DWI showed hyperintensity in the right more than the left hippocampal formation as well as the dorsal parts of the cerebellar cortex and both temporop-occipital junctions. PET showed corresponding hypermetabolism. Limbic encephalitis was diagnosed, and she was treated with intravenous immunoglobulins without success. Cortisone treatment did not change the patient’s condition either. She kept severe global amnesia, more important in the verbal than the visuospatial domain.

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Discussion: We present a case of non-paraneoplastic limbic encephalitis, showing persistent changes in DWI over time, where the more affected region seemed to be responsible for less deficit.

P1274
MIGRAINE AND TRANSIENT GLOBAL AMNESIA (TGA): TWO CASES WITH CONSIDERABLE OVERLAP
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Introduction: The etiological position of TGA is unclear, yet an association with migraine seems to be clear. TGA has typical findings in MRI, abnormalities in diffusion-weighted imaging (DWI) 48 hours after the ictus in the lateral hippocampal region.

Case reports: (1) a 51-year-old woman, suffering from simple migraine, otherwise healthy, had sudden onset amnesia in the morning with repetitive questioning, but otherwise normal behaviour. After 2 hours, amnesia resolved gradually, and was replaced by anxiety, headache, and nausea. In the evening, she had an attack of simple migraine, and slight memory trouble lasting about 30 minutes. The remainder of the examination was normal but DWI disclosed two punctiform hyperintensities at the lateral border of the left hippocampal body. (2) a 72-year-old woman, suffering from simple migraine, had sudden onset amnesia which lasted for about 6 hours, during this, she developed nausea, vomiting, anxiety, and a dull headache, which resembled her usual migraine headaches. The remainder of the examinations were normal but for DWI disclosing some punctiform hyperintensities at the lateral border of the left hippocampal body.

Discussion: Migraine is the most important risk factor for the development of TGA. In our cases, either stress induced by TGA triggered habitual migraine attack, or TGA was an aura manifestation of migraine. It remains unclear whether the described lesions represent cytotoxic ischemia, and are related to migraineous stroke.

P1275
SWEAT: A PERSPECTIVE DIAGNOSTIC MEDIUM OF PANIC DISORDER?
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Panic disorder (PD) remains a fascinating neuropsychiatric entity with unclear etiology and obscure pathophysiology. Despite its growing prevalence, a reliable laboratory marker of this paroxysmal disorder is still absent. Sweat is a neglected human secretory activity immediately on various neurovegetative challenges including psychic impulses. We hypothesized a possible dysfunction of homeostasis in the sweat in PD. 10 patients with active PD (group A), 9 patients with PD in remission (group B) and 11 age-matched control subjects (group C) participated in this study. All subjects underwent a single 8-min session in a dry-heat sauna. Sweat and venous blood were collected immediately after the end of the session. Concentrations of lactate, glucose, creatinine, sodium, potassium, chlorine, calcium and magnesium have been quantitatively estimated in both liquids and statistically compared between the three groups using ANOVA and Tukey’s HSD test. We did not find any significant difference between the three groups in any of the parameters in the blood. However, group A had significantly higher sweat levels of lactate, glucose, creatinine and magnesium than the other two groups which did not differ. Moreover, sweat concentrations of natrium, potassium and chlorine were significantly higher in group A versus group B. The sweat of patients with active PD in comparison to PD in its clinical remission exhibits distinctive changes of selected parameters after dry-heat sauna exposure. Increased concentrations of lactate, glucose and magnesium in the sweat do not contradict presumed neurotransmitter-metabolic mechanisms in PD. These findings appear to be prospective biochemical markers in PD and its course.

P1276
MEDITERRANEAN NERVE STIMULATION EVOKES PALMOMENTAL AND SUBMENTAL REFLEXES IN THE HEALTHY AND DEMENTED ELDERLY
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Background: Palmomental muscle reflex activity is considered as a primitive reflex and associated with pathological states. Submental muscle activity after median nerve stimulation has not been reported before. Reflex activation of palomental and submental muscles with the median nerve stimulation in the healthy aged and demented population has not been reported before.

Method: In this study, we recorded activity of mental, submental, masseter and perioral muscles with bipolar surface electrodes by means of sub-threshold stimulation of median and radial nerve in a population of dementia patients (n=18) and healthy aged controls (n=20).

Results: All subjects displayed submental and palomental activity approximately at same latency (range: 80–90 msec). Orbitalis oris and masseter muscle reflex responses were slightly longer in their latencies and the size of the reflex responses was smaller compared to the mental and submental EMG responses. Needle electrode recordings from 2 patients showed mental and submental activities at the same latency (range: 80–90 msec). Radial nerve stimulation at wrist evoked muscle activity with later latency and smaller size.

Conclusion: Palomental muscle reflex activity might be associated with functions like mouth-opening or swallowing rather than being a primitive reflex. These reflexes may open a venue to investigate the physiology of hand and mouth coordination.

P1277
IMPAIRED HIPPOCAMPAL NEUROGENESIS CONTRIBUTING TO COGNITIVE DYSFUNCTION INDUCED BY THIAMINE DEFICIENCY AT EARLY PRE-PATHOLOGICAL LESION STAGE
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It has not been reported whether thiamine deficiency (TD) affects hippocampal neurogenesis or not. Here, we explored the influence of TD at early pre-pathological lesion stage on hippocampal neurogenesis and the correlation between affected hippocampal neurogenesis and cognitive dysfunction. We prepared TD mouse model by feeding a thiamine-depleted diet. Learning and memory functions of TD mice were tested with Y-maze. Hippocampal neurogenesis was studied with BrdU, PCNA, and Dcx immunohistochemical staining. The results showed significant decline in learning ability and hippocampal neurogenesis simultaneously since TD9 when the model mice did not exhibit regular pathological lesion, the loss of cholinergic neurons, and abnormal long-term potentiation of hippocampal CA1. Re-administering thiamine reversed the impaired hippocampal neurogenesis and the declined learning ability induced by TD at early pre-pathological lesion stage simultaneously. The present study demonstrated that hippocampal neurogenesis was vulnerable to TD and the impaired hippocampal neurogenesis might contribute to cognitive dysfunction induced by TD at early pre-pathological lesion stage.

P1278
COGNITIVE FUNCTION ASSESSMENT IN PATIENTS WITH RECENTLY DIAGNOSED ESSENTIAL HYPERTENSION
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P1279
COGNITIVE FUNCTION AND TARGET ORGAN DAMAGE IN PATIENTS WITH RECENTLY DIAGNOSED ESSENTIAL HYPERTENSION
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P1280
TEMPORAL LOBE EPILEPSY OR CONVERSION DISORDER – A CASE REPORT
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P1281
REMINIL IN THERAPY OF COGNITIVE IMPAIRMENT
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P1282
QUALITY OF LIFE (QOL) OF UNIVERSITY STUDENTS LIVING WITH AN OLD DEMENTED RELATIVE: A PILOT STUDY IN MADRID (SPAIN)
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P1283
ROLE OF ANTIBODIES IN PHOSPHOLIPIDS IN THE DEVELOPMENT OF COGNITIVE DISORDERS
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NEURAL SUBSTRATES RELATED TO MERE EXPOSURE EFFECT
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TREATMENT RESPONSIVE EXECUTIVE AND BEHAVIORAL DYSFUNCTION ASSOCIATED WITH VITAMIN B12 DEFICIENCY

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PREVALENCE AND PHENOTYPIC DESCRIPTION OF SPG4 MUTATIONS OF HEREDITARY SPASTIC PARAPLEGIA IN ESTONIA

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Hereditary spastic paraplegia (HSP) is a clinically and genetically heterogeneous disorder, with a reported prevalence of 0.5 to 12 per 100,000. HSP is classified clinically into “pure” (pHSP) and “complex” (cHSP) forms: pHSP forms present with spasticity and motor deficit in the legs, brisk reflexes and positive Babinski’s sign, which are often accompanied by deep sensory impairment and sphincter disturbances. In the case of cHSP, a number of other neurological or extra-neurological features are associated. HSP due to the mutations in the spastin gene (SPG4) located to 2p22-p21 is the most common form of AD-HSP. The aims of this study were to evaluate the prevalence of the most frequent genotype of HSP, to assess the type of mutations in SPG4 and to describe the phenotype of SPG4 in Estonia. To detect all possible patients a simple model with multiple data sources was selected. There were 59 patients included in the study, giving a crude prevalence of 4.4 per 100,000. Eligible for further genetic evaluation were persons who signed informed consent for genetic testing. Totally 52 blood samples were collected. Mutation was discovered as follows: exons from SPG4 with adjacent splice sites were amplified using PCR, mismatches were analyzed first by DHPLC and then all exons with different elution patterns were sequenced using BigDye Terminator kit on ABI 377 sequencer. Totally 15 persons proved to be SPG4-positive. 3 persons had clinically cHSP, the other 12 – pHSP form. The exact types of mutations and genotype-phenotype correlations are discussed within this study.

ETIOLOGICAL AND CLINICAL ANALYSIS OF CHRONIC ISOLATED DIZZY PATIENTS

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Background and aims: Dizziness or vertigo is one of the common complaints in patients who visit the neurological clinics. We defined the chronic isolated dizziness as dizzy symptoms lasting over 6 months without focal neurological signs. We aimed to analyse the aetiologies and clinical features of the patients with chronic isolated dizziness.

Methods: 542 dizzy patients visited the neurological department of Chonnam National University Hospital from January 2006 to December 2006. 120 (22%) patients of them were compatible with chronic isolated dizziness. All subjected patients were examined using video-nystagmography (VNG), vestibular evoked myogenic potential (VEMP), brain MRI and brain auditory evoked potential (BAEP). Tilt test or transcranial Doppler (TCD) were taken if needed. The etiology and symptoms of each patient’s demographic and risk factors were analysed.

Results: 58 patients (48%) have peripheral vestibular diseases (43 – vestibular dysfunction, 11 – benign paroxysmal positional vertigo, 4 – Ménière’s disease). Migrainous vertigo was 5 (4%), spinoarebellar ataxia 2 (2%), vasovagal syncope 2 (2%) and stroke/vertebrobasilar insufficiency 3 (3%). Other patients (42%) had no definite abnormality on evaluations, and they could be diagnosed with the psychogenic dizziness containing panic disorder and phobic postural vertigo. There were no significant differences in demographic and risk factors between organic and psychogenic dizziness except age (p=0.046).

Conclusions: Peripheral vestibular diseases and psychogenic dizziness are common aetiologies of chronic isolated dizziness. The proportion of cerebrovascular events in patients presenting with chronic isolated dizziness is very low.


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Background and objectives: Little is known about the frequency, relationship and predictors of various long-term (5–6 year) neuropsychological impairments and other functional outcomes. One of the primary aims of the Auckland Stroke Outcomes (ASTRO) study is to determine if neuropsychological impairment in long-term stroke survivors of IS and ICH is independently associated with the disability, handicap, quality of life, health services usage and economic cost of stroke.

Methods: Prospective longitudinal study of long-term (5 to 6-year) stroke outcomes (neuropsychological impairment, impairment, disability, handicap, HRQoL, and survival). The study will source its participants and utilise existing baseline; 6-month and 1-year follow-up data from the population-based stroke incidence study carried out in Auckland in 2002–2003 (ARCOS III). Standard and well-validated measures of neuropsychological impairment (a battery of tests for evaluation of memory, language, visuo-perceptual and visual reasoning, executive functioning, response and processing speed, mood and emotion), disability (the MRS), handicap (the LHS) and HRQoL (SF-36). Information on utilisation of various health care and community resources by stroke survivors and their caregivers will also be collected. Stroke burden in informal caregivers will be assessed by the SF-36 questionnaire and Bakas Caregiving Outcomes Scale. Death outcome data in stroke patients will also be collected.

Significance: If our hypothesis of the significance of neuropsychological impairments on other functional outcomes after stroke
is substantiated, this will provide a new direction for rehabilitation efforts in stroke which have traditionally focused solely on motor functioning (particularly walking), language and activities of daily living.

P1295
ATHEROSCLEROTIC STENOSIS OF NECK AND CEREBRAL VESSELS AND IT’S ASSOCIATION WITH SLEEP POSTURE OR POSITION
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We investigated here the link between sleep position and atherosclerotic stenosis. 60 consecutive subjects with ischemic strokes, TIA or without symptoms were investigated. Subjects qualified if there was significant unilateral atherosclerotic stenosis (30% or more) in the neck vessels or circle of Willis. All patients had full blood workup, 3D ultrasound, and MRI/MRA of the vessels. Sleep posture was established by unbiased interviews. Sleep video EEG recordings were done to support the protocol reliability. Sleep posture was categorized as follows: a) Right Sleepers (RS) >70% sleep time on the right b) Left sleepers (LS) c) Neutral Sleepers (NS) or supine with face up >70% of sleep time d) Turning sleepers (TS) or <50% in any one position. Of the 28 right sided stenosis at any level 24 were RS and 4 LS (p=0.0015). Of the 20 left sided stenosis 17 were LS and 3 were RS (p=0.009). All 6 of the basilar stenosis were NS (p=0.03). 6 stenoses at varying sites were associated with TS. There is a clear association between side of stenosis and fixed or habitual sleep posture. Intracranial stenosis was more common in our Asian patients occurring mainly at the anterior clinoid process and MCA territory. This may be related to turbulent flow during habitual or non-turning sleep. A similar pathogenesis may occur in patients with narrow jaws at the carotid bulb level for those with carotid stenosis and at the clivus for basilar stenosis. Frequent turning appears to have a beneficial effect.

P1296
DISCHARGE DIAGNOSES FROM ELECTRONIC DATABASES ARE INSUFFICIENT FOR EPIDEMIOLOGICAL RESEARCH
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Objective: Is the use of electronic searches of discharge diagnosis from hospital databases sufficient for epidemiological research of traumatic spinal cord injury (SCI)?
Methods: We performed an electronic search of specified discharge diagnoses from hospital databases using ICD-8, ICD-9 and ICD-10 coding systems, followed by personal ascertainment of all identified patient records. Previously we had identified all SCI patients admitted to the Department of Neurology during 1952–2001 from old archives. We compared the data from the two sources to identify any missing records from the electronic search.
Results: 1952–2001 from old archives. We compared the data from the two sources to identify any missing records from the electronic search.

P1297
SEXUAL DYSFUNCTION IN MULTIPLE SCLEROSIS IS RELATED TO QUALITY OF LIFE: A 3-YEAR FOLLOW-UP STUDY IN BELGRADE (SERBIA)
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Background and aims: Sexual dysfunction (SD) is a very frequent but often overlooked symptom in multiple sclerosis (MS). The aims of this study were to determine the frequency of SD in a Serbian sample of MS patients, and to detect the changes in SD after the 3 years of follow-up.
Methods: We performed a panel study of 109 patients who fulfilled the following inclusion criteria: MS (McDonald’s criteria), age 18–60 years, EDSS<8, and written informed consent. Exclusion criteria were: exacerbation of the disease in the last month, any pre-existing major chronic illness and psychiatric disorder, and no sexual experience in life. The sexual disturbances of the patients were quantified by Szasz sexual functioning scale. The quality of life was measured by questionnaire MSQoL-54. Spearman rank correlation coefficients were used to examine the relationship between SD and selected variables. The changes in presents and severity of SD after the 3 years of follow-up were evaluated by Wilcoxon rank test.
Results: At the beginning of the study, the proportion of patients with sexual disturbances was 66.2%. Sexual dysfunction directly correlated with age (p=0.019), unemployment status (p=0.028), disability (p=0.001), primary-progressive course of MS (p=0.001) and with impairment in quality of life regarding physical (p=0.001) and mental (p=0.001) health. After the period of 3 years the significant deterioration in symptoms of SD was observed (z=–4.609, p=0.001).
Conclusions: Our results have shown that SD is common in MS patients and one of the major causes of distress and impairment in their quality of life.

P1298
EXTREMELY LONG EPISODES OF SOMNOLENCE IN TWO CASES OF KLEINE-LEVIN SYNDROME
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We have clinically investigated 14 cases with Kleine-Levin syndrome (KLS), a disorder with periodic hypersomnia and associated behavioural and cognitive disturbances. In a recent review article of 186 cases the mean duration of the episodes was 12±9 days (2.5–80). Only one patient exhibited an extremely long episode (80 days), 3 patients had had episodes lasting 35–49 days. In our 9 male and 5 female patients, the mean age is 28 years (13–50). In two patients the symptoms have remitted but the rest have regular or irregular recurrences.
Results: In our material the mean duration was 10 days. Two patients have had extremely long episodes: one young boy with
onset of KLS at ten years of age had episodes lasting 2–3 weeks until 2005 when he was struck by hypersomnia, depression and cognitive disturbance and was in bed for 57 days. The history reveals some muscular weakness. Another patient, a man 50 years of age with dystrophia myotonica type 1, developed his first episode of Kleine-Levin syndrome at the age of 16 with weeklong hypersomnic episodes. These turned into prolonged periods lasting about three months, a transformation that occurred two years ago. Interestingly both these patients have accompanying symptoms in terms of sweating and muscular weakness.

**Discussion and conclusion:** KLS is a rare disease of unknown cause. The appearance of muscular disturbance in two cases with extremely long episodes is of interest and will be the focus of further investigations.

**P1299**

**THE EFFICACY OF ROPINIROLE ON THE SEVERITY OF RESTLESS LEGS SYNDROME IN DIABETIC PATIENTS WITH PERIPHERAL POLYNEUROPATHY**

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**Background:** Dopamine agonist, Ropinirole is known as the effective treatments of Restless legs syndrome (RLS). However, there have been no systematic investigations about the effect of ropinirole on RLS symptoms in patients with diabetics in Korea.

**Methods:** Fifteen diabetic patients (7 male, mean age 52.3±12.1 years), who were diagnosed as secondary RLS were enrolled. They scored the International Restless Legs Scale (IRLS) and nerve conduction study (NCS) before and after ropinirole treatment. Patients received 2–4 weeks of ropinirole and then scored the IRLS again and assessed the adverse effects of medication.

**Results:** Mean score of IRLS was 26.8±5.6 (range 17–37), which suggested the moderate to severe RLS. Mean duration of diabetes was 9.8±7.4 years (range 3–45) and mean blood glucose was 189.2±56.34 g/dl (range 150–280). Pre-ropinirole IRLS score showed a positive correlation with terminal latency of tibial and peroneal nerves (r=0.657, p=0.031) and a negative correlation with sensory MEP amplitude of sural nerve (r=–0.761, p=0.025). Mean dose of ropinirole was 0.90±0.56 mg/day (range 0.5–2.0) and mean duration of treatment was 40.6±30.9 days (range 30–90). Mean IRLS score was significantly reduced from 24.1 to 12.1 after ropinirole administration (p=0.035). After ropinirole treatment, three patients had more than 50% of reduction in IRLS score and six patients showed slight improvement of RLS symptom.

**Conclusions:** Ropinirole is effective and well tolerated in diabetic patients with RLS. This is the first study to evaluate the efficacy of ropinirole on the severity of RLS in diabetic patients with peripheral polyneuropathy in Korea.

**P1300**

**PERIODIC ALTERNATING NYSTAGMUS IN ISOLATED NODULAR INFARCTION**

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Periodic alternating nystagmus (PAN) is characterized by periodic reversal of horizontal jerky nystagmus with a null period of several seconds. Damage to the uvulonodulus or to their connections with the brainstem vestibular nuclei has been suggested as a mechanism of PAN. However, PAN has rarely been reported in circumscribed cerebellar lesion, and isolated nodular infarction is an unrecognized cause of acquired PAN. We report on a patient with isolated nodular infarction, who developed PAN without fixation in association with perverted head-shaking nystagmus and loss of tilt suppression of the post-rotatory nystagmus. This is the first report of PAN in circumscribed cerebellar infarction. This finding provides further evidence that PAN occur due to dysfunction of cerebellar nodulus.

**P1301**

**PAROXYSMAL OCULAR TILT REACTION DUE TO MESODIENCEPHALIC LESIONS**

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Mesodiencephalic lesions usually produce a tonic contralesional ocular tilt reaction by involving either the riMLF or INC. Lesions of the INC produce an ipsilesional torsional nystagmus and lesions of the riMLF cause a contralesional torsional nystagmus. Here, we describe four patients with paroxysmal ipsiversive OTR concurrently with contralesional or ipsilesional torsional nystagmus. Patients are also associated with vertical gaze palsy, saccadic slowing and decreased amplitudes of unilateral torsional nystagmus. These findings may be explained by paroxysmal irritation of the ipsilesional interstitial nucleus of Cajal and/or rostral interstitial nucleus of the medial longitudinal fasciculus. In this paper, we are attempt to differentiate the effects of INC abnormality and riMLF as a cause of paroxysmal ocular tilt reaction from mesencephalic lesions on different oculomotor parameters under clinical observations.

**P1302**

**ACCURACY OF THE BEDSIDE HEAD-IMPULSE TEST IN DETECTING VESTIBULAR HYPOFUNCTION**

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**Objective:** To determine the accuracy of the bedside head impulse test (bHIT) by direct comparison with results from the quantitative head impulse test (qHIT) in the same subjects and to investigate whether bHIT sensitivity and specificity changes with neurootological training. Methods: Video-clips of horizontal bHIT to both sides were produced in patients with unilateral and bilateral...
peripheral vestibular deficits (VD; n=15) and healthy subjects (n=9). For qHIT, eye and head movements were recorded with scleral search coils on the eye and forehead. Clinicians (neurologists or otolaryngologists) with at least 6 months of neuro- otological training (“experts”: n=12) or without this training (“non-experts”: n=45) assessed video-clips for ocular motor signs of VD on either side or for normal vestibular function.

Results: On average, bHIT sensitivity was significantly (t-test: p<0.05) lower for experts than non-experts (63% vs. 72%), while bHIT specificity was significantly higher for experts than non-experts (78% vs. 64%). This outcome was a consequence of the experts’ tendency to accept bHIT with corresponding borderline qHIT values as still being normal. Fitted curves revealed that at the lower normal limit of qHIT, 20% of bHIT were rated as deficient by the experts and 37% by the non-experts.

Conclusions: When qHIT is used as reference, bHIT sensitivity is adequate and therefore clinically useful in the hands of both neuro- otological experts and non-experts. We advise to perform search-coil head impulse testing or high speed video methods, when bHIT is not conclusive.

P1303
THE 3-DIMENSIONAL OCULOMOTOR FASCICULAR ARRANGEMENT BASED ON MRI ANALYSIS OF ISOLATED OCULOMOTOR NERVE PALSY
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Background and aims: The rostro-caudal topography of oculo- motor fascicles is well established. There are, however, some con- troversies whether medio-lateral topography also exists. The object of this study is to evaluate the possibility of MRI analysis of ocu- lomotor fascicular arrangement with coordinate system in isolated oculomotor nerve palsies.

Methods: We retrospectively reviewed the clinical records and MRI of the 8 patients showing isolated oculomotor nerve palsy due to small midbrain infarction. Brain MRI was performed using a 1.5-T magnet with 2 mm thickness and 0.1 mm slice interval. The anterior-posterior axis (X) was defined as the midline crossing the centre of the cerebral aqueduct and the medio-lateral axis (Y) as the line crossing the same point. For rostro-caudal measurement, the intercommisural line was used as base line of the Z axis. The range of lesion was determined by measuring actual distance of the margins in millimetres from each axis.

Results: The mean values±SD and range of the X, Y and Z of the lesions are as follows: X=7.56±4.34, 1<X<15; Y=3.43±1.37, 0<Y<6; Z=6.51±3.91, 0<Z<12.5.

Conclusions: The distribution of all the MRI lesions was 0.

P1304
BOTULINUM TOXIN A IN TREATMENT OF SIXTH NERVE PALSY
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Objectives: Diplopia induced from acute sixth cranial nerve palsy (abducens) can be debilitating and impair everyday activity of patients. We aimed to know whether it is possible to hasten its recovery by use of botulinum toxin A in medial rectus muscle.

Material and methods: From 28 patients (20 males and 8 females) with acute sixth nerve palsy of less than 3 months dura- ation, in 14 patients (cases) we injected 3.75 IU botulinum toxin A (DYSPORI) in ipsilateral medial rectus muscle.

Results: The time for recovery in treatment group was 12.5±6.8 days, versus 63.5±26.4 days in 14 control patients. The difference was statistically significant (p=0.001). Albeit after 4 months of follow up, all patients but one in control group recovered completely.

Conclusion: Treatment with botulinum toxin A in diplopia of acute sixth nerve palsy, hastens recovery time effectively.

P1305
ANTIBODIES TO NEOUROFILAMENT SUBUNIT IN OBSTRICTIVE SLEEP APNEA
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Background and aims: Obstructive sleep apnoea (OSA) is char- acterized by episodes of obstruction in the upper airways during sleep leading to apnoeas or hypopnoeas and arousals. Sleep apnoea is a risk factor for arteriosclerosis, stroke and hypertension. Elevated level of antibodies to light and medium neurofilament subunit (anti-NFL and anti-NFM) are considered as a marker of axonal loss in MS. We were interested in anti-NFL and anti-NFM in OSA because of an unresolved hypothesis of neuron damage in OSA.

Methods: 25 patients with normal neurological status suffering from OSA underwent limited polygraphy (respiratory sounds, nasal airflow, thoracic and abdominal respiratory movements, heart rate, o2xyhaemoglobin saturation, and body position). The mean apnoea/hypopnoea index was 18.0 (SD 14.8). Cubital vein blood samples were collected in the early morning between 6:00 and 7:00. Anti-NFL IgG and anti-NFM IgG antibodies were analysed by an enzyme-linked immunosorbent assay (ELISA) and the results were expressed in arbitrary units (AU). The results were compared with those of normal age matched healthy subjects (Kolmogorov-Smirnov test).

Results: The mean anti-NFL IgG and anti-NFM IgG were 8.8 (10.4) AU and 14.0 (33.0) AU in OSA and 25.2 (28.1) AU and 12.6 (9.0) AU in controls. The difference was significant in anti-NFL IgG levels (p=0.003). No correlation with OSA intensity was found.

Conclusions: Anti-NFL is lower in subjects suffering form OSA. The study was supported by Czech Ministry of Education grant VZ 002160816

P1306
OPTIC NEUROPATHIES IN SOUTH MOROCCO
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Background and aims: Optic neuropathies (ON) represent fre- quent causes of visual loss in young adults, caused by optic nerve involvement. Multiple sclerosis is the most common aetiology. The aim of our study is to analyze clinical, Para clinical, etiologi- cal, therapeutic and evolutionary aspects of ON in South Morocco and to underline some particular etiologic aspects.

Patients and methods: Authors realized a retrospective study of 73 ON cases, during 7 years (2000 to 2006). All diagnoses evoked by clinically, were confirmed on the basis of ophthalmological and electrophysiological findings.

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Results: The mean age was 38 years, with a sex-ratio male:female of 0.82. Ophthalmologic examination realized in all patients showed visual field loss and optic disc abnormalities in 35% of cases. Visual evoked potential found demyelization in 74% of cases. Multiple sclerosis was the most common aetiology (66% of cases), syphilis 11%, diabetes 4.1%, Leber hereditary optic neuropathy (2 cases), 2 cases of Sjögren’s syndrome, B12 vitamin deficiency (1 case), neuro Behçet (1 case), and a toxic ON (1 case). Aetiology was undetermined in 5 cases (7.46%). 90% of our patients had a significant improvement under treatment (essentially intravenous pulsed methylprednisolone).

Conclusion: Neuro-ophthalmological specialized centres have to be created in south Morocco, for a good management of ON, also a greater interest must be given to prevent some rare causes like syphilis which still constitutes the second cause in our context, and our practitioners must focus on an early diagnosis and treatment of ON to avoid ophthalmic sequels.

P1307
SLEEP DISORDERED BREATHING IN PATIENTS WITH STROKE: A STUDY OF 30 PATIENTS
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Structure and format. Study of population. Background and aims: Several publications suggest that sleep disordered breathing (SBD) is related to cerebrovascular disease, and could modify stroke patient outcome. The aim of the present study was to evaluate the frequency and influence on clinical outcome of SBDs in a group of patients with a first onset of acute stroke.

Method: We studied 30 non comatose subjects with a first acute stroke. History of hypertension, coronary heart disease, respiratory and oro-pharyngeal diseases were obtained by using a standard questionnaire. Stroke severity was estimated using the NIH Stroke Scale; using cerebral computed tomographic imaging its location was identified. An overnight polysomnographic comprehensive study which records position, respiratory parameters, heart rate and oxygen saturation was performed, on average 6 days, post stroke onset. Clinical outcome after 6 months was evaluated performing neurological examination and calculation of Barthel Index.

Results: The mean age was 71.3. Prior to the stroke, 57% snored or presented repetitive sleep apnoea (OSA). Polysomnography revealed 73% of patients with an apnoea-hypopnea index (AHI) >10 events/hour, in particular 34% of them presented AHI >30/h. Subjects with severe OSA presented prolonged hospitalization and worse scores on the clinical outcome scales.

Conclusions: The prevalence of sleep-disordered breathing was high in patients with acute ischemic stroke. Most patients showed a history of snoring or sleep apnoea, in accordance to hypothesis that SBD could precede stroke as an independent risk-factor for cerebrovascular diseases. Clinical outcome was less favourable in patients with severe OSA.

P1308
ORBITAL MYOSITIS TOGETHER WITH SPHENOIDAL SINUSITIS
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Orbital myositis (OM) is a rare condition that results in inflammation of extraocular muscles. Although often idiopathic in origin, OM has been associated with various non-infectious diseases. An 11 years old girl was admitted to our clinic because of irritating orbital pain and headache. This report describes case with orbital myositis together with sphenoidal sinusitis shown on cranial MRI. It has a rapid resolution after antibiotic and steroid treatment. Previous studies on this clinical entity were also reviewed.

P1309
UNEXPLAINED MEDICAL SYMPTOMS IN A NEUROLOGY SETTING
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Background and aims: The aim of our study was to determine pseudoneuropsychiatric symptoms (PNS) and related mental disorders among patients admitted to the neurological clinic.

Methods: All cases of psychiatric disorders as a main discharge diagnosis, made on the basis of neuropsychiatric interview after exclusion of neurological disease, have been retrospectively reviewed. Primarily, all diagnoses were made according to the World Health Organization’s International Classification of Diseases, 10th revision (ICD-10) criteria.

Results: Among 623 patients, hospitalized to the Institute of Neurology between 2000 and 2001, 31 with functional neurological symptoms received a discharge psychiatric diagnosis. Prevalence of somatoform disorders was 3.69%, whereas depression and anxiety were less frequent (each 0.64%). Conversion disorder accounted for 69.6% and somatisation disorder – for 13% of patients with somatoform disorders diagnoses. Mean age in somatoform group was 27.8 (±10.1) and female/male ratio was 1.55. Patients in depression and anxiety groups were older (mean age –38.7 (±14.1) and 33.5 (±8) respectively) and no female predominance was observed. Headache, loss of consciousness and convulsions were the most commonly reported symptoms by patients in the PNS group.

Conclusions: Results show that pseudoneuropsychiatric symptoms appear to be a good marker of somatoform disorders. We suggest that early detection of PNS would provide a correct management of patients.

P1310
THE PREVALENCE OF PARKINSON’S DISEASE IN THE ARAB POPULATION OF ARA VALLEY, ISRAEL
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Background: Studies done in several Arab countries reported on a relatively low prevalence of Parkinson’s disease (PD).

The Aim: To study the prevalence of PD in the Arab population of Ara Valley (Israel) consisting of 113,322 residents. 3.4% were aged 76–95 years, 3.53% 66–75 years, 4.74% 56–65 years, 7.14% 46–55 years, 13.13% 36–45 years.

Methods: The study was done in two steps: Step I: We used drug tracer methodology and collected data on people using antiPD drugs from the computer database of the Clalit Health Services pharmacy in this region. Step II: The neurologist in this region (R.M) asked the practitioners about the indications for the antiPD prescriptions and later on, he examined all the patients personally.

Results: 33 patients were excluded from the study and only 49 were diagnosed as PD patients (a crude prevalence of 43.24/100,000). In males, the prevalence was 46.49/100,000 and in
females 39/74/100,000 (ratio 1.17). 69% of the PD males were heavy smokers and none of the females. 59% of the PD males worked in the agriculture.

**Conclusions:** Like in the other studies published in the English literature, a low prevalence of PD was found in this Arab population.

**P1311**
**INSOMNIA AND RESTLESS LEGS SYNDROME SCALE IN PATIENTS ON PERMANENT HAEMODIALYSIS**
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**Background and aims:** To evaluate insomnia and RLS in patients on permanent haemodialysis and investigate possible association between them, supplementing an extended multi-centric cross-sectional study in six haemodialysis units (Athens, Alexandroupolis, Heraklion, Patra, Rhodes and Tripolis) in Greece.

**Methods:** A sample of 280 patients has been studied during the last 3 years, according to the criteria of the International RLS Study Group (RLS rating scale for severity) and Athens Insomnia Scale (AIS). The statistical analysis is based on z-criterion.

**Results:** 22.1±4.8% (p=0.05) of the patients is positive for RLS, with mean RLS value 20.4±1.8 (p=0.05), which is considered moderate according to the 40 point scale. Insomnia affects significantly patients with RLS (89% vs. 64%, p=0.01 for patients with and without RLS, respectively), while mean AIS score is 10.6±1.6 vs. 7.0±0.9 (p=0.05) for patients with and without RLS, respectively; this difference has also arisen statistically significant (p=0.01). Both groups of patients (with and without RLS) are positive for insomnia, since their mean AIS scores are both >6. It must be noted that night-time insomnia of RLS patients is characterized by delayed sleep onset and night-time waking and furthermore there is a significantly higher risk of insomnia in patients with >15 months on dialysis.

**Conclusions:** RLS of moderate severity is frequently met in patients on chronic haemodialysis, who are generally positive for insomnia. However, RLS significantly affects insomnia and especially in case of longer time on dialysis.

**P1312**
**SUDDEN DEAFNESS AND VERTIGO IN ANTERIOR CEREBELLAR ARTERY INFARCTION – A CASE REPORT**
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**Objectives:** Acute ischemic stroke in the distribution of the anterior inferior cerebellar artery (AICA), is known to be associated with vertigo, nystagmus, hearing loss, facial weakness, ataxia, hypalgesia and dystarthis. In this study we present a patient with sudden hearing loss and vertigo only, due to acute cerebellar infarct.

**Case report:** Our patient, a 65-year-old man presented to our hospital because of vertigo, left sided hearing loss and tinnitus. Pure tone audiometry, showed severe sensorineural hearing loss on the left. Computed tomography of the brain 40 hours from the onset, was without pathological findings. The rest neurological examination was negative for central nervous system (CNS) disorder and the patient was admitted with the possible diagnosis of Meniere’s disease. Next day, a new neurological examination revealed gaze evoked bidirectional horizontal nystagmus, left limbs dysmetria and gait ataxia. Magnetic resonance imaging revealed a hypertensive lesion in the left cerebellar peduncle of acute cerebellar infarct.

**Discussion:** Inner ear is supplied by the internal auditory artery (IAA) which usually derives from AICA. Thus, clinical presentation of the syndrome associated with AICA occlusion may include sensorineural hearing loss. Meniere’s disease is characterized by recurrent episodes of vertigo or dizziness, fluctuating and low-frequency hearing loss. Our patient presented the symptoms of Meniere’s disease. Later, symptoms indicating lesion of the CNS were added. In conclusion, because the clinical presentation of AICA infarction may mimic other vestibular disorders such as vestibular neuritis or Meniere’s disease, a neurological examination is essential focusing on additional brainstem signs.

**P1313**
**PREVALENCE OF TRANSIENT GLOBAL AMNESIA IN A MEXICAN POPULATION AND REVIEW OF TRIGGERING FACTORS**
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**Objective:** Compare prevalence, triggering factors of TGA in a Mexican population from global.

**Background:** TGA, is relatively common on clinical practice: annual global incidence of 3.5, 10/100,000/year, reaching 23.5/100,000/year in older patients. Despite several hypotheses about pathogenesis (emotional stress, hypoxicischaemic, venous jugular congestion) there is no consensus about the cause.

**Methods:** Analytic, epidemiologic, retrospective study, reviewing files of patients admitted to Neurology from ER during 6 years. 2134 patients, 780 (36%) with TIA, 39 (1.9%) TGA. Diagnostic criteria: A) >30 years, B) Acute onset of retrograde amnesia, C) Intact consciousness, D) No history for head trauma, E) Duration 1–24 hours, F) No neurological symptoms.

**Results:** From 39 patients:
* 18 had comorbidities. Hypertension was followed by Diabetes.
* 32 had triggering factors, emotional stress is the most frequent (82%)
* Studies (MRI, Doppler) practiced in 28 patients, positive results in 6. MRI result: multiple vascular lesions. Doppler results: carotid stenosis, no ulcerated plaques.

**Conclusions:** We differ from universal literature:
A) There are reports of an important association between TGA and ischemia. In our population, 82% had stress as the principal evidence.
B) Comorbidities were found in 46%, much less association than universal literature (in some series superior to 70%). We DO NOT consider the event as secondary to comorbidities.
C) Our population exhibits few or no positive results on imaging studies (21%), and we DO NOT think they explain the event.
P1314
ACUTE OCCLUSION OF CENTRAL RETINAL ARTERY OR VEIN, TREATED SUCCESSFULLY WITH SUPER SELECTIVE INTRA ARTERIAL THROMBOLYSIS
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Introduction: The treatment of the acute occlusion of the central retinal artery or vein remains controversial. We propose a new type of management with intra-arterial thrombolysis.

Material and methods: From April 2001 until May 2004 we studied 7 patients (5 males and 2 females) with age ranged from 27 to 78 years old, with an average age of 52.1 yrs. All patients presented with acute partial or complete loss of vision in one eye. The lapse between the acute ischemic event and the intra-arterial thrombolysis varied from 12 to 96 hours. All patients were evaluated by 2 experienced ophthalmologists and the diagnosis was confirmed with retinal angiography. Tirofiban or rt-PA were utilized as thrombolytics and citicoline as neuroprotector.

Results: 2 of 7 patients developed acute amaurosis. 3 patients had visual acuity of 20/400 and 2 had 20/200 on the affected eye. From the 7 patients, 6 had acute occlusion of the central retinal vein and 1 had acute occlusion of the central retinal artery. 2 patients were treated with r-IPA and 5 received Tirofiban as thrombolytic agents and all patients received neuroprotection with citicoline, magnesium sulphate and Nimodipine intra arterially. 4 patients recovered their vision in 100%, 2 had partial recovery of their vision and 1 patient did not show significant improvement, and this was the case that the intra-arterial thrombolysis was performed later (more than 3 days) No complications were observed from the procedure. This is the first report in Mexico of this type of treatment.

P1315
UNUSUAL ETIOLOGY OF RECURRENT REFRACTORY PAROXYSMAL VERTIGO. EXPERIENCE WITH 15 CASES
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Introduction: The purpose of this paper is to present an unusual etiology of recurrent and sometimes refractory type of paroxysmal vertigo, which has not been reported previously.

Material and methods: From March 2004 to December 2005, we collected 15 patients with recurrent, refractory paroxysmal vertigo. There were 7 males and 8 females with ages ranging from 18 to 80 years-old with a medium of 28.7 yrs. All patients showed thrombosis of intracranial venous sinuses.

Results: All patients showed paroxysmal vertigo refractory to conventional treatments. Only pts #7 and #11 showed alterations in the prothrombotic factors (Decreased Protein “C” and protein “S”). MRI with MRA (venous phase) were performed in all patients and in all, venous thrombosis was demonstrated. All patients were treated with antiaggregates. Superselective thrombolysis with Tirofiban or rt-IPA was used in 3 patients an endovascular protesis (STENT) in the affected vein was applied. All patients responded satisfactorily with this type of treatment and the VERTIGO disappeared.

Discussion: The correction of the obstructed venous outflow from the inner ear, relieved the intraendolymphatic pressure with the clearing of VERTIGO.

P1316
ATYPICAL PRESENTATION OF LEBER’S HEREDITARY OPTIC NEUROPATHY
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Leber’s hereditary optic neuropathy (LHON) is a rare maternally transmitted mitochondrial disease, resulting from missense mutations in mtDNA, encoding for the mitochondrial oxidative chain. We present the case of a 33-year-old woman with an insidious picture of visual difficulties, progressing slowly over a 2 year period and more recently accompanied by gait unsteadiness without vertigo. She presented bilateral optic paleness, tunnel narrowing of the visual fields without central scotomas, bilateral finger-to-nose dysmetry and slight ataxic gait unsteadiness. Her brain MRI showed mild global encephalic atrophy and her CSF had otherwise normal opening-pressure and was negative for IgG oligoclonal bands. The ophthalmologic examination revealed bilateral 10/10 central vision and normal ocular tension, although campimetry showed severe narrowing of the visual fields and the evoked potentials determined an important P100 delay. Although the clinical presentation was rather atypical for Leber’s, LHON was ultimately diagnosed after mtDNA focused-sequenciation detected a T4216C mutation. Previously described cases of indolent presentation, lack of family history or bilateral optic atrophy at the time of presentation can be found in LHON-related literature. A relevant number of cases can present with atypical visual field defects, such as bitemporal hemianopsia / ‘tunnel vision’. Isolated reports of associated cerebellar atrophy and ataxia can also be found. The T4216C mutation, encoding for ND1-NADH, is described as a secondary LHON mutation, pathogenically less severe and epidemiologically uncommon, frequently found in asymptomatic individuals. LHON should, hence, be considered as a possibility in all unexplained or atypical cases of optic neuropathy.

P1317
BOTULINUM TOXIN TREATMENT IN CERVICAL DIZZINESS
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Object: The diagnosis of cervical dizziness (CD) is characterized by dizziness and dysequilibrium associated with neck pain in patients with cervical pathologies. The aim of this study was to evaluate the effectiveness of botulinum toxin A (BTX-A) in the treatment of patients with CD.

Methods: Twelve patients with CD were enrolled in the present study. The dosing was individualized in order to obtain the optimum therapeutic effect in each patient. The patients were asked to give a percentage of improvement in the intensity of the dizziness during the follow-up examination.

Results: The average age of the patients was 54.8±6.3 years, and the mean duration of CD was 2.2±0.5 years (range, 1 month–6 years). A mean dose of 150±50 units of Dysport/session/person was injected into the cervical muscles and shoulder muscles depending on the location of the tender points. The mean number of sessions was 3 (range, 2–6 sessions). Ten out of the twelve patients showed moderate to marked improvement in their dizzi-
ness. Some patients reported a total disappearance of all other associated symptoms (headache, nausea, etc). Three patients complained of local pain at the injection sites, lasting as long as 12 days, and two patients complained of transient neck weakness.

**Conclusion:** BTX-A has been proven to be a safe and effective treatment for CD. The results of the present study suggest that BTX-A could be used as a potential therapeutic tool for the treatment of CD.

### P1318

**CLINICAL PROFILE OF EPILEPSY IN CHILDREN: A JORDANIAN EXPERIENCE**

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**Objectives:** To study the clinical characteristics, demographic, seizure classification, presumptive etiology, investigative policy, treatment and socioanthropological aspects of epilepsy in Jordanian children.

**Methods:** In a prospective multicentre hospital-based study, 381 children with a diagnosis of epilepsy were studied. There was no standard treatment protocol. We develop a data sheet that includes information on, Age, age at first seizure, sex, type of seizures, idiopathic or symptomatic, triggering factors possible etiology of epilepsy, stigmatization, associated complaints, investigations performed, compliance, duration of therapy and relapses, outcome.

**Results:** The age distribution was between 4–252 weeks. Family history of epilepsy was positive in 75.3% with 61% being first-degree relatives. The frequency of seizures before treatment was daily in 56.4% followed by monthly in 27.3%. The type of epilepsy was generalized in 79.5 with 5.5% had specific epileptic syndromes. Of the triggering factors for seizures, 81.1% had no such factors, while the remaining associated with triggered factor with fever. Electroencephalogram (EEG) was reported to be abnormal in 83%. Computerized axial tomography (CT) of the brain performed to 73.8% with 24.4% reported abnormal. Complete blood picture, liver and renal profiles were monitored in 61.2, 52.5 and 11.5% respectively. Parents of 8.9% of children think that epilepsy is a stigma. Compliance to medication was excellent in 85% and average in 9.7%. Epilepsy was associated with other problems in 48% of cases.

**Conclusion:** This the first study about Jordanian children with epilepsy highlighting the different demographic, clinical profile, investigation, treatment trends and outcome of epilepsy.

### P1319

**PREVALENCE OF RESTLESS LEGS SYNDROME IN POST-MENOPAUSAL WOMEN**

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**Background and aim:** The aim of this study was to assess the prevalence of restless legs syndrome (RLS) in postmenopausal women and its correlation with intake of hormonal replacement therapy (HRT) and presence of RLS in pregnancies in the past.

**Methods:** We have used a diagnostic questionnaire based on International Restless Legs Syndrome Study Group diagnostic criteria of RLS. We have also asked the subjects about use of HRT, presence of RLS during past pregnancies and Sociodemographic data. In subjects with RLS we have assessed severity of the symptoms with RLS Severity Scale (RLSSS). We have screened post-menopausal women coming to a gynaecological out-patient department for a routine control.

**Results:** We have examined 73 subjects (mean age 53.6 years). RLS was found in 23.3% of the subjects. There was no difference in prevalence of usage of HRT between the RLS-negative and RLS-positive group (23.2% vs. 23.5%). RLS in past pregnancies was present in 13.7% of the subjects – in 50% of them post-menopausal symptoms of RLS developed while RLS developed only in 19% of women without pregnancy – related RLS in the history. Mean severity of RLS was 18 points in RLSSS, with higher score in RLS-positives taking HRT (27.7 vs. 15 points, non-significant, due to size of the sample).

**Conclusion:** RLS during pregnancy seems to be a risk factor of developing post-menopausal RLS. The results suggest some form of interaction between intake of HRT and the course of RLS as RLS-positives with HRT had more severe symptoms.

### P1320

**VERTIGO SYNDROMES ASSOCIATED WITH AN EARTHQUAKE IN GEORGIA**

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**Background:** Georgia experienced a strong earthquake. After this event the amount of patients with vestibular symptoms increased. We evaluate patients with earthquake induced vertigo, the influence of earthquake of benign paroxysmal positional vertigo (BPPV) course and developing phobic postural vertigo (PPV) syndrome after this event. BPPV and PPV are the most common causes of vertigo. “Idiopathic” BPPV is the cause of BPPV in 50–70% of cases. Head trauma, vestibular neuritis, Meniere’s disease, migraine are the most common causes of “secondary” BPPV. (PPV) syndrome characterized by dizziness, subjective disturbance of balance and by perception of illusory body perturbations, usually triggered by perceptual stimulus. PPV frequently associated with anxiety symptoms in patients with obsessive-compulsive type personality.

**Design and methods:** 60 patients (51 women, 9 men) were enrolled in this study, age range from 18–85. We evaluated idiopathic BPPV in 49 cases and secondary types BPPV in 11 cases.

**Results:** 37 previously documented histories of BPPV patients had features typical for posterior semisemircircular canal BPPV and 23 patients experienced subjective disturbance symptoms like BPPV, but there were no abnormal responses in their vestibular testing. We suggest that an earthquake could manifest psychogenic vertigo with panic attacks, anxiety, agoraphobia, PPV and could provoke a transition from organic vertigo to PPV and psychological stress plays an important role in occurring “secondary” BPPV.

**Conclusion:** Earthquake may trigger exacerbation of “secondary” BPPV and could be a provocative factor to develop psychogenic vertigo, mostly PPV.

### P1321

**PREVALENCE AND RELATED PARAMETERS OF DAYTIME SLEEPINESS IN SEVERELY SNORING KOREAN PATIENTS**

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EFFECTIVENESS OF PLATELET HYPER-AGGREGABILITY CORRECTION-TREATMENT ON INTRACTABLE VERTIGO. THE RESULTS OF A LONG-TERM FOLLOW-UP

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P1323

OBSERVATIONAL STUDY OF 37 PATIENTS WITH RESTLESS LEGS SYNDROME

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P1324

TREATMENT LIMITATION IN NARCOLEPSY: COMORBID MENTAL DISORDER. A CASE STUDY

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P1325

VESTIBULAR DISTURBANCES OF PATIENTS WITH VEGETATIVE DYSFUNCTION

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P1326

Abstract cancelled

P1327

PREVALENCE OF RESTLESS LEGS SYNDROME IN PATIENTS WITH RHEUMATOID ARTHRITIS – ITS IMPACT ON SLEEP, FUNCTIONAL OUTCOME AND MOOD DISORDERS

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P1328

HORNER’S SYNDROME AS CIS

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Neurological manifestation of systemic diseases; Infection and AIDS; Critical care

P1329

LYMPHOCYTIC MENINGITIS IN HUMAN GRANULOCYTIC ANAPLASMOSIS: A CASE REPORT

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Introduction: Human granulocytic anaplasmosis (HGA) is a tick-borne rickettsial infection caused by Anaplasma phagocytophilum and manifesting with non-specific flu-like symptoms. No cases of meningitis or pathologic cerebrospinal fluid (CSF) have yet been reported in Europe. We describe the first case of lymphocytic meningitis caused by Anaplasma phagocytophilum in Belgium.

Case history: A 55-year-old healthy man presented with recurrent episodes of fever, headaches, myalgia and arthralgia since 2 months. He had worked several months in the woods without notion of a tick bite. Neurological examination was unremarkable. Brain MRI showed no abnormalities. Lymphocytic pleocytosis and 18 oligoclonal bands were detected in CSF. All CSF cultures, as well as PCR for herpes and enterovirus were negative. Routine laboratory investigations, auto-immune and paraneoplastic tests were all within normal limits. Serological tests for Borrelia burgdorferi, Syphilis and HIV were negative. The titre of Anaplasma phagocytophilum IgG antibodies was elevated up to 1/1024, IgM antibodies were negative. The patient was treated with doxycycline 100 mg bid during 3 weeks resulting in clinical improvement. Later, as he developed the same symptoms again, ciprofloxacin 500 mg bid was administered for three months leading to full clinical recovery.

Discussion: This is, to our knowledge, the first case report of lymphocytic meningitis attributed to HGA. While Anaplasma phagocytophilum can cause profound multi-system disease, no case of meningitis or CSF involvement has been reported up till now. However, reports from the United States described meningitis in human monocytic ehrlichiosis (HME), another tick-borne rickettsial infection, caused by Ehrlichia chaffeensis.

P1330

USE OF INTRATECA L TPA FOR THROMBOLYSIS IN INTRAVENTRICULAR HEMORRHAGES OF DIFFERENT SUBTYPES

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Introduction: Intraventricular haemorrhage is associated with poor prognosis. Treatment of intraventricular haemorrhage includes observation, drainage for hydrocephalus, and possibly thrombolysis and maintenance of drain patency. Unfortunately, a lack of data precludes a standardized treatment strategy. We present our experience with intrathecal tPA in three patients with intraventricular haemorrhage.

Methods: Patients were admitted to neurocritical care unit and diagnosed with intraventricular haemorrhage as seen on CT scan. An external ventricular drain was placed in all three patients, and an early lumbar drain was inserted in one patient. tPA at 2 mg/2 mL was administered via external ventricular drain twice daily over a three day period. Serial CT scans were done to monitor progress of thrombolysis, and 24-hour external ventricular drainage volumes were collected.
P1331

USE OF INTRATHecal NICARDIPINE FOR ANEURYSMAL SUBARACHNOID HEMORRHAGE-INDUCED CEREBRAL VASOSPASM
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Introduction: Cerebral vasospasm leading to delayed ischemia is a common and serious complication of aneurysmal subarachnoid haemorrhage (SAH) resulting in increased morbidity and mortality. Traditionally used treatments for cerebral vasospasm all have notable limitations in their efficacy and safety profile. Nicardipine is a calcium channel blocker that is available for intravenous administration. A recent study reported on its efficacy in the treatment of cerebral vasospasm when given intrathecally. We present our positive experiences with intrathecal nicardipine for treatment of cerebral vasospasm in two patients with aneurysmal SAH.

Case Series: Patient 1 was given intrathecal nicardipine after failing triple-H therapy for vasospasm following aneurysmal SAH, as documented by CT angiogram and high mean velocity (Vm) noted on transcranial Doppler ultrasound (TCD). Intrathecal nicardipine was effective at reducing and maintaining reduced Vm without untoward effects. Upon discontinuing intrathecal nicardipine there was an abrupt rise in Vm. Resuming intrathecal nicardipine resulted in return of Vm to baseline normal levels. Patient 2, who also presented with aneurysmal SAH, was given intrathecal nicardipine after failure of conventional triple-H therapy and rise in Vm on TCDs. Initiation of intrathecal nicardipine resulted in decreased Vm and remained within normal range for the duration of patient’s stay. Prevention of vasospasm delayed neurological ischemic deficits.

Conclusions: Based on our supplemental positive results, we believe that further studies evaluating the use of intrathecal nicardipine for management of cerebral vasospasm are warranted.

P1332

COULD INDUCED MILD HYPOTHERMIA MITIGATE BRAIN DAMAGE AFTER CARDIAC ARREST OF NON-CARDIAC ORIGIN, AND IN OTHER RHYTHMS THAN VENTRICULAR FIBRILLATION?
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Hypothesis: We wonder whether induced mild hypothermia could also mitigate brain damage after CA in other rhythms than VF and/or in CA of non cardiac origin.

Methods: 60 patients were prospectively randomized into the hypothermic group (HG) and a normothermic group (NG). The cause of CA was almost asphyxiation. Other patients had asystole or pulseless electrical activity as initial rhythm at the first assessment. The management during the resuscitation and the post-resuscitation phase was similar in both groups. In the HG, however, the cooling was initiated by a helmet device in the prehospital setting and continued in the hospital either by a surface or intravenous cooling for 24 hours. The rewarming phase was very slow in the HG. The NG was kept at normothermia throughout the resuscitation and the post-resuscitation phase.

Results: 30 patients were included in the HG, and 30 patients were included in the NG. On admission, the characteristics of the patients were similar. 6 months after the CA, the survival rate was significantly higher in the HG 18/30 (60%) compared to NG 9/30 (30%). Moreover the HG showed the highest good neurological outcome compared to NG (17 versus 8 patients respectively), and this without increasing hypothermia related complications.

Conclusions: Mild hypothermia seems to improve the survival rate and neurological outcome after CA even in rhythms other than VF and CA of non cardiac origin. Surprisingly cooling also mitigates brain damage associated to asphyxial CA.

P1333

IMMUNE DISORDERS IN PATHOGENESIS OF SENSORY POLYNEUROPATHY IN ACUTE VIRAL HEPATITIS B
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Acute viral hepatitis B(AVHB) is an acute infectious disease. There are rare publications concerning nervous system affection in AVHB.

Materials and methods: 120 patients suffered from AVHB, aged from 18 to 56, were investigated. Along with clinical, neurological examination and detection of level of antibodies to myeloperoxidase (MPO), basic protein myelin(BPM) and tumour necrosis factor – a (TNFa) in blood serum was performed. Obtained data were compared with control group consisted of 20 healthy persons.

Results: All patients had AVHB of different severity grade. 13 pts (10.8%) had clinical signs of sensory polyneuropathy – night pain, numbness, sensory disorders of distal pattern in extremities. Only superficial perception was affected. Dynamic observation showed subjective signs occurred on 3–4 day from onset and objective signs on 10–13 day from onset. Antibody level was significantly higher than in control group. Anti-BPM level was 0.34±0.02 unit of optical density (UOD) and in control groups 0.02±0.001 UOD. Anti-MPO level was 4.4±0.35 UOD (in control group 0.8±0.02 UOD), TNFa level was 18.86±1.2 UOD (in control group 0.5±0.02 UOD) (p=0.001). Anti-MPO are markers of small vessels inflammation, anti-BPM indicate demyelination, TNFa – proinflammatory cytokine.

Conclusion: Performed study showed sensory polyneuropathy (mainly with thin myelin fibres affection) in 10.8% in AVHB. These fibres conduct superficial perception and are more vascularised. It can explain increased a-MPO level. Proinflammatory cytokines (e.g. TNFa) cause hematocellular barrier deterioration that in turn result in demyelination (the latter confirmed by a-BPM increase).

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CLINICAL MANIFESTATIONS AND ETIOLOGY OF CHRONIC NEUROINFECTIONS

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Some neuroinfections could have chronic occurrence with relapses and remissions and inadequate respond to etiotropic treatment (e.g., azyclovir). The aim of the study was to reveal etiology and clinical presentations of chronic neuroinfections. We examined 56 patients (32 women and 24 men) (36.2±10.8) years old with encephalopathy (26.8%), encephalitis (17.8%), encephalomyelitis (14.3%), encephalo-myo-polyradiculoneuropathy (14.3%), chronic meningitis (1.8%), arachnoiditis (16.1%), repetitive facial paralysis (5.5%) and herpetic ganglionitis (3.6%). The etiology of chronic neuroinfections was revealed by PCR and ELISA of blood and CSF. In 51.2% cases patients had mixed-infection: mixed-herpetic (10.7%), combination of herpes and urogenital infection (19.6%) or herpes monoinfections (42.8%) by EBV (14.3%), HSV type 1.2 (10.7%), VZV (5.5%), herpes type 6- (5.5%), CMV (7.1%), neuroborreliosis (5.5%). Chronic neuroinfections clinically were presented by chronic fatigue syndrome (75.0%), problems with thermoregulation (60.7%), autonomic infringements (57.1%), panic attacks (25.0%), pyramid symptoms (53.6%), extrapyramidal and cerebellar involvement (21.4%), vestibular infringements (32.1%), different pain syndromes: pain in the back (32.1%), root pain (39.3%) and headache (33.9%), polyneuropathy (17.8%), epileptic seizures (10.7%), brain stem involvement (14.3%), hypothalamic syndrome (14.3%), cognitive impairment (10.7%) and somatic co-morbidity (35.7%). Our study revealed predominantly mixed-viral-bacterial or herpetic etiology of chronic neuroinfections, their complex clinical presentation with multi-level and multi-system involvement, sometimes with unusual combinations of clinical syndromes.

P1335

CLINICAL PECULIARITIES OF PAIN IN THE BACK IN PATIENTS WITH NEUROINFECTIONS

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The mechanisms of pain in the back formation due to infections (especially neuroinfections) are not clearly understood. Infection could raise a complex immunological, microvascular and autonomic changes resulting in dorsalgia. The aim of the study was to reveal clinical peculiarities of dorsalgia on the infectious background. We examined 20 patients (80% women) aged of (36.5±7.54) y.o. The low-back pain had 7 (45%) patients, thoracic – 1 (5%), thoracic-lumbar – 4 (20%), cervical – 1 (5%) and spread (36.5 ±7.54) y.o. The low-back pain had 7 (45%) patients, thoracic – tighten pain, 5 (25%) – constraining pain. Excessive pain had 3 (15%) patients, moderate pain – 12 (60%) and painful discomfort – 3 (15%) patients. The herpetic or other viral infection was revealed in 8 (40%) patients, urogenital infection in 2 (10%) and mixed-infection in 10 (50%) cases. The infectious process confirmed subfebrility in 16 (80%) patients, asthenia in 14 (70%) patients, and pain in the joints in 6 (30%) cases. Our study revealed that patients with neuroinfections might have chronic moderate, mainly tighten, pain in the back, more often low back or spread pain. The main etiologic factor of dorsalgia in such patients is herpes or mixed infections. Infections are one of the main causes of chronic pain in the back formation that is why the antibacterial and antiviral treatment in some cases is expedient.

P1336

WHAT HAS BEEN HAPPENING WITH THOSE HTLV-2-ASSOCIATED MYELONEUROPATHY PATIENTS FROM PORTO ALEGRE SINCE 1994?

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Background: HTLV-2-associated myeloneuropathy has been documented among monoinfected individuals living in Porto Alegre city, southern Brazil. Both subtypes A and B were seen in those individuals. The prevalence of HTLV-1/2 infection is 1.2% among blood donors in this metropolitan area.

Objective: To analyse the natural history of HTLV-2-associated myeloneuropathy. Design: 13-year follow-up study.

Patients and methods: 194 HTLV-2-infected individuals, 62 coinfected with HIV-1, were seen three times a year since 1994, providing clinical and laboratory data. Magnetic resonance imaging, electrophysiological studies (somatosensory and visual evoked potentials, electromyography) and cerebrospinal fluid analysis were performed whenever necessary. Results: 37 HTLV-2-infected patients with myeloneuropathy were studied; HIV-1 and syphilis were excluded. Risk factors as intravenous drug use in nine individuals (8 of them coinfected), south american descendant in three and occupational transmission by a needlestick accident in one health care worker were identified. No one died but four were lost for the follow-up. A dorsal spinal cord tumour had developed in one patient, with full recovery after surgical intervention. Connective tissue disorders (Sjögren syndrome and systemic lupus erythematous) were identified in five patients. Devic’s syndrome (relapsing neuromyelitis optica) has developed in one caucasian HTLV-2b-infected male whose wife (also HTLV-2b-infected) was also diagnosed with systemic lupus erythematous. Gait disorders (spastic paraparesis and sensory ataxia), dyautonomy (neurogenic bladder, erectile dysfunction, constipation and fecal incontinence), radicular pain and cognitive impairment were the main disabling signs of HTLV-2-associated disease.

Conclusion: HTLV-2-associated myeloneuropathy is a slowly disabling disease, characterized by sensory ataxia, radicular pain and bladder dysfunction.

P1337

CLINICO-MORPHOLOGICAL SIGNS OF PSEUDOTUMOR FORMS OF CHRONIC HERPETIC MENINGOENCEPHALITIS (CHME) IN ADULTS

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HSV is an etiologic factor of chronic lesions of CNS and also can be associated with malignant brain tumours. Morphologically herpetic infection is characterized by combination of cellular changes of two types: enlarged in size hyperchromic nuclei (inclusion type I) and enlarged vacuolated nuclei with pointed substance in every vacuole (type II). Study was based on material of autopsy of 57
patients who died from herpetic lesions of CNS. In 10 cases diagnosis was a tumour in different parts of the brain. Etiological diagnosis was established on base of typical intracranial viral invasions of I and II types in brain cells, on revealing of HSV antigens in histological slices, immunohistochemically. In the autopsy foyers of necrosis were determined in 6 cases: in cortex and white matter, brain stem and cerebellum. Laminar non-ischemic necrosis was found in the cortex of temporal and parietal lobes. In the brain stem necrosis appeared as small foci of destruction of nervous tissue. Histological signs of chronic inflammation were established in all cases. Leptomeninges and brain were infiltrated by lymphocytes and macrophages (perivascular cuffs) and demonstrated focal and diffuse sclerosis. Constant histological findings were diminution of quantities of cortical neurons, proliferation of macroglial cells. Necrosis and perivascular cuffs were signs of acute morphologic processes, as the patients died from generalized virus infection with an inflammatory exacerbation. Thus, the appearance of necrosis in CHME can simulate brain tumour and morphological investigation on light microscopic level allows diagnosing exacerbation signs in cases of CHME and exclude presence of brain tumour.

P1338
CLINICAL NEUROLOGICAL AND NEUROPHYSIOLOGICAL FINDINGS IN SYSTEMIC LUPUS ERYTHEMATOSUS
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Background: Systemic lupus erythematosus (SLE) is connective tissue disease related to many organs. Second only to renal disease as a cause of death in SLE, neurological complications are clinically manifested in 50–70% of SLE patients.

Methods: Central nervous system (CNS) involvement was evaluated in 111 patients (93 females, 18 males) with SLE aged 17–57, with the mean duration of the disease of eight years. Disease activity was quantified using the Systemic lupus erythematosus Disease Activity Index (SLEDAI). Patients were taking the following medications for the treatment of SLE: prednisolone, cytotoxic immunosuppressants, non-steroid anti-inflammatory medications. All patients underwent a clinical neurological examination, electrophysiological studies, transcranial Doppler sonography (TCD), cerebral imaging and blood sampling.

Results: 36 patients (32.4%) had clinical neuropsychiatric manifestations. SLEDAI scores ranged from 4 to 35, with a mean of 14. Headache (34.2%), depression (28%), stroke (18.9%), memory abnormalities (18.9%), seizure (16.2%), peripheral polyneuropathy (16%), vertigo (13.5%), chorea (3%) was the most prevalent clinical manifestation. Electrophysiological testing revealed abnormal electroencephalography in 21 patients (57.8%). Abnormalities included theta, delta slowing and sharp wave activity. Abnormal brainstem auditory evoked response was detected in 13 (36.1%) patients. There was no significant pathology in TCD. MRI of the brain showed cortical atrophy in 19%, central atrophy in 47.6%, periventricular lesions in 14.3%.

Conclusions: SLE-related nervous system involvement encompassed a wide spectrum of neurological features. Neurophysiological methods provide valuable diagnostic tools in SLE patients and may disclose pathological manifestations which are not evident at clinical examination.

P1339
NON-LINEAR HEART RATE DYNAMICS ASSESSMENT IN PATIENTS WITH VEGETATIVE STATE
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Background and aims: Consciousness is warranted by neural networks recently recognised on fronto-parietal areas. Since neural networks are considered as complex systems that determine non-linear behaviour in time series of physiological variables we hypothesize that a wide derangement of those networks, such as those in vegetative state (VS) patients, might cause alterations in heart rate nonlinear dynamics.

Methods: Consecutive patients with VS, without any cardiac comorbidity, were included in the study. Each patient was matched with a control subject. Patients were assessed by the Level of Cognitive Function (LCF) scale. A 6-hour electrocardiogram was obtained for the determination of RR sequences. Nonlinear variability of RR time series was quantified by the calculation of approximate entropy (ApEn) which is a regularity statistic measuring the unpredictability of fluctuations in time series. Mann-Whitney 2-sample test was used to compare groups.

Results: 12 patients (mean age±SD 43.2±15.2 years) and 12 controls (mean age±SD 40.1±18.3 years) were investigated. Mean time interval from the acute event onset to evaluation was 68 days. ApEn values were lower in patients (0.68±0.27) than in controls (1.13±0.15; p=0.0006). At the 3-month follow-up 2 patients died, 6 were unchanged, 2 moved from LCF I to II, and 2 recovered consciousness. The 2 patients who recovered consciousness had the highest ApEn values, similar to their matched control.

Discussion: Nonlinear dynamics assessment allows identifying patients in VS; it might represent an additional useful tool for establishing prognosis.

P1340
THE FIRST CASE OF CITRULLINAEMIA TYPE II IN EUROPE: CLINICAL IMPLICATIONS
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A 40-year-old man of Pakistani origin presented with 3 months of episodic confusion. He was recently dismissed from work as a lead IT consultant because of his inability to concentrate. Brain imaging and routine blood biochemistry were normal and his symptoms were initially attributed to psychological issues. He was referred for a neurology opinion, and was found to have impaired psychometry and slow EEG suggestive of metabolic encephalopathy. His subsequent tests showed elevated plasma levels of ammonia, citrulline and arginine implicating citrullinemia type II. CSF lactate was also raised. Subsequent clinical deterioration was rapid, with development of cerebral oedema and death within the next 4 weeks. Genetic analysis revealed a novel mutation in SLC25A13. Mitochondrial mutation analysis was negative. Citrullinemia type II (CTNL2) is a recessively inherited metabolic disorder caused by a deficiency in the hepatic mitochondrial-transporter citrin. It presents in infancy with jaundice, and as a hyperammonaemic ence-
phalopathy in adulthood. We report the first case of CTLN2 in Europe, which is associated with a novel mutation in the SLC25A13 gene in a patient ethnically and geographically distinct from CTLN2 described previously in the literature. Further studies are ongoing to elucidate the molecular nature of this mutation which may represent a founder effect from newly-arrived families of South-Asian origin. CTLN2 should be considered as a possible cause of hepatic encephalopathy, as the early recognition of the disorder is essential for timely liver transplantation, the only known effective therapy to date for this condition.

P1341
DIAGNOSTIC AND THERAPEUTIC PITFALL IN NEUROSARCOÏDOSIS
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Background: Neurosarcoïdosis is rare, but may be severe and life-threatening. Diagnosis needs histological demonstration of non-casating granulomas and exclusion of other granulomatous disease or sarcoïd-like reaction. In addition to corticosteroids, treatment may require immunosuppressive agents.

Clinical Cases: Patient 1 presented a space-occupying lesion involving the pineal gland, the thalami and the mesencephalon. After a first unsuccessful brain biopsy, a second one showed histological characteristics of granuloma. In spite of treatment with corticosteroids and cyclophosphamide, an extension of the lesion was observed. A third biopsy revealed the presence of a germinoma surrounded by a granulomatous tissue. Patient 2 was first misdiagnosed as possible MS, with bilateral optic neuropathy and periventricular and colossal contrast-enhancing lesions. Brain biopsy confirmed the diagnosis of neurosarcoïdosis. Treatment was successful but induced a severe epidural lipomatosis with spinal cord compression. The patient died unexpectedly two days after neurosurgical operation.

Discussion: Case 1 is an example of a diagnostic pitfall in case of tumours, especially pineal tumours, inducing a sarcoid-like granuloma in the surrounding tissue. Case 2 is an example of a rare and severe side-effect of chronic corticosteroid treatment, epidural compressive lipomatosis.

P1342
ANALYSIS OF THE SITUATION OF HIV/AIDS/STI IN THE REPUBLIC OF UZBEKISTAN
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Uzbekistan, the most populous country in Central Asia with a population of 25.5 million has crude birth rate of 20.4 per 1000. More than 56% of the population is under 25 years of age. This young population will have a major impact on the future population growth of the country, which is estimated will reach 40.5 million by 2050. The challenge that Uzbekistan faces is to reverse the deterioration of the health status that followed the collapse of the Soviet Union and to catch up the lost years of health development.

Current situation with HIV/AIDS spread in Central Asia including Uzbekistan is worrying. According to the last data of the annual Global report of UNAIDS and WHO on HIV/AIDS for 2006 the country has watched “the explosive development of HIV epidemics” (more then 7 000 cases – August, 2005). The parallel development of HIV/injection epidemics by the use of drugs and STIs is observed. Intravenous drug users (IDUs), commercial sex workers (CSWs) and men having sex with men (MSM) are the main sources of the spread of HIV infection.

P1343
THE PATHOGENETIC MECHANISMS OF DIABETIC POLYNEUROPATHY
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Diabetic polyneuropathy (DP) is the most frequent complication in diabetes mellitus. The aim is to study the role of the demyelination process and vasculitis in the development of DP.

Material and methods: 50 patients with diabetes were examined. Patients went through neurological, immunological examinations (determination level of antibodies to basic protein myelin (ab-BPM) and myeloperoxidase antibody level (MP-AB) in blood serum).

Control group – 20 healthy persons.

Results: All the DM patients had DP. Two groups were chosen for analyzing. The first group (20 people) consisted of those with low surface sensibility (disease duration 3.7±1.4 years). The second group (30 patients) with low surface, deep sensibility and parasthesia of extremities (disease duration 12.5±1.3 years). A-BMP level among first group – 0.16±0.013 unit optical density (UOD), in second group – 0.47±0.032 UOD. In control group – 0.2±0.002 UOD (p<0.001).

A-BPM is the demyelination process marker. MP-AB level among the first was 6.26±0.42 UOD, in the second group – 8.47±0.46 UOD (p<0.05). In the control group – 0.8±0.02 UOD. MP-AB is the vasculitis small vessels marker.

Conclusion: From the conducted research it is evident, that DP severity increases with disease duration, that is accompanied by higher marked demyelination and a more increased MP-AB level. The results may prove the presence of autoimmune inflammation of vasa nervorum in DM, which lead to development of DP.

P1344
THE ROLE OF HELICOBACTER PYLORI IN THE DEVELOPMENT OF CEREBRAL VASCUITIS
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Stomach ulcer and gastroduodenitis are often related to H. Pylori. Chronic cerebral ischemia is the most common cerebrovascular disease, but its pathogenesis is not clear enough. Aim of study was to learn the neurologic and immune features of stomach ulcer and gastroduodenitis caused by H. Pylori. 29 patients having stomach ulcer or gastroduodenitis, mean age – 53.7 years; male – 15, female – 14, were investigated. In all patients gastroscopy with identification of H. Pylori in stomach juices was performed. Along with clinical examination, detection of the level of antibodies to myeloperoxidase (aMPO – marker of vasculitis) using the immunnoassay method in blood serum was performed. Control group consisted of 20 persons. All patients showed objective and subjective cerebral signs. Initial manifestation of cerebral blood supply insufficiency (ICMBSI) was found in 5 patients, discirculatory encephalopathy (DE) of 1 grade – in 7 and DE of 2 grade in 15 pts. aMPO level was elevated (9.1±0.055 unit optical density (UOD)) compared to control group (0.8±0.02 UOD) (p<0.001). All patients were divided in 2 groups – 1 – with small quantity H. Pylory and 2 – with large quantity. In 1 group aMPO level was 6.83 and in 2 group – 10.67 UOD. In 1 group. In 2 group 1 pts had ICMBSI (5.9%), 1 pts – DE of 1 grade (5.9%) and 15 pts – DE of 2 grade (88.2%). In patients with gastric diseases caused by H. Pylory we...
observed neural disorders. Correlation of aMPO and H. Pylory quantity was found. Neural tissue affection in these cases is secondary and due to secondary cerebral vasculitis.

P1345
A CASE OF CANDIDA ALBICANS SPONDYLODISCITIS
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Background: Candida species have emerged as important pathogens in human infections, mainly in immunocompromised patients. Spinal infection due to Candida species is very uncommon. We present the case of a 45-year-old man with Candida spondylodiscitis who had suffered candidaemia.

Case Presentation: A 45-year-old man presented with intracerebral and intraventricular haemorrhage due to moyamoya disease. He was admitted to the intensive care unit. Two weeks later he developed candidaemia due to Candida albicans which was treated with intravenous fluconazole and amphotericin B for 5 weeks. Four months after the end of treatment of candidaemia, he complained of lower back pain in the sacral area. The patient was afebrile, and his physical examination was unremarkable except for diffuse lumbar midline and paraspinal muscle tenderness. Results of neurological examination were normal. Culture of blood samples yielded no pathogens and serological testing for HIV was negative. MRI of the dorsal spine showed C6-7, T7-L1, and L2-S1 spondylitis. A vertebral biopsy was performed; Candida albicans was cultured from this specimen. The patient began treatment with intravenous fluconazole and oral caspofungin. The control MRI performed 2 months later showed partial improvement, and the patient was discharged from the hospital with medication of oral voriconazole.

Conclusion: In spite of the increasing frequency of candidaemia, Candida is still a relatively uncommon cause of spinal infection. Candida spondylodiscitis is a recognized late complication of candidaemia, and has been reported to occur more than a year following the initial episode of fungaemia, the range being 2–15 months.

P1346
TEN YEARS OF NEUROCYSTICERCOSIS AT LA PAZ UNIVERSITY HOSPITAL IN MADRID (SPAIN)
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Introduction and objectives: Neurocysticercosis is the most common parasitic infection of the central nervous system. Neurocysticercosis was endemic only to Latin America, Eastern Europe, Asia, and Africa, although increasing numbers of cases are being recognized in Spain, particularly among Hispanic immigrants. We reviewed the sociodemographic characteristics, incidence, clinical features, imaging, diagnosis and management of patients after being admitted to the La Paz University Hospital of Madrid for the last ten years.

Patients and methods: We reviewed the clinical records of 38 patients with a diagnosis of Neurocysticercosis in our hospital from January 1st, 1996 to December 31st, 2006. A total of 30 patients showed neurological manifestations on admission, 2 of them being children.

Results: The most frequent clinical manifestations at onset were seizures (n=18), unspecified headache (n=6), trigeminal neuralgia (n=1), cephalgia associated to hydrocephalus (n=2) and psychomotor development delay (n=1). In one case the cystic cerebral lesions were CT casual findings. Neurocysticercosis is more common among immigrants from Latin America, mainly from Ecuador (n=15). Neuroradiological signs of active Neurocysticercosis were found in 25 patients. Albendazole, associated or not to corticosteroids and phenytoin, has been used as treatment in 19 patients.

Conclusions: Neurocysticercosis is more common among immigrants from endemic areas. The most frequent first manifestation is seizure. Treatment with albendazole results in complete resolution or significant regression of cystic lesions, and showed a significant reduction of seizures rate as well. Risk of recurrence was lower in treated patients.

P1347
SUCCESSFUL MANAGEMENT OF RHINOCEREBRAL MUCORMYCOSIS, WITHOUT AGGRESSIVE SURGICAL DEBRIDEMENT
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Objectives: Rhinocerebral mucormycosis (RCM) is a rare opportunistic fungal infection, affecting immunocompromised patients with diabetic ketoacidosis, leukaemia or renal insufficiency. Usually, RCM progresses relentlessly and results in death, unless combined treatment with antifungal agents and aggressive surgical debridement is initiated promptly. In cases of orbital involvement, exenteration of the orbit is a widely proposed treatment regime. We present a diabetic patient with RCM who was managed conservatively with high doses of liposomal amphotericin (7 mg/kg) and with surgical drainage of paranatal sinuses.

Case-History: A 44-year-old diabetic woman presented with a one-day history of right eyelid ptosis and severe periorbital headache. She was afebrile and on examination had total right ophthalmoplegia, blindness of the right eye and periorbital swelling. Brain MRI showed involvement of the right orbit and large infiltrates at the ethmoid, maxillary and sphenoid sinuses. Urgent surgical drainage was performed and mucosal biopsies revealed aseptate hyphae belonging to Rhizopus species. Orbitectomy and maxillectomy were proposed to the patient but she refused. Blood glucose levels were controlled and high doses of liposomal amphotericin were started on the first day and were switched after a month to oral fluconazole. Re-evaluation of the patient six months later showed clinical stabilization.

Conclusion: The possibility of clinical regression of RCM with conservative management alone is of great interest. Rapid initiation of high-dose liposomal amphotericin may halt disease progression and potentially lead to a favourable therapeutic outcome. Thus early diagnosis or suspicion remains the definitive step for successful management of RCM.

P1348
PARKINSONISM IN GOUGEROT-SJÖGREN’S SYNDROME: 3 CASES
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Background and aims: Gougerot-Sjögren’s syndrome (G-SS) is one of the commonest autoimmune connective tissue diseases. Central nervous system (CNS) involvement is estimated between 20% and 25% of all G-SS cases. Its manifestations are polymorphous; among of them extra-pyramidal involvement. The aim of our study is to describe clinical, para-clinical, therapeutic and
evolutionary aspects of neurological G-SS with Parkinsonism.

Methods: We report three cases of Parkinsonism revealing G-SS in the neurology department of the University hospital of Marrakech.

Results: Case 1: 39-year-old woman with euthyroidien goiter, xerophthalmia and xerostomia and hemiparkinsonian symptoms present since August 2002.
Case 2: 60-year-old man, diabetic type 2 with bilateral parkinsonian symptoms, insomnia and sphincter disturbance since 1998.
Case 3: 55-year-old woman, with xerophthalmia, xerostomia, two early abortions and parkinsonian symptoms since 2005. Brain-MRI was normal in the 2nd case, abnormal in the other showing high hyperintense lesions in T2-weighted images. Diagnosis of Gougerot-Sjögren syndrome had been confirmed by typical lesions in minor salivary glands biopsy in all the cases and a positive Shirmer test. Antinuclear antibodies to SSA and SSB realized in all cases were positive in the 1st one.

Conclusion: Extra pyramidal involvement is very rare in Gougerot-Sjögren syndrome. The physiopathology of this association is still unknown. We insist on the importance of searching the xerophthalmia and xerostomia in parkinsonian patients.

P1349
NEUROBRUCELLOSIS: PROBLEMS OF EARLY DETECTION IN A THIRD-WORLD COUNTRY
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Objectives: Analyze neurological manifestations of brucellosis in Kyrgyzstan, frequency of diagnostic mistakes, and their possible causes.

Design: Retrospective analysis of 22 neurobrucellosis cases.

Main Outcome Measures:
1. Stage of brucellosis infection when admitted to the in-patient department (acute or chronic)
2. Main neurological syndromes detected in each patient (central, peripheral, or predominantly autonomic division involvement)
3. Diagnoses of the patients were referred to the Neurology Department
4. Method used for laboratory confirmation of brucellosis (Agglutination reaction or ELISA test)

Main results:
1. 8 patients presented with acute brucellosis, whereas 14 patients had chronic infection.
2. 17 patients (77.3%) were referred to the Neurology Department with incorrect diagnoses, e.g. 9 of 15 patients with brucellosis-related damage to the peripheral nervous system were primarily diagnosed as and treated for lumbar disk disease and spondylosis.
3. More than one-third of the patients were diagnosed with brucellosis after the infection became chronic.
4. The diagnoses were verified with agglutination-based serology tests in blood and/or CSF in 19 patients (86.4%); the other 3 cases required confirmation with more specific ELISA tests, which are more expensive and much less available in Kyrgyzstan.

Conclusion: These findings demonstrate neurologists’ low awareness of neurobrucellosis as well as lack of national evidence-based guidelines to elaborate clinical and laboratory diagnostic criteria for this disease. As neurobrucellosis is not rare in Central Asian countries, it should always be considered in the differential diagnosis for patients suffering from chronic neurological disorders, particularly patients with peripheral nervous system involvement.

P1350
SYSTEMIC T-CELL LYMPHOMA REVEALED BY CEREBRAL AND MYELITIC MANIFESTATIONS
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Involvement of central nervous system (C.N.S) is encountered in less than 10% of the systemic lymphomas and only exceptionally, it is the first manifestation of the malignancy. We present the case of a patient in whom medullary involvement was the revealing sign of the disease.

A 60 years old man presented in our department with pyramidal tract disease of lower limbs and urinary urgency. A cerebral and cervical M.R.I. disclosed diffuse hyperdense lesions in the periventricular white matter, as well as an extensive lesion in the spinal cord at C5-C7 level, all of which took in irregularly the contrast material. The lumbar puncture, haematological and biochemical examinations were all normal. The chest X-Ray showed a patchy infiltration of the lung parenchyma, that was reconfirmed by the chest C.T. A bronchoscopy was performed that was negative, but a biopsy of an inguinal lymph node and a dermal lesion revealed a T-cell lymphoma. The patient was treated by chemotherapy, but he died six months later. The systemic T-cell lymphomas are quite uncommon and usually C.N.S complications happen later in the course of the disease. Furthermore, the C.N.S lesions are found in the cerebral hemispheres and only rarely in the spinal cord. The present case is exceptional regarding the fact that myelitic manifestations were the first signs of the disease. Finally, the patient dying six months later confirms the bibliographic findings concerning the very bad prognosis of this malignancy.

P1351
HTLV-1-ASSOCIATED MYELOPATHY/TROPICAL SPASTIC PARAPARESIS (HAM/TSP): RESPONSE TO ALPHA-INTERFERON AND A TWO-YEAR FOLLOW-UP
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Background and aims: HAM/TSP, a rare form of progressive myelopathy, has an increasing incidence because of migratory flows. We describe a case of HAM/TSP and its response to immunomodulatory therapy, during a follow-up period of two years.

Methods: 43-year-old Ecuadorian man, with a 2 month-history of back pain, heaviness in both legs, progressive walking-difficulty and nocturnal cramps.

Results: Moderate pyramidal dysfunction was detected after neurological exploration, including proximal spastic paraparesis, prominent hyperreflexia and bilateral Achilles clonus, with Babinski sign. Laboratory analysis, including blood and CSF, revealed non-specific increased immunoglobulin-levels. Neuropsychiological study (EMG, visual/somatosensory-evoked potentials), was within normal limits. Brain and spinal-MRI showed a cervical slipped disc without signs of myelopathy. Serologic antibody-panel found positivity for HTLV-1 (Western-Blot/ELISA). In accordance with WHO-diagnostic guidelines, qualitative-PCR demonstrated plasmatic viral replication. Therapeutic approach included high-dose intravenous steroid-pulse combined with rehabilitation. Despite initial improvement, ambulatory controls revealed progressive

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worsening of motor disability. A four-week alpha-Interferon assay was tested, with sustained benefit during the follow-up period.

**Conclusions:** Neural damage caused by HTLV-I, and specifically HAM/TSP, is considered an immunomediated process. Immunomodulatory molecules, such as alpha-Interferon, have demonstrated activity and usefulness in clinical trials. The case presented adds to current knowledge and experience on the therapeutic effect of α-Interferon in this uncommon but disabling disease. Further assays should be made, in order to define standardized therapies.

**P1352**

**HERE TODAY, GONE TOMORROW: A CASE OF SPONTANEOUS LUNG LESION REGRESSION IN THE PRESENCE OF ANTI-HU POSITIVE SENSORY NEUROPATHY**  
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Anti-Hu antibody is a marker of neurologic autoimmunity which is strongly associated with small-cell lung carcinoma (SCLC). We report the case of a 69-year-old lady who presented with a severe sensory neuropathy in association with the presence of anti-Hu antibody. Prior to the development of her neurological symptoms, she presented with a right middle lobe lung lesion, with radiological, bronchoscopic and histological features suggestive of SCLC. The mass disappeared spontaneously without any specific treatment being given, which was confirmed by CT, CT-PET and bronchoscopy. Her neurological symptoms have persisted, while there is now no evidence of an underlying malignancy. Disappearing lung lesions have rarely been reported in the presence of anti-Hu, but this is the only case where histology suggestive of SCLC has been obtained prior to regression of the lung lesion. We believe this case supports the theory that the immune processes which are responsible for neurological para-neoplastic syndromes in the presence of anti-Hu are also responsible for anti-tumour activity.

**P1353**

**TENOFOVIR-INDUCED TETRAPARESIS RELATED TO SEVERE HYPOKALEMIA AND RHABDOMYOLYSIS**  
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**Background:** Tenofovir disoproxil fumarate is a nucleotide reverse transcriptase inhibitor used in antiretroviral treatments. Very few cases of life threatening profound hypokalemia associated with rhabdomyolysis have been reported.

**Case-report:** A 49-year-old Afro-american Brazilian patient presented to us with a 3-day evolution of progressive tetraparesis.

He was infected by HIV-1, HCV and HTLV-II. AIDS diagnosis was done 12 years ago and he has been presenting a long list of opportunistic infections. He developed chronic renal dysfunction in the last two years. Antiretroviral drugs (tenofovir, ritonavir/lipinavir, ampranavir and lamivudine) have been used with bezafibrate in the last three months. Peripheral neuropathy developed insidiously and was diagnosed by electromyography five months ago. An acute flacid tetraparesis evolved without cramps or pain. At presentation serum creatinine level was 4.8 mg/dl, serum potassium level 1.7 mEq/L, AST was 602 U/L, LDH was 872 U/L, serum myoglobin level was over 800 ng/mL and serum CK level was 8,111 U/L. Complete clinical improvement was achieved 3 days after intensive potassium and fluid replacement, urinary alkalinization and fibrate and antiretroviral regimen discontinuation.

**Discussion:** Tenofovir-related nephrotoxicity and hypokalemia may be severe and life threatening, mainly in association with ritonavir. Risk factors are low body weight, baseline renal insufficiency or ritonavir concomitant use.

**P1354**

**A CASE OF SEVERE CEREBRAL TUBERCULOSIS INFECTION IN AN HIV POSITIVE PATIENT**  
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**Background and aim:** we describe a case of severe cerebral tuberculosis in a patient with HIV infection and tuberculosis naive. O.D., a 29-year-old Nigerian girl, was admitted in hospital in September 2006, for a fever that appeared a few days before, associated with headache, vague visual disturbances and pain in the left upper arm. In her previous medical history HIV positivity was diagnosed three years before. At her admission she was drowsy and unbalanced, needing support while walking; she also presented neck stiffness and had signs of oral candidiasis. During the hospitalisation she complained of visual disturbances and her sight progressively worsened until complete blindness occurred in less than two months. She also had episodic disorientation or mental confusion with memory deficit, and complained of sleep disturbances. A first MR showed wide spread changes with intense signal abnormality in the frontal and the middle of the base of the brain. A control done three months after showed a big conglomerate with confluent intense signal abnormality which fill the base of frontal cistern/supracellular cisterns. A chest X-ray showed infiltrates of basal left side. A CSF showed increased protein and decrease level of glucose. Cryptococcus antigen test was negative. A PCR was positive for mycobacterium tuberculosis complex. Meningeal tuberculosis in this HIV positive patient was diagnosed, and initiated both HAART and antibiotic therapy.

**Conclusion:** we assumed that HIV infection of the central nervous system could favour and extend the cerebral damage of an unknown tuberculosis.

**P1355**

**CURRARINO TRIAD: A RARE CAUSE OF Meningitis IN AN ADULT**  
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We report on a 61-year-old female with Currarino triad manifesting as acute meningitis. Currarino triad is a rare congenital ge-
netic condition characterized by ano-rectal malformation, sacral bony defect and a presacral mass most often caused by an anterior or sacral meningoele, a teratoma, both being sometimes associated, or an enterogenous cyst. The patient had history of treatment for anal stenosis in her childhood. She suffered severe constipation all life long, without specific diagnosis. Her only brother died at the age of 5 from bacterial meningitis. In October 2006, while suffering from low back pain for ten days, she developed headache, fever and meningeal signs. The CSF analysis revealed probable bacterial meningitis with neutrophilic pleocytosis, profound hypoglycorachia and elevated lactic acid in CSF No bacteria was identified. She received metronidazole, ampicillin and ceftriaxone during 3 weeks. CSF slowly reached normalization. MRI showed the sacral defect and an anterior meningoele. Despite extensive investigations, no fistula could be shown. Meningitis, one of the most severe complications of Currarino triad, was reported in a few dozens of cases. When identified, it might be related to a fistula between skin or rectum and meningoele or to an infection of the cyst It requires large spectrum antibiotics. However, the mechanism of infection remains unclear and some meningitis remains idiopathic. Sacrum imaging might be useful for meningitis from unknown origin. Family screening is recommended. Early diagnosis of Currarino triad may prevent devastating complications.

P1356
CENTRAL NERVOUS SYSTEM TUBERCULOSIS: A CLINICO-PATHOLOGICAL PRESENTATION
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Background: Central nervous system (CNS) tuberculosis (TB) remains a public health problem, particularly in developing countries. The clinical spectrum is broad and may be non-specific making early diagnosis difficult. This increases the incidence of mortality.

Patient and methods: We present a 55-year-old woman that was admitted to our hospital because of headaches, somnolence and mild left hemiparesis with subacute worsening without fever or meningeal signs. The brain CT revealed hydrocephalus and RT basal ganglia ischemic findings. A Ventriculostomy was performed without clinical improvement. Cerebrospinal fluid findings showed elevated protein levels, mononuclear pleocytosis and normal sugar level. Ziehl Nielsen, serum and CSF test for cytomegalovirus, Epstein–Barr virus, herpes simplex virus, herpes zoster virus, and enteroviruses, antibodies to the West Nile Virus were negative. Multiple lesions of increased signal intensity in T1, Ischemic findings and localized leptomeningeal enhancement were detected on Brain MRI. Isoniazid, rifampin, pyrazinamide, ethambutol, pyridoxine and full corticosteroid treatment was started. The diagnosis was confirmed by biopsy that showed acute and chronic inflammatory infiltrate with scattered epithelioid granulomata predominantly in the meninges compatible with antiogistis of the CNS. 10 days later mycobacterium tuberculosis was cultured from 2 separated CSF samples.

Conclusions: We will discuss the clinical and pathological findings of this challenging diagnosis. The atypical presentation of our patient with only mild focal signs, headaches and somnolence without fever, neck rigidity or other symptoms highlights the importance of considering TB in the differential diagnosis also in regions of low incidence.

P1357
RECURRENT STROKE REVEALING CATASTROPHIC ANTIPHOSPHOLIPID SYNDROM WITH HEPATITIS C VIRAL INFECTION
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Antiphospholipid syndrome is an autoimmune disease characterised by association of thrombotic event or/and avartemen and presence of serum antiphospholipid antibodies. Very few cases of antiphospholipid syndrome (APLS) have been described among patients having chronic hepatitis C virus infection (HCV). We report the observation of a 43-year-old woman who had an APLS diagnosed following recurrent strokes, and in whom etiologic investigations ended in an association of APLS with HCV. This association, in addition to its exceptional character, raises etiopathogenic problems. Indeed, if antiphospholipid antibodies (aPL) are frequently noted during chronic hepatitis C, they rarely generate thromboembolic complications.

P1358
MULTIPLE MENINGIOMAS AND UTERINE LEIOMYOSARCOMATOSIS, ASSOCIATED WITH ENDOCRINOPATHIES AND METABOLIC DYSFUNCTIONS: A CONDITION ATTRIBUTED TO “MEN 1” OR A NEW SYNDROME?
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Background: Patients with MEN 1 usually develop endocrine and non-endocrine tumours. Single meningiomas and uterine leiomyomas, but not multiple meningiomas (MM) and uterine leiomyosarcomas (ULMS) have been reported in MEN 1 previously. We describe the first case of the syndrome in a female unrelated to the patients with MEN 1 described to date.

Case report: A 75-year-old female with MM and positive family history of MEN 1 is presented. Her own history revealed thyroid adenomatosis, uterine leiomyosarcomatosis, ovarian cysticum, and other symptoms compatible to MEN 1 including diabetes mellitus type II. Additionally, she referred cholelithiasis, nephrolithiasis and ulcer duodeni from the past. Magnetic resonance imaging (MRI) detected multiple fronto-parieto-occipital meningiomas with diffuse nonadjacent hyperostoses. Spectroscopic MR (MRS) provided the characteristic spectral changes; choline (Cho) excess, increased Cho/Cre ratio, markedly decreased acetylaspartate (NAA) and reduced creatine (Cre).

Conclusion: This is the first case of MM and ULMS, associated with multiple endocrinopathies and multiple metabolic dysfunctions, reported. The first case of MM and ULMS associated with multiple endocrine tumours, endocrinopathies and metabolic dysfunctions has been reported. This case supports the existence of this syndrome as a separate entity from MEN 1.
P1359
NEUROLOGICAL IMMUNE RECOVERY INFLAMMATORY SYNDROME ASSOCIATED WITH HIV1 TREATMENT. A CASE REPORT
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A 32-year-old male patient diagnosed with HIV 1 infection in 2003 (at age 29), rejecting at that time the HAART scheme, which was started in August 2006 is presented. In September 2006 language emission difficulties, alteration both in memory and in focusing attention appeared. One month later other findings appeared (mixed aphasia and right pyramidal syndrome). He was admitted to a hospital for further clinical studies; he was medicated with corticosteroids. By February 2007, a total remission was yielded. Image studies (MRI, CT cranial and chest/abdominal scans), Cerebro-Spinal Fluid (CSF) analysis, electroencephalography, CD4+ T-cells Count (CD4/C), viral load (VL) and a series of blood and CSF cultures were requested. Multiple cortical and subcortical right fronto-temporal and bilateral occipital hypointense lesions on T1 and hyperintense on diffusion sequences were found. Spectrophotometry discarded neoplastic and infectious process on these locations, but an inflammatory process hallmark could not be discarded. The CD4/C were within expected (217 cells) limits and the VL was non detectable. No bacterial colonies grew on the cultures. The image studies requested on February 2007 showed a complete remission of the lesions. IRIS represents a paradoxical deterioration after the beginning of the HAART. A neurological IRIS must be considered in those patients suffering unspecific neurological signs or symptoms (with or without MRI/CT findings) within the first 45 to 60 days of starting HAART and yielding a CD4 T cells count within normal and a non detectable viral load, after excluding infectious aetiologies.

P1360
UNILATERAL PAPILLEDEMA: AN UNUSUAL FORM OF NEUROSARCIOIDOSIS. A CASE REPORT
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Objective: Neurological pathology as the initial form of sarcoidosis is exceptional (less than 5%). Neurological manifestations are diverse, depending on location site, most common are facial palsy or diplopia, and only present in 5 to 26% of all the patients with sarcoidosis.

Methods: We present the case of a 54-year-old female, with unilateral papilledema, as the first sign of sarcoidosis, without other symptoms. We have used the new diagnostic criteria of neurosarcoidosis of M. Sakuta, published in 2006 in Japan.

Results: IRM was normal, but the tomography of thorax showed bilateral hilar lymphadenopathy. Broncho alveolar lavage fluid was normal, but showed elevated serum ACE, negative Tuberculin Test, and minimal elevated serum calcium level. Lumbar puncture showed aseptic liquid. Sarcoidosis is a granulomatous, multisystemic disease, of unknown etiology that mainly affects lungs, skin and lymphatic ganglia. Incidence is low (40 cases by 100,000 inhabitants).

Conclusions: Central nervous system involvement is more frequent in the acute forms of this illness. When the presenting features of sarcoidosis are neurological, as in this case, diagnosis is difficult.

P1361
MANNITOL INFUSION FOR PATIENTS WITH CEREBRAL OEDEMA
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Mannitol is used in cerebral oedema for more than 45 years. 

Objective: to evaluate the mannitol infusion effect on neurological status and CT midline shift.

Methods: 258 patients with cerebral oedema caused by stroke, brain tumour and with severe brain trauma were observed in NeuroICU (Neurosurgical Centre (chief – Prof. A.L. Krivoshapkin) of Novosibirsk Railway Hospital). We studied CT evidence of both midline shift (at least 3mm) and diffuse cerebral oedema. Besides, multimodal monitoring (MAP, GCS, ICP, cerebral oxygenation (rSO2) and blood osmolarity) were used. All the patients were treated according to standard protocol: mannitol infusion (1–30 days, mean – 6.6 days) 50 ml/h for the patients with GCS <8 and midline shift >8 mm (2.6 g/kg/day) and 25 ml/h for the patients with GCS >8 and midline shift <8 mm (1.3 g/kg/day), adequate respiratory and volume support.

Results: mean ICP = 24 mm Hg. Average MABP = 118.1 mm Hg. The initial CT scans demonstrated midline shift 4–18 mm in 86 patients (32.9%). rSO2 and Hemodynamic Sufficiency Index were low (57.3% and 0.46 respectively) and hemispheric Asymmetry Rate increased (17.2 %) in patients with local cerebral oedema. 29 patients (12.5%) died, predominantly due to cerebrovascular diseases and brain tumour. No survived patients worsened. GCS improved and changes mentioned above disappeared gradually. Osmolarity remained normal.

Conclusions: it is reasonable to exploit mannitol infusion in patients with cerebral oedema.

P1362
TUBERCULOUS MENINGITIS IN HIV-INFECTED PATIENTS DURING ANTI-TUBERCULOSIS TREATMENT WITH POOR CNS PENETRATION
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Tuberculous (TB) meningitis is the most lethal form of Mycobacterium tuberculosis infection. It occurs more commonly in HIV-infected patients. HIV/TB coinfection treatment is particularly challenging.

Case 1: A 23-year-old man, HIV1, HCV and HBV-infected was started on isoniazid, rifampin, pyrazinamide and ethambutol after pulmonary tuberculosis diagnosis. At day 16, hepatic dysfunction was detected. Treatment was resumed with isoniazid, streptomycin, ethambutol and ciprofloxacin, after hepatic improvement. Isoniazid was stopped later on (AST-438; ALT-428U/L). At day 121 anti-retroviral therapy was prescribed. Two months later he complained of severe headache and fever. Neurological examination was normal but CSF bacteriologic study disclosed Mycobacterium tuberculosis. He completely recovered on rifabutin, pyrazinamide, ethambutol, cycloserin and ciprofloxacin without new signs of hepatotoxicity.

Case 2: A 32-year-old man, HIV1 and HCV-infected was started on isoniazid, rifampin, pyrazinamide and ethambutol after pulmonary tuberculosis diagnosis. At day 16, hepatic dysfunction was detected. Treatment was resumed with isoniazid, streptomycin, ethambutol and ciprofloxacin, after hepatic improvement. Isoniazid was stopped later on (AST-438; ALT-428U/L). At day 121 anti-retroviral therapy was prescribed. Two months later he complained of severe headache and fever. Neurological examination was normal but CSF bacteriologic study disclosed Mycobacterium tuberculosis. He completely recovered on rifabutin, pyrazinamide, ethambutol, cycloserin and ciprofloxacin, after hepatic improvement. Isoniazid was stopped later on (AST-438; ALT-428U/L). At day 121 anti-retroviral therapy was prescribed. Two months later he complained of severe headache and fever. Neurological examination was normal but CSF bacteriologic study disclosed Mycobacterium tuberculosis. He completely recovered on rifabutin, pyrazinamide, ethambutol, cycloserin and ciprofloxacin, after hepatic improvement. Isoniazid was stopped later on (AST-438; ALT-428U/L).
namide, ethambutol, p-Aminosalicylic-acid and cycloserin were started with clinical and imagiological improvement.

Discussion: We report two patients who developed tuberculous meningitis while on anti-tuberculosis treatment with poor CNS penetration. An immunological reconstitution syndrome seems less probable since microbiological examination was positive in the first patient and both improved on anti-tuberculosis drugs with better CNS penetration, without steroid therapy. These patients remind us that anti-tuberculosis treatment, particularly in HIV-infected patients, should include drugs with good CNS penetration.

P1363
NEUROLOGICAL ONSET OF SYSTEMIC SARCOIDOSIS. PRESENTATION OF A CASE
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Objectives: To describe the case of a patient with neurological onset of systemic sarcoidosis. Sarcoidosis is an inflammatory multisystemic disease of unknown cause that affects the nervous system in 5–15% of the patients.

Methods: A 29-year-old man who presented a progressive campimetric defect. He had a history of mumps encephalitis in childhood and a hydrocephalus that required ventricular CSF drainage. Last month the patient was diagnosed of hypogonadism, hypocorticism and diabetes insipidus. Our study included neuroimaging, CSF and an axillary lymph node biopsy.

Results: Papilla atrophy, temporary superior quadrant defect in the right eye and superior altitudinal defect in left eye, an increase in protein levels in CSF, a compatible MRI with a granuloma in the hypothalamus-chiasmatic region and multiple lymph nodes in thorax and abdomen. A definite diagnosis of neurosarcoidosis (NS) requires demonstration of non-caseating granulomas affecting nervous tissues. In most cases, histological evidence of systemic disease (probable NS) is sufficient in the presence of compatible alterations in the CNS. In our case the lymph node biopsy showed multiple non-caseating granulomas. Corticosteroid treatment improved his symptoms.

Conclusions: NS is a rare disease, even more in this case, where the diagnosis was made through a chiasmatic defect. It’s important to think of sarcoidosis in neurological patients because of its high prevalence and its good therapeutic response.

P1364
ACUTE, STROKE-LIKE ONSET OF LYME NEUROBORRELIOSIS
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Background: Lyme disease is a multisystemic disorder caused by a spirochete, Borrelia Burgdorferi (Bb), which is transmitted to humans by ticks of the species Ixodes. Three sequential clinical stages have been described: early localized; early disseminated; and late persistent infection. Neuroborreliosis may occur during the early dissemination phase, and very rarely, may present as a meningoencephalitis occurring leading to an acute stroke.

Case Report: We present the clinical data of a 23-year-old male who suddenly developed a right hemiparesis associated with cerebellar ataxia and dysarthria, and bilateral dysmetria. Brain MR examination showed pontine ischaemic lesions with low apparent diffusion coefficient and absence of contrast enhancement. CSF analysis revealed a high protein content, a lymphocytic pleocytosis, and oligoclonal IgG bands not present in the corresponding serum. Elevated IgM and IgG anti-Bb antibodies were present in both serum and CSF samples, associated with an intrathecal synthesis of these antibodies. Retrospective medical story indicated the occurrence of fluctuating, tension-like headache during the last 5 months and a tick bite 6 months before the acute event.

Conclusion: Ischaemic lesions of the CNS may be the first manifestation of Lyme disease. The pathologic process is likely due to the extension of the inflammation or infection from the meninges to the small penetrating vessels of the posterior circulation.

P1365
DETERMINANTS OF INFECTIONS COMPLICATING ACUTE STROKE: ANALYSIS OF 1183 CASES
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The 3rd most common stroke complication is infection. Aim of the study was the frequency of aspiration pneumonia and urinary tract infection (UTI), their risk factors and their effect on outcome in patients with acute stroke.

Methods: Patients with acute stroke hospitalized in our Dept. were included in the study. Results: We included 1183 patients (618M/565F) with acute stroke (aged 60–101), 42% had ischaemic infarct of large arteries, 12% intracerebral haemorrhage, 8% lacunar infarct, 24% cardioembolic and 14% were unclassified. In 140 stroke patients (11.8%) occurred an aspiration pneumonia and in 180 (15.2%) an urinary tract infection (UTI) within one week after acute stroke. In a forward stepwise logistic regression analysis lower baseline Scandinavian Scale score, age, male gender, history of diabetes, and stroke subtype predicted pneumonia while female gender, and age were the predisposing factors for an UTI. Among 1183 stroke patients 402 (34%) died. After correction for age, sex, type of stroke and traditional cardiovascular risk factors the most important determinants for poor outcome was aspiration pneumonia (p<0.001) and the presence of coronary heart disease.

Conclusions: Aspiration pneumonia and UTI are frequent complications of stroke associated with poor outcome. Patients with identified risk factors must be closely monitored for infection.

P1366
LIVER AND BRAIN METABOLIC ALTERATIONS IN PATIENTS WITH SUBCLINICAL HEPATIC ENCEPHALOPATHY
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We studied the prevalence of subclinical hepatic encephalopathy (SHE) diagnosed as a premorbid decline of cognitive functions as measured by Wechsler Adult Intelligence Test (WAIS-R) in patients with liver cirrhosis without any neurological signs and symptoms at bedside examination. We also studied the significance of blood markers of liver cirrhosis and metabolic brain function as measured by H1 MRS in patients with and without SHE as compared to controls. We included 36 patients with liver cirrhosis and 34 healthy controls, matched by age, sex and education level. In each case the WAIS-R (PL) test was performed. At the time of neuropsychological testing the following blood markers of liver
function were studied: albumin, bilirubin, ASPAT, ALAT, INR and ammonia. The H1 MRS metabolic abnormalities in the brains of study participants were measured. MR imaging was performed on 1.5 Magnetom Vision Plus (Siemens Erlangen, Germany). Three voxels of 8 cm³ were positioned in: 1) predominantly white matter in the posteromedial parietal cortex, 2) predominantly gray matter in the posterior occipital cortex, 3) globus pallidus. The following ratios were assessed: Myinositol/Creatine (Mi/Cr), Choline/Creatine (Cho/Cr), N-acetyl aspartate/Creatine (NAA/Cr), Myoinositol/Choline (Mi/Cho), N-acetylaspartate/Choline (NAA/Cho).

SHE was diagnosed in 41.7% of patients. Patients with and without SHE presented with a similar profile of blood and brain metabolism derangements as compared to controls, however, patients with SHE as compared to patients without SHE showed lower NAA/Cr ratio, suggesting greater neuronal dysfunction in SHE patients and a significant correlation between cognitive decline and the levels of INR and ammonium.

**P1367**

**EYE MOVEMENT DISORDERS IN VITAMIN B12 DEFICIENCY: TWO NEW CASES AND REVIEW OF THE LITERATURE**

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**Background:** Vitamin B12 deficiency can cause dementia, encephalopathy, myelopathy, peripheral neuropathy and optic neuropathy and rarely eye movement disorder.

**Objectives:** To emphasize the relation between eye movement disorder and VB12 deficiency.

**Method:** Case 1 was presented with memory problems, gait disturbance and imbalance. Case 2 was presented with imbalance and visual problems. Blood tests and magnetic resonance imaging (MRI) were done.

**Results:** In case 1 laboratory tests showed vitamin B12 level 110 pg/ml (normal range 211–911). Neurological examination showed impaired position and vibration sense in lower extremities, positive Romberg’s sign, ataxic gait and bilateral internuclear ophthalmoplegia (INO). Mini-mental state examination score was 28/30. MRI demonstrated high signal intensity around aqueduct and the 4th ventricle. In case 2, VB12 level was 86 ng/mL. Neurological examination revealed diminished position and vibration in lower extremities, brisk deep tendon reflexes, positive Romberg sign, ataxic gait and primary-position downbeat nystagmus increasing in lateral and downward gaze. MRI showed mild cerebellar atrophy thought to be consistent with age. In our cases eye movement disorder did not resolve after vitamin B12 injections. Similar nine cases in literature were reviewed.

**Conclusion:** Eye movement disorders in vitamin B12 deficiency are rare, but should be considered as a significant presentation of VB12D. Since the response to treatment is also correlated with the duration of symptoms, diagnosis should be made promptly in order to have the best clinical outcome.

**P1368**

**HASHIMOTO’S ENCEPHALOPATHY OCCURRING IN THE COURSE OF RESPIRATORY INFECTION**

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P1376
CRYPTOCOCCAL MENINGITIS WITH OCCLUSION OF THE PARAMEDIAN MIDBRAIN AND BILATERAL THALAMIC ARTERIES
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P1377
AAGENÆS SYNDROME WITH CNS MANIFESTATIONS
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P1378
CENTRAL PONTINE MYELINOLYSIS FOLLOWING HYPERTENSIVE ENCEPHALOPATHY IN A PREGNANT PATIENT WITH CONFUSION AND HORIZONTAL GAZE PALSY
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P1379
NEUROSYPHILIS WITH RECURRENT NEUROLOGICAL EPISODES MIMICKING MULTIPLE SCLEROSIS – A CASE REPORT
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P1380
THE IMPORTANCE OF COMBINED SEROLOGIC TESTS IN PATIENTS SUSPECTED TO HAVE NEUROSYPHILIS – A CASE REPORT
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P1381
IS CEREBRAL TOXOCARIASIS MORE SEVERE THAN NEUROCYSTICERCOSIS?
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P1382
CHOREA IN SYSTEMIC LUPUS ERYTHEMATOSUS
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P1383
ATYPICAL PRESENTATION OF BENIGN INTRACRANIAL HYPERTENSION
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P1384
A UNIQUE ASSOCIATION OF CEREBELLAR SYNDROME AND PYRAMIDAL SIGNS IN A CASE OF COXIELLA BURNETII MENINGO-ENCEPHALITIS
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P1385
CEREBRAL TUBERCULOSIS WITH HYPOPITUITARISM AND TUMOR-LIKE LESION OF THE HYPOTHALAMUS
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SKELETAL-EXTRASKELETAL ANGIOMATOSIS LIMITED TO THE HEAD, ASSOCIATED WITH PARAPROTEIN-AEMIA
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STREPTOCOCCUS SUIS MENINGITIS: THE FIRST CASE REPORT FROM PORTUGAL
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THE INCIDENCE OF CNS IMPAIRMENT IN HIV POSITIVE PATIENTS IN NEUROLOGY PRACTICE
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Neuroimmunology; Neuro-oncology

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ANTIBODIES AGAINST TUBULIN IN PATIENTS WITH MULTIPLE SCLEROSIS
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Background: Axonal injury results in the release of cytoskeletal microtubules and neurofilaments. Antibodies against tubulins as core proteins of microtubules may be involved in the immune response in multiple sclerosis (MS).

Objectives: To compare serum and cerebrospinal fluid (CSF) levels of anti-tubulin (anti-TUB) antibodies in MS patients and controls and to investigate the relationship between serum and CSF levels.

Patients and methods: Antibodies IgG against bovine tubulin were measured using ELISA in paired CSF and serum samples obtained from 39 MS patients, 13 controls with miscellaneous disorders (CD) and 16 normal control subjects (CN).

Results: MS patients and CD patients had similar levels of anti-TUB antibodies in CSF, which were significantly higher than that seen in the CN group. The similar anti-TUB levels were found in serum in all three groups. There were low or insignificant correlations between anti-TUB antibody levels between serum and CSF in all groups.

Conclusion: Anti-TUB antibodies are not a specific marker of neuronal damage and are not related to aetiology. Serum levels are independent of CSF levels of anti-TUB antibodies. This study was supported by the research project MSM 0021620816.

Neurological deficit due to spinal cord involvement is not uncommon in the course of malignant disease. Usually this is caused by bony metastasis with extension into the epidural space. Clinical manifest spinal cord dysfunction caused by intramedullary spinal cord metastasis (ISCM), however, is extremely rare. Apparently, given the observations in autopsy series of cancer patients, in which a frequency of ISCM of 0.9–2.1% has been reported, they often remain asymptomatic. ISCM predominantly originate from lung carcinoma. Furthermore, metastasis from breast cancer, renal cell carcinoma, and melanoma are not uncommon. ISCM are usually solitary. Rapid progression of neurological deficit, a strong asymmetry in myelopathic symptoms, and Brown Sequard syndrome are characteristic symptoms of ISCM. MRI with gadolinium enhancement is the best non-invasive technology to investigate intramedullary metastasis. The preferred treatment of ISCM consists of radiotherapy. Surgical therapy is seldom indicated. It may be considered in patients with well-delineated tumours without leptomeningeal metastases who have a relatively good condition and prognosis. We present the clinical features and results of MRI studies of three patients with ISCM. In two patients ISCM was the first clinical manifestation of metastatic disease. In contrast to reports in literature two patients had a relatively slow progression of neurological deficit before a diagnosis was made. In the two patients who received treatment for ISCM this resulted in stabilisation of their deficit. The possibility of ISCM should be considered in case of malignancy with progressive myelopathy without evidence of epidural or leptomeningeal metastases.

P1394
THREE PATIENTS WITH INTRAMEDULLARY SPINAL CORD METASTASIS: A REPORT OF CLINICAL FEATURES AND IMAGING STUDIES
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P1395
ELEVATION OF GAS6 PROTEIN CONCENTRATION IN CEREBROSPINAL FLUID OF PATIENTS AFFECTED BY CHRONIC INFLAMMATORY DEMYELINATING POLYNEUROPATHY (CIDP)
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Background and aims: Gas6 protein enhances survival of Schwann cells and neurons. It participates to autoimmunity in animal models. Gas6 human cerebrospinal fluid (CSF) concentration is unknown. We evaluated Gas6 CSF concentration in normals, non-autoimmune diseases (NAD) and autoimmune-inflammatory diseases (AID).

Methods: CSF samples collected from 1999 till 2006 during a diagnostic spinal puncture were stored at -30°C after informed consent. We considered subjects with NAD (stroke, epilepsy, ALS, headache) or with AID: Guillan-Barré syndrome (GBS), CIDP, other inflammatory polyneuropathies (IP) and multiple sclerosis (MS) or resulted normal. CSF total protein and age were obtained from clinical records. Gas6 was measured with an enzyme linked immunoassay (ELISA) developed and validated in our laboratory (inter-, intra-assay CVs <10%, recovery 96%). Parametric and non-parametric analysis were used. We compared mean values with the ANOVA test with Scheffé post hoc test. The level of significance was 5%.

Results: Three CSF samples were analyzed. Gas6 concentration in CSF was undetectable in control, NAD and AID patients. Mean values were: 8.7±0.7 (controls), 8.7±0.9 (NAD), 8.0±0.7 (AID) pg/ml. Significance was calculated with t-test.

Conclusion: No significant differences among the groups were found. Further studies are needed to evaluate the role of Gas6 protein in the pathogenesis of chronic inflammatory demyelinating polyneuropathy.
Background: Meningiomas represent the most frequent primitive intra-cranial tumours after gliomas.

Objective: The present study has been done to investigate the features of meningiomas in our clinical research.

Patients and methods: We selected patients (pts) with meningiomas diagnosed with CT, MRI and/or DSA, who had undergone surgical treatment. Each tumour was analysed relative to age, and sex of the pts and with number, site, size, angiographic features, clinical evolution, histological subtypes, grading, mitotic indexes, necrosis extension, and cellular atypies of the meningiomas.

Results: Between 1992 and 2006, 162 pts with meningiomas were hospitalised. These tumours appeared more frequently after the age of 50 (131 pts – 80.9%) with predominance in women (69.1%). A number of 150 pts (92.6%) presented a unique tumour. We found the following major forms of meningiomas: a)“in the mass”, 134 pts (82.7%); b)“in the plaque”, 28 pts (17.3%). According to the topography of the implantation base, the following major types of meningiomas have been identified: convexity meningiomas, for 54 pts (33.3%); parasagittal meningiomas, for 34 pts (21%); sphenoid wing meningiomas for 28 pts (17.3%). Necrosis was detected in 118 pts (72.8%) and cellular atypies were discovered in 102 pts (63%) permitting to classify these tumours as WHO grade I or II. The mitotic index was less than 5/HPF for most of pts (83.4%). The meningiomas vascularisation was ensured mostly by the external carotid artery, but also by the internal carotid artery and/or by the vertebral artery.

Conclusions: Practically, meningiomas cover the whole intracranial neurological semiology, which depends mainly on the tumour location (anatomical report of the implantation base) and on the meningiomas site and size.

P1398

ANTIBODIES IN NARCOLEPSY-CATAPLEXY PATIENTS: SERUM BIND TO RAT HYPOCRETIN NEURONS

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Background: The sleep disorder narcolepsy-cataplexy (NC) is associated with lack of hypocretin-1 (HCRT) – a neuropeptide known to regulate sleep and wakefulness. NC patients have very low cerebrospinal fluid (CSF) levels of HCRT and post-mortem studies show pronounced reduction of HCRT neurons. Substantial evidence suggest that NC is an autoimmune disorder because 90% of patients have the same HLA-type (DQB1*0602). It is therefore tempting to speculate that narcolepsy is caused by autoimmune destruction of HCRT neurons. But direct evidence of this fx. detection of auto-antibodies is still missing.

Objective: we wanted to detect signs of autoimmune processes in serum and CSF of HCRT-deficient NC patients targeted against rat HCRT neurons.

Methods: serum (diluted 1:20 or 1:100) and CSF from 9 HLA-DQB1*0602-positive NC patients and 9 controls were each applied onto 6 coronal sections of paraformaldehyde-fixed pre-incubated male Wistar rat brains. Immunostaining was evaluated blind to the nature of the sample. Double-staining with anti-HCRT-IgG was done if positive immunostaining was found.

Results: specific immunostaining of HCRT-containing neurons (membrane and superficial part of the cytoplasma) was found in plasma of one NC patient, confirmed in an additional plasma sample from the same patient taken 1 year and 3 months later. In the rest, no specific immunostaining was observed.
Conclusion: In individual NC patients signs of autoimmunity against HCRT neurons were identified. However in the majority of patients this seemed not to be the case, possibly due to subdetectable levels of autoimmune processes or other mechanisms of HCRT neuron destruction.

P1399
ANTINUCLEAR ANTIBODIES IN MITOCHONDRIAL ENCEPHALOPATHIES
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Background and aims: Mitochondrial encephalopathies are a group of disorders relating to the mitochondria, the organelles that are the “powerhouses” of the eukaryotic cells that comprise higher-order life forms. One of these disorders is the Leigh syndrome (LS), which is a rare inherited neurometabolic disorder characterized by degeneration of the CNS (brain, spinal cord, and optic nerve), meaning that it gradually loses its ability to function properly. The aim of this study was the elucidation of role of some antinuclear antibodies in pathogenesis and clinical presentation of LS.

Methods: Serial dilutions of patient serum and CSF were reacted with frozen sections of human cerebelum and basal ganglia, and vibratome sections of rat brain, labelled using indirect immunofluorescence methods, examined using confocal microscopy. Western blot analysis of Anti-ENA (extractable nuclear antigen), Anti-La (SS-B), and Anti-nRNP (nuclear ribonucleoproteins) was carried out using lysates of human Purkinje cells. Positive controls included brain sections and Western blots of neuronal lysates reacted with sera from patients with Leigh syndrome and defined autoantibody response.

Results: The LS patients’ serum and CSF labelled Substantia Nigra and thalamic cell cytoplasm as well as scattered cells in both molecular and granular cerebellar cell layers. Western blot analyses revealed that the patient serum labelled a 34kd protein in lysates of human Substantia Nigra neurons, but not liver.

Conclusions: This study revealed that LS patients may indicate a previously unreported antinuclear antibody response against certain type of nuclear antigens. As in other neurodegenerative diseases, pathogenetic role of these antibodies remains unknown.

P1400
CXCL1 (GRO-ALPHA) AND CXCL6 (GRANULOCYTE CHEMOTACTIC PROTEIN-2) ARE ASSOCIATED WITH STROKE SEVERITY AND SHORT-TERM STROKE OUTCOME
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Acute cerebral ischaemia induces local inflammatory reaction including expression of chemokines, which precedes relevant leukocyte infiltration contributing to tissue injury. The objective of the study was to test hypothesis that CXCL1 and CXCL6 chemokines, potent neutrophil chemoattractants, play a role in inflammation during early phase of ischaemic stroke. The CXCL1 and CXCL6 levels in the CSF and serum obtained during 24 h from 23 ischaemic stroke patients aged 72.2±10.8 years have been measured by ELISA. CSF and blood samples from 15 tension headache patients served as a control group. The neurological stroke severity was estimated with Scandinavian Stroke Scale (SSS) within 24 h of stroke (SSS-1) and two weeks later (SSS-2). CXCL1 and CXCL6 levels were significantly elevated in the CSF of patients with ischaemic stroke in comparison with controls (65.6±22.3 pg/ml vs. 43.8±2.3 pg/ml for CXCL1 and 3.1±0.9 pg/ml vs. 1.8±0.7 pg/ml for CXCL6). Serum levels of studied chemokines did not differ from control values. CSF CXCL1 and CXCL6 levels correlated significantly with the neurological stroke severity within 24 h and after two weeks from the onset of stroke. This is the first such observation. Our results suggest that CXCL1 and CXCL6 chemokines may play a role in the inflammatory reaction during early phase of ischaemic stroke and CSF CXCL1 and CXCL6 levels are associated with stroke severity and have predictive value for short term stroke outcome.

P1401
113 CASES WITH NERVE SHEATH TUMORS: A 10-YEAR REVIEW
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Perineural elements including Schwann cells and fibroblasts are the origin of nerve sheath tumours. Malignant peripheral nerve sheath tumours (MPNST) and schwannomas can be difficult to diagnose because of their infrequent occurrence, non-specific symptoms, and lack of distinguishing radiological features and immunohistochemical markers. Thus, these are most often diagnosed histologically after surgical excision. In this study we tried to review both epidemiological and clinical manifestations of these tumours. We prepared a descriptive study included a series of 113 cases who were admitted in 3 academic hospitals of Tehran University of medical sciences – Amir A’lam, Shariati and Emam Hospital – Tehran, Iran, between 1997 and 2006. Patients’ data including age, sex, family history, history of neurofibromatosis, anatomical site of involvement, clinical manifestations, cranial nerve which was involved and pathological type of tumour were conducted using the SPSS statistical software program. Vestibulohoclar nerve (CN VIII) was the most common involved nerve and cervical plexus, facial nerve (CN VII) and vagus (CN X) were on the next turns. Intracranial regions were the most common anatomical site for schwannoma while neurofibroma was mostly found in the face and scalp and Malignant Peripheral Nerve Sheath Tumour (MPNST) in parapharyngeal space. Typically, presenting symptoms of these tumours are based on the affected nerve. There are no generally accepted guidelines for the diagnosis of malignant peripheral nerve sheath tumours with different origins. So due to the poor overall diagnosis, the least invasive therapy should be chosen.

P1402
RETROSPECTIVE ANALYSIS OF THE EFFICACY AND TOLERABILITY OF LEVETIRACETAM IN PATIENTS WITH METASTATIC BRAIN TUMORS
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Objective: Investigate the efficacy and tolerability of levetiracetam (LEV) in metastatic brain tumour (MBT) patients.

Background: Seizures affect approximately 30% of all patients with MBT. Treatment is often inadequate with conventional
antiepileptic drugs (AED). LEV is a 2nd generation, non-enzyme inducing AED that binds to neuronal synaptic vesicle protein 2A and may be effective in controlling seizures from MBT.

**Methods:** We performed a retrospective chart review of all MBT patients who had received LEV for seizure control.

**Results:** Thirteen patients were reviewed with a median age of 55.1 years (range 34–70). Six patients had breast cancer, 5 had lung cancer, and 2 had melanoma. LEV was used as an add-on AED in 7 patients and as monotherapy in 6 patients, with a median dose of 1,000 mg/day (range 500–3,000). The baseline median seizure frequency was 1 ictal event every other day. After the addition of LEV, the median seizure frequency was reduced to 0 per week. The seizure frequency was reduced to less than 50% of the pre-LEV baseline in 100% of patients (p=0.0002, Sign test), with 10 patients (77%; confidence interval: 46% to 95%) noting complete seizure control. The most common adverse event was somnolence, noted in 3 patients (23%).

**Conclusions:** LEV was very effective and well tolerated in MBT patients with seizures, and should be considered for add-on therapy or as a substitute AED for monotherapy.

**P1403**

**LONG-TERM THERAPY OF BRAIN TUMORS WITH TEMOZOLOMIDE: REVIEW OF TOLERABILITY AND EFFICACY IN 42 PATIENTS**

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**Background:** TZM is a 2nd generation alkylating agent with significant efficacy for brain tumours. The drug is administered orally for 5 days every month (150–200 mg/m2/day), using a conventional schedule. Due to TZM's lack of cumulative toxicity, some patients are receiving treatment for 12 to 24 months. The efficacy, safety, and tolerability of this long-term therapeutic approach remain unclear.

**Methods:** We performed a retrospective chart review of all Neuro-Oncology Center patients who had undergone temozolomide chemotherapy for 12 months or longer. RESULTS: A total of 42 patients (median age 45 years) met the criteria; tumour types included GBM (12), oligodendroglioma (9), anaplastic glioma (9), astrocytoma (7), and other glioma (5). 33 patients had received irradiation; 8 had prior chemotherapy. The median number of monthly TZM cycles was 14 (range 12–28; 16 patients ≥18 cycles), with a median TZM dose of 400 mg/day. Median time to progression was 18+ months (range 12+ to 52+ months; 17+ months in GBM cohort), with 9 objective responses by MRI (21.4%). Toxicity included mild to moderate fatigue (95%), mild nausea (83%), constipation (59%), and grade I/II leukaemia (59%) and thrombocytopenia (45%). Of 701 total cycles of TZM, 14 (2.0%) were delayed at least one week by treatment-related side effects. No lymphoproliferative disorders have been documented.

**Conclusions:** Long-term treatment with TZM is feasible, and demonstrates durable activity and acceptable toxicity in patients with gliomas, including GBM.

**P1404**

**EPIDEMIOLOGY OF PRIMARY CENTRAL NERVOUS SYSTEM TUMORS IN A CHILD POPULATION OF BELGRADE (SERBIA)**

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**Background and aims:** Primary tumours of central nervous system (CNS) are the second most common type of malignant diseases in children up to 15 years of age. The aim of this survey was to estimate incidence and mortality of primary CNS tumours among children up to 15 in Belgrade, during the period 1991–2005.

**Methods:** All children with primary CNS tumours with permanent residence in Belgrade were registered, by retrospective analysis of hospital records in all relevant institutions in the city. Mortality data were obtained from the Municipal Institute of Statistics. Both incidence and mortality rates were adjusted by world population.

**Results:** In Belgrade, during the period 1991–2005, 119 children with primary CNS tumours were registered. The average age-adjusted incidence rate was: 3.5/100,000 for boys, 2.5/100,000 for girls, and 3.0/100,000 for both sexes. The increasing trend of incidence was observed (y=2.608+0.061x, p=0.624). In boys, the average incidence rate increased from 2.7/100,000 in 1991–1995 to 5.0/100,000 in 1996–2000, and decreased to 2.5/100,000 in 2001–2005. The age-specific incidence rates were: 3.7/100,000 (0–4 years), 2.7/100,000 (5–9 years) and 2.4/100,000 (10–14 years). The most common pathohistological type of primary CNS tumours was astrocytoma (42%). The average mortality rates were: 1.7/100,000 for boys, 1.5/100,000 for girls and 1.6/100,000 for both sexes.

**Conclusions:** This study underlines the importance of continual registration of children patients with CNS tumours on regional level. It is the best way to follow incidence and mortality of the disease in our population for a longer period of time.

**P1405**

**THE FEATURES OF STROKE IN PATIENTS WITH SYSTEMIC RHEUMATIC DISORDERS**

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**Aim:** to detect the frequency and the features of stroke among 329 patients with systemic rheumatic disorders (SRD).

**Results:** We are presenting here our results on studies of 329 patients with different types of SRD: systemic lupus erythematosus (SLE) – 139, systemic sclerosis (SSD) – 40, different forms of primary systemic vasculitis (SV) – 117 and rheumatic disorders (RD) – 33. The group of this study consisted of 272 females and 57 males with the mean age of 39±12.7 years old. In patients with SRD, different types of ischemic stroke (IS) were distributed by their nature as follows: thrombosis type of IS was observed in patients with SLE, polyarteritis nodosa (PN), obliterating thrombangiitis (OT); heart-embolic type of IS was observed in patients with SLE and PN; hemodynamic type of IS was observed in patients with Takayasu's disease (TD), PN, SLE; lacuna-like type of IS was rarely observed in patients with SLE; haemorrhheologic micro occlusion type of IS was observed in patients with SLE, SSD, OT. Hemorrhagic strokes were rarely observed in patients with SLE and TD.

**Conclusion:** The features of strokes in patients with SRD are systemic character, time-course trend of strokes (mainly minor type of stroke) and good outcome and successful rehabilitation after first episodes of stroke. The pathogenesis of stroke in patients with systemic rheumatic disorders included distinct and multiple factors.
P1407
ANTI-ALPHA-FODRIN AUTOANTIBODIES IN PATIENTS WITH POLYNEUROPATHY OF VARIOUS ETIOLOGIES
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Background: We have previously reported that autoantibody to alpha-fodrin, a major component of the membrane cytoskeleton, is specifically detected in the sera of patients affected with Sjögren’s syndrome. Complications in the nervous system in Sjögren’s syndrome are frequent and peripheral neuropathy is sometimes the first manifestation of Sjögren’s syndrome. We therefore investigated whether the alpha-fodrin autoantibodies are detected in patients affected with polyneuropathy associated with Sjögren’s syndrome, polyneuropathy regarded as being associated with autoimmune and polyneuropathies with other aetiologies.

Methods: The reactivities of the sera from patients to recombinant alpha-fodrin proteins (N-terminal, intermediate, and C-terminal fragments) were evaluated by Western blot analysis.

Results: Anti-fodrin autoantibody to either fragment was positive in almost all the definite Sjögren’s syndrome cases with sensory polyneuropathy. The number of the cases with autoantibodies to intermediate and C-terminal fragments was higher than that with autoantibody to N-terminal fragment. All Sjögren-suspected cases with polyneuropathy and many cases affected with sensory polyneuropathy of unknown etiology were anti-fodrin autoantibody-positive, whereas there are few positive in healthy control cases. As the autoimmune mechanism is considered as the etiology of Miller-Fisher syndrome, a variant form of Guillain-Barré syndrome, anti-fodrin autoantibodies (especially to intermediate, and C-terminal fragments) were also positive in many cases affected with the syndrome.

Conclusion: These results have indicated that alpha-fodrin autoantibodies might be an excellent marker for peripheral neuropathies of various aetiologies as well as the nervous system involvement of Sjögren’s syndrome.

P1408
STEROID-RESPONSIVE ENCEPHALOPATHY ASSOCIATED WITH AUTOIMMUNE THYROIDITIS (HASHIMOTO’S ENCEPHALOPATHY), A CASE REPORT
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In 1966 Lord Brain described a patient with Hashimoto’s thyroiditis and encephalopathy. Subsequently, the term Hashimoto encephalitis became generally accepted. Most of these patients improve on immunosuppressive therapy with steroids. Therefore the syndrome is also defined as “steroid-responsive encephalopathy with autoimmune thyroiditis (SREAT)” or “nonvasculitic autoimmune meningoencephalitis (NAIM)”.

Case Report: A 66-year-old woman was admitted to our hospital with a 3 months history with fluctuating cognitive impairment, aphasia and tremor. Her medical history included hypothyroidism and osteoporosis. Therapy with l-thyroxin had been started 4 months prior to admission. Clinical examination revealed moderate aphasia, confusion, myoclonus and ataxia. Routine blood tests including TSH, fT3 and fT4 were normal. ANA, RF-IgA, RF-IgM, AntiTR were negative. Anti TPO was elevated to 2336 U/ml. MRI scan of the brain disclosed a picture compatible with minor chronic ischemia. EEG showed marked slowing and general dysrhythmia without epileptic activity. Cerebrospinal fluid examination revealed 11 cells and elevated total protein to 1.6 g/l with otherwise normal findings. Other possible conditions causing encephalopathy were ruled out. The patient was started on prednisolone with striking clinical improvement and normalization of the EEG. Treatment with gradually tapering of the dosage was continued for 3 months. The patient remained free of symptoms after corticoid cessation. Conclusion: Steroid responsive encephalopathy is an infrequent, but often severe complication of autoimmune thyroid disease with usually good prognosis.
Results: We did not find any significant differences in levels of IgM or IgG anti-NF antibodies in serum, CSF or intrathecally between ALS patients and controls.

Conclusion: The neurodegeneration in ALS patients is not accompanied with the anti-NF response.

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P1410

EARLY-DELAYED RADIATION-INDUCED LESIONS FOLLOWING RADIOTHERAPY WITH CONCURRENT TEMOZOLOMIDE IN HIGH GRADE GLIOMAS: REPORT OF THREE CASES

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Introduction: Postoperative radiotherapy with concomitant Temozolomide followed by adjuvant temozolomide significantly improves survival in high-grade gliomas. However seldom reported with focal radiotherapy alone, early-delayed radiation-induced lesions were observed in three patients after completion of the concomitant therapy.

Methods: In a series of 50 consecutive patients with high grade gliomas treated by postoperative radiotherapy (RT) with concomitant Temozolomide (TMZ) at 75 mg/m² daily, we observed three patients developing a nodular enhancing lesion mimicking progression on MRI.

Results: Our first patient was treated with complete resection for occipital glioblastoma. Gd-MRI at 4 months after completion of RT with TMZ, revealed a 28-mm enhancing lesion at the primary tumour site while Tyrosine-SPECT scan was strongly suggestive for recurrence. At re-operation, pathological examination revealed mainly features of radio-necrosis. The second patient had partial resection for extensive parieto-temporal glioblastoma. MRI at 12 weeks after concomitant therapy showed a 48-mm enhancing area surrounding the primary tumour site, with reduced uptake on FDG-PET scan. The patient was successfully treated with oral corticosteroids. The third patient was treated with complete removal of a parietal anaplastic oligoastrocytoma. MRI at six months showed a 12-mm ring-enhancing lesion that spontaneously vanished after six months. All patients remained clinically stable and progression-free after one year of follow-up.

Conclusion: Early-delayed radiation-induced focal lesions might reflect a radiation-sensitizing effect of Temozolomide on peritumoral brain tissue during radiation therapy for high grade gliomas. We observed however no negative impact on clinical status or survival as patients recovered completely and remained progression-free at 1 year.

P1411

BENEFICIAL EFFECT OF INTRAVENOUS IMMUNOGLOBULIN IN CENTRAL PONTINE MYELINOLYSIS

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Background: Central pontine myelinolysis (CPM) and extrapontine myelinolysis (EPM) is clinically characterized by a rapidly evolving flaccid quadripareisis, pseudobulbar palsy and altered consciousness.

Purpose: To report a case of unusual and delayed presentation of CPM/EPM.

Methods: A 45-year-old woman – with a long-standing history of hypertension treated with indapamide – was admitted with an E. coli sepsis. On admission, her serum sodium level was 105 mmol/L. After correction with initially 3% saline (1.5 mEq/L/h), followed by isotonic saline infusion, the serum sodium concentration rose to 128 mEq/L over the next 36 hours. At that time, neurological examination and CSF analysis were normal. Her clinical evolution was uneventful. In the third week she started developing subacute distal and proximal brachial diplegia (0/5) with generalized hyperreflexia and pseudobulbar speech. Sensation was intact. Serum sodium levels were normal. T2-weighted MRI of the brain revealed symmetric abnormal hyperintense signal in the basal ganglia and similar scattered lesions in the pons and medulla. Neurophysiological investigations were performed.

Results: She was diagnosed as having a ‘(wo)man-in-the-barrel’ syndrome following CPM and EPM. A trial of intravenous immunoglobulin therapy (0.4 g/kg for 5 days) proved to be partially successful (strength in arms improved (3+/5)) with the effect being observed within one week of intravenous immunoglobulin therapy.

Conclusion: The diagnosis of delayed-onset CPM/EPM should be considered in patients with recent history of severe hyponatremia. Intravenous immunoglobulin might be a therapeutic option.

P1412

INVolVEMENT OF THE PERIPHERAL NERVOUS SYSTEM IN NON-HODGKIN LYMPHOMA: CLINICAL AND NEUROPHYSIOLOGICAL ASPECTS

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Background and aims: Lymphomas can cause central and peripheral nervous system involvement. Most peripheral nerves complications are due to non-Hodgkin’s lymphoma. Polyneuropathy is the most frequent sign, symptoms occurring in 35–40% of non-Hodgkin’s lymphoma patients long before antitumour related therapies are started. The goal of the current study is to establish clinical and electrophysiological interrelations of the peripheral nerves damage in non-Hodgkin lymphoma.

Methods: The complete neurological and electrophysiological assessment was carried out in 32 non-Hodgkin’s lymphoma patients (17 female) with age ratio varying from 19 to 76 y.o. No patient had undergone chemotherapy or radiation at the moment of electrophysiological assessment. The other most frequent known causes of peripheral neuropathy were also excluded. Motor and sensory conduction velocities were measured in both upper and lower limbs.

Results: All recorded neurophysiological data suggested a predominantly axonal damage in 27 patients, clinically expressed as a distal sensory-motor peripheral neuropathy. Sensory loss was a more predominant feature (19 patients) while motor involvement was mild or minimal (8 patients). The neuropathy had a relatively benign self-limited course (30 patients), both small and large sensory fibres being involved.

Conclusion: Patients with known non-Hodgkin’s lymphoma develop peripheral nerves complication in the absence of chemotherapy or radiation. Even asymptomatic, patients appear to have sustained peripheral nerves damage, mainly at the level of the lower limbs. A distal sensory motor axonal peripheral neuropathy is much common in B cells derived non-Hodgkin’s lymphoma. Detailed electrophysiological and neurological examinations help to localize and confirm these disorders.
Cerebral venous thrombosis is an unusual condition caused by multiple aetiologies. In 20% of the cases there is no recognised cause. Clinical features include headache, papilledema, blurred vision, focal or generalized seizures, neurological focal deficits, impaired consciousness and coma.

**Methods:** We present the case of a patient with cerebral venous thrombosis associated with dysgerminoma and chemotherapeutic treatment.

**Results:** A 15-year-old female with suprasellar dysgerminoma diagnosed by hypotuitarism and treated with transphenoidal surgery received one chemotherapy cycle with cisplatin, etoposide and bleomycin. One week later she presents progressive headache, left hemiparesis and papilledema and 48 hours later has a progression to tetraparesis and focal motor seizures with secondary generalization. In the cerebral MR we found areas of restricted diffusion in cortical motor regions bilaterally, right hemisphere venous infarction and thrombosis of longitudinal, sigmoid and left transverse sinuses. The rest of the complementary tests were normal, including coagulation studies. The patient was treated with anticoagulant and antiepileptic drugs with complete resolution of the symptoms.

**Conclusions:** Treatment with cisplatin and etoposide and the hypercoagulability state found in some tumours are well known conditions associated with the production of venous cerebral thrombosis. The treatment is based in control of the seizures and the intracranial hypertension, as well as anticoagulant drugs. Local thrombolysis can be used in selected patients.
PARANEOPLASTIC MUSCULAR MANIFESTATIONS

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Background and aims: We want to describe the paraneoplastic muscular manifestations which occur at patients with neoplasia affections.

Method: The studying material consisted of 105 patients who presented muscular paraneoplastic manifestations and were hospitalized in the Clinics of Neurology, Oncology and Dermatology during 1977–2006.

Results: The muscular paraneoplastic manifestations present in our batch included the following clinical entities: polymyositis or dermatomyositis at 45 patients (43%), myasthenia at 30 patients (28.4%), pseudomyasthenia syndromes at 15 patients (14.3%) and myopathy like syndromes at 15 patients (14.3%). We excluded out from the study the myasthenia associated to a thymus cancer. The pathogenic substrate of these affections consists of a cross immune reaction, frequently of humoral type, between the muscular structures and the effectors of the anti-tumour response, triggered by the appearance of the tumour.

Conclusions: The muscular paraneoplastic manifestations are not provoked by the local action of the malignant tumour and its metastases, but are closely related to the presence of the cancer. These paraneoplasiae act as a second disease, which evolves simultaneously with the developing of the malignant tumour. They are well limited clinical forms which mostly have a sub-acute or chronic evolution, not always influenced by the evolution of the malignant trigger. Sometimes the muscular paraneoplastic manifestations have an inaugural character, situation in which their identification has a great importance in diagnose and therapy neoplasia approaching. The study of these affections allowed the identifying of some types of antibodies and their correlation to the forms of the malignant tumour.

MYXOPAPILLARY EPENDYMOMA WITH EXTENSIVE SPINAL AND INTRACRANIAL DISSEMINATION AT DIAGNOSIS: AN EXCEPTIONAL CASE REPORT

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Background: Myxopapillary ependymoma commonly affects the filum terminale. They are usually well-circumscribed lesions; making complete removal is possible in most cases. Subarachnoidal seeding has been reported months or years after partial or subtotal resection, and more rarely infratentorial metastases. We report an exceptional case presenting with diffuse metastases along the spinal and intracranial subarachnoidal space from the sacral level up to the lateral sulci.

Methods: This 25-year-old Caucasian male presented with a 2.5-month history of severe back pain when lying and dysesthesia in both legs. Neurological examination showed only some fasciculations in both quadriceps muscles and was further normal. MR imaging revealed numerous enhancing nodular lesions, varying from 1 to 3 cm in size, scattered throughout the whole spinal cord, around the brainstem and in the Sylvian sulci. We performed a dorsal laminectomy at D4 level because of severe spinal cord compression. Pathological examination demonstrated a myxopapillary ependymoma. Oral chemotherapy was started to avoid radiotherapy regarding the important tumour extent. Despite stable MR imaging, the patient complained of increased back pain and bilateral leg dysesthesia after 2 cycles of Temozolamide and was subsequently treated by radiation therapy.

Discussion: Myxopapillary ependymoma is considered to be a benign tumour (WHO grade 1) arising from the medullar conus and filum terminale involving the whole CNS. The tumour tends to grow slowly, without infiltration of the surrounding neural tissue with seldom metastasis. Intracranial seeding has been reported several months or years after subtotal or partial removal, but spontaneously intracranial seeding at diagnosis is extremely rare.

AGGRESSIVE PAPILLARY GLIONEURONAL TUMOR: A CASE REPORT AND LITERATURE REVIEW

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Background: Papillary glioneuronal tumours (PGNT) are a rare form of mixed neoplasm composed of glial and neuronal components. PGNT usually display low-grade pathology, with a proliferative index of 1-3%.

Methods: Herein we describe a newly diagnosed case of PGNT with a more aggressive phenotype that required irradiation and chemotherapy.

Case Report: The patient was a 19-year-old Caucasian female who developed progressive headaches and visual seizures. An MRI scan revealed an enhancing mass in the left temporal-occipital region, with surrounding oedema and mass effect. The mass was resected under stealth guidance without complication. Postoperative MRI scans showed patchy enhancement and residual FLAIR abnormality. Pathology revealed a highly cellular neoplasm with papillary-like structures, containing cells with glial and neuronal differentiation. Regions of mitoses and focal necrosis were noted, along with a Ki-67 labelling index of 26%. The diagnosis was aggressive PGNT; treatment consisted of conformal irradiation and concomitant temozolomide over 6 weeks. Chemoradiation was tolerated well, without any neurological or haematological toxicity. Post-irradiation follow-up MRI scans demonstrated a reduction of residual enhancement and FLAIR abnormality. The patient continues standard-dose adjuvant temozolomide (150 mg/m2/day × 5 days), with further improvement on subsequent MRI scans and a normal neurological examination (except for a stable right sided visual field defect).
**Conclusions:** This patient demonstrates that PGNT may, in rare cases, display an aggressive clinicopathologic phenotype that requires a therapeutic approach more consistent with a high-grade glioma.

**P1420**

**ESTRADIOLS REGULATE DENDRITIC SPINE DENSITY IN HIPPOCAMPAL PYRAMIDAL CELLS IN RATS**

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There has been an explosion of many information on the neurobiology of dendritic spines in synaptic integration, signalling and plasticity. We evaluated on the structure composition, function, development, plasticity and pathology of hippocampal dendritic spines as review. Also we performed Golgi impregnation on brain’s rat ovariec-tomized rat which received estradiol or estradiol and progesteron after ovariectomized. In ovariec-tomized rats resulted a decrease in dendritic spine density in CA1 but did not affect spine density of CA3 pyramidal cells or granule cells of the dentate gyms. So, we demonstrated that steroids are necessary for the maintenance of normal adult CA1 hippocampal pyramidal cell structure.

**P1421**

**PREDOMINANT PARENCHYMAL INVOLVEMENT PATTERN IN NEURO-BEHÇET DISEASE**

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**Background:** Behçet disease is characterized by the clinical triad of oral ulcers, genital ulcers and uveitis. It is a chronic relapsing multisystem disorder. Neurological involvement is reported with variable prevalence rates of between 10% and 28%.

**Objective:** The aim of the study to assess the demographic, clinical and radiological features of 47 neuro-Behçet patients

**Material and Method:** From 1998 to 2004, 47 neuro-Behçet patients who were followed in our hospital were enrolled to the study. All patients were classified according to their neurological examination, non-neurological symptoms and signs and radiological features (MRI findings).

**Results:** 61.5% of patients were male and 38.4% were female. The mean age of all patients was 39.7 (21–60). 53.7% of all patients had pyramidal signs, 46.1% had cranial nerve involvement, 30.7% had cerebellar signs, 23.0% had headache, 7.6% had meningeval involvement and 7.6% had sensory symptoms. While 44 patients presented with parenchymal involvement, 3 patients had intracra-nial hypertension and presented as pseudotumour cerebri.

**Conclusion:** This study revealed a parenchymal involvement pattern; particularly brain stem involvement; is found to be the most commonly seen involvement type in neuro-Behçet disease.

**P1422**

**DIAGNOSTIC CRITERIA OF COGAN SYNDROME**

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Cogan syndrome is a rare clinical disease first described by Morgan and Baumgartner in 1934 as Menière’s disease complicated by interstitial keratitis and in 1945 by Cogan as a clinical entity characterized by vestibulocochlear symptoms associated with non-syphilitic interstitial keratitis. We describe a patient with clinical symptoms starting nine years prior to making the diagnosis of Cogan Syndrome. In 1998 the patient reported to her physician with sudden deafness and iridocyclitis. After treatment with corticosteroids the patient reached complete remission. In the following years she had several relapses concerning hearing and vision and each time was treated with corticosteroids. However, the diagnosis was not made until 2007 when the patient again reported to the hospital after a 4-month-period of progressive hearing loss until complete bilateral deafness and afterward new onset of ocular symptoms with blurred vision on the left eye which was diagnosed as neuritis nervi optici. We summarize the diverse clinical symptoms of Cogan syndrome and their occurrence in order to facilitate the diagnosis for clinicians, as treatment is only promising when started within the first two weeks of onset of symptoms.

**P1423**

**PROLACTINE-SECRETING PITUITARY CARCINOMA: CLINICO-PATHOLOGICAL CORRELATIONS**

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**Background:** Prolactine-secreting pituitary carcinomas are distant metastases of the initial pituitary tumour. Pituitary tumours are usually invasive, secreting macroadenoma. To date, 46 lesions producing prolactin have been reported in the English literature.

**Case Description:** A 67-year-old female presented with headache and visual changes. MRI showed expansive pituitary tumour with intrasellar and suprasellar component, invading dura, cavernous and sphenoid sinus and displacing adjacent structures. Hyperpro-lactinaemia and panhypopituitarism was found. Surgery revealed tumour separated from pituitary tumour arises from cavernous sinus. Histologically, tumour appeared as metastasis from systemic organ. Immunohistochemical evaluation demonstrated positivity for synaptophysin, S-100 protein and prolactin.

**Conclusion:** There is great importance of the clinicopathological correlations for prolactine secreting pituitary carcinoma. Histologically, pituitary carcinoma mimicking metastatic disease from a systemic organ. Immunohistochemically, tumour exhibited specific hormone staining patterns similar to intrasellar adenoma.

**P1424**

**AN ACQUIRED NEUROMYOTONIA CASE NON-ASSOCIATED TO THYMOMA WITH SIGNIFICANT CLINICAL IMPROVEMENT AFTER THYMECTOMY**

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A 27-year-old woman presenting with neuromyotony case is. Her illness began in 2002 with the development of sudden episodes of myotonic movements involving upper limbs distal muscles. In 2004, these myotonic episodes became increasingly more frequent and generalized. She was then admitted to Médica Sur Hospital, image studies were requested and discarded both a neoplasm and a thymoma. The movements were only responsive to Biperidene. She was medicated with corticoesteroids, without clinical improvement. The episodes worsened their frequency. She was readmitted on several occasions because of myotonic movements. In October
2005 a thymectomy was performed. Image studies (CT cranial, chest and abdominal, MRI cranial and spinal scans), an electromyography, a muscle and thymic biopsies were requested. Additionally a determination of serum specific antibodies titres was also required. The Electromyography showed myokimic discharges. The findings of the electromyography led to a muscle biopsy and another series of image studies were requested (including CT chest and abdominal scans). Subsequent studies showed antibodies against muscle cell membrane high voltage gated K channels. Pathology reported no sign of Thymic hyperplasia nor even malignant foci. The patient underwent a significant clinical improvement after the Thymus was removed. Many cases of Neuromyotonia are mostly acquired. It has been described associated to auto-immune diseases, thymoma and to Neoplastic states (paraneoplastic syndrome). Auto-immune association is evident in this case. It is not infrequent to find this syndrome without a Thymoma, which does not imply that there is no thymic involvement. This affirmation is supported by post-surgical clinical remission.

P1425
CLINICAL AND IMMUNE FEATURES OF CEREBRAL DISORDERS IN PATIENTS WITH KIDNEY DISEASES
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Signs of central nervous system affection are very often observed in patients with kidney diseases. Pathogenesis of this affection is not yet clear enough. Aim of this study was to learn features and frequency of cerebral disorders in inflammatory kidney diseases, role of immune factors in this pathology.

Materials and methods: 80 patients (mean age 45.8±0.19 years) suffering from chronic pyelonephritis (43 pts) and glomerulonephritis (37 pts) were investigated. All patients were subjected to clinical, neurological and immunoassay examination. Immunoassay examination included determination of level of antibodies to myeloperoxidase(aMPO) and tumour necrosis factor-alpha aTNF in blood serum. Obtained results were compared with control group consisted of 20 health persons.

Results: All patients showed neurological syndromes: vegetovascular syndrome (21.2%) – 1 group, multiple cerebral symptoms (26.2%) – 2 group, focal cerebral lesions (35%) – 3 group. Immunoassay showed elevated level of aTNF – 1.45±0.319 unit optical density (UOD) as compared to control group – 0.05±0.002 UOD, p=0.001. aTNF level in 1 group was 0.55±0.0195 UOD, in 2 group – 1.45±0.778 UOD and in 3 group – 10.86±1.360 UOD. aMPO level in patients was higher than in control group – 8.49±0.376 UOD and 0.8±0.02 UOD accordingly (p<0.001) but no correlation with intensity of neural disorders was found. Differences between aMPO and aTNF levels in pyelonephritis and glomerulonephritis were insignificant.

Conclusion: Our study showed the role of proinflammatory cytokines (aTNF) in neural affection in kidney diseases that correlates with the severity of neural disorders. aMPO level elevation indicates primary vessels affection.

P1426
NEUROLOGICAL INVOLVEMENTS IN SJÖGREN'S SYNDROME – A CASE REPORT OF MENINGOENCEPHALITIS IN PRIMARY SJÖGREN'S SYNDROME AND A CASE REVIEW AT A MEDICAL CENTER IN TAIWAN
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Introduction: Sjögren's Syndrome with CNS involvement can mimic or coexist with MS, we report a case of primary SJS presenting with meningoencephalitis, review P'TS with DX of Sjögren Synd and neuro signs.

Method: We collected P'TS from our hospital with DX of SJS from 1983 to 2005, clarify their DX and analyzed their neurological involvement.

Result: 233 patients were included. Many neurological symptoms were noted and analyzed.

Case Report: The 44 y/o female suffered from progressive nausea, vomiting, unsteady gait deviation, vertigo and diplopia happened later. She was admitted to NS ward under DX of brain tumour. N-G tube was inserted due to dysphagia. Head MRI showed lesion at medulla. A brain tumour was suspected. P’T had gradual weakness, became bed-ridden. Solumedrol was prescribed. She was transferred to our ward. Brainstem encephalitis was impressed. Positive anti-SSA was noted. Plasma exchange was arranged and her MP improved. Chest CT showed patchy ground glass opacities noted at both lungs and pneumonia was R/O. Schimer’s test showed no tears. Dyspnoea made patient receive intubation under progressive multilobar pneumonia impressed. Intestinal lung disease was highly suspected. Pulse therapy of was prescribed. Weaning program success. TC-99M sialoscintigraphy showed secretory and excretory dysfunction of Bilat salivary GLS. Under DX of SJS, cyclophosphamide was prescribed. Tracheotomy was removed, her MP improved to nearly full. Brain MRI showed no organic lesion. No immunosuppression drug was given.

Discussion: We emphasize that evidence of SJS should be investigated in cases of aseptic meningoencephalitis even when SICCA symptoms are absent.

P1427
EXPRESSION OF CD95/FAS IN PERIPHERAL BLOOD T-LYMPHOCYTES IN MULTIPLE SCLEROSIS PATIENTS UNDER THE METHYLPREDNISOLONE TREATMENT
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Objectives: Multiple sclerosis (MS) is an immune-mediated disease of the CNS that is characterized by inflammation, demyelination, and axon loss. Apoptotic elimination of pathogenic T-cells is considered to be one of regulatory mechanisms in MS but exact role of these mechanisms is not completely clear. Recent data indicate that CD95/Fas mediated apoptosis plays the role in relapsing-remitting multiple sclerosis limiting autoimmune process in the central nervous system.

Methods: Using indirect immunofluorescence and monocloned antibodies to antigen CD95.

Results: The aim of our study was to explore the potential role of Fas-mediated apoptosis in MS patients under the intravenous methylprednisolone treatment during the exacerbation of the disease. We analyzed the expression of CD95/Fas on peripheral blood T-lymphocytes in 20 MS patients and 10 healthy donors. The expression of CD95/Fas on peripheral blood T lymphocytes in MS patients was higher than in healthy control. At the same time, the level of CD95+cells in MS patients increased after the corticosteroid therapy. In contrast, the level of T-cells was higher before the treatment and decreased after the corticosteroid therapy.

Conclusion: We suggest that these changes are related to the positive effect of corticosteroids in MS relapses.
Headache and pain

P1428
LEFT THALAMIC MASS CHALLENGING DIAGNOSIS IN A DIABETIC AND HYPERTENSIVE PATIENT
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P1429
SURPRISING DIAGNOSTIC (ANGIOPLASTIC MENINGIOMA) TO A VASCULAR PATIENT
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P1430
EFFICACY OF COMBINATION USING COMPUTER TOMOGRAPHY (CT) AND MAGNETIC-RESONANCE IMAGING (MRI) IN THE DIAGNOSIS OF HIPO-TOMOGRAPHY (CT) AND MAGNETIC-RESONANCE IMAGING (MRI) IN THE DIAGNOSIS OF HYPO-THALAMO-HYPOPYSEAL SYSTEM (HHS) DISORDERS
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P1431
NEUROFIBROMATOSIS 2 (NF-2) RECOGNISED IN A YOUNG MAN WITH MULTIPLE INTRACRANIAL AND SPINAL TUMOURS. A CASE REPORT
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P1432
HEADACHE PREVALENCE RELATED TO DIABETES MELLITUS. THE HEAD-HUNT STUDY
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Objectives: To investigate a possible association between headache and diabetes mellitus (DM) in a large population-based cross-sectional health study.

Methods: Diagnoses of headache were based on 13 questions in the second of two questionnaires covering a wide range of topics. Migraine was diagnosed according to a modified version of the migraine criteria in the first international classification of headache disorders (IHCD-1). Headaches that did not fulfill the criteria for migraine were diagnosed as non-migrainous headache. The diagnoses were mutually exclusive. The diagnoses of DM were based on information from questionnaires and fasting blood samples with serum glucose, anti-GAD and C-peptide. Associations were assessed in multivariate analyses, estimating prevalence odds ratios (ORs) with 95% confidence intervals (CIs).

Results: Information on both headache and self-reported DM were available in 51,249 participants, whereof 1499 had self-reported DM and 1097 had fasting blood samples. Prevalence OR of migraine was lower among persons with DM compared to those without DM, the OR being 0.4 (95% CI 0.2-0.9) for type 1 DM and 0.7 (95% CI 0.5-0.9) for type 2 DM. OR of headache were lower among those with duration of DM ≥13 years compared to those who had got DM the last 3 years, OR 0.6 (95% CI 0.4-0.9). The analyses revealed no clear associations between non-migrainous headache and DM.

Conclusion: The reason for the inverse relationship between migraine and DM is unknown, but might be related to pathophysiological abnormalities, especially autonomic discrete neuropathy in patients with DM that protect against migraine.

P1433
HEADACHE PREVALENCE RELATED TO ASTHMA, HAY FEVER AND CHRONIC BRONCHITIS. THE HEAD-HUNT STUDY
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Objectives: To examine the relationship between headache and asthma, hay fever, and chronic bronchitis in a large cross-sectional population-based study.

Methods: Diagnoses of headache were based on 13 questions in the second of two questionnaires covering a wide range of topics. Migraine was diagnosed according to a modified version of the migraine criteria in the first international classification of headache disorders (IHCD-1). Headaches that did not fulfill the criteria for migraine were diagnosed as non-migrainous headache. The diagnoses were mutually exclusive. Diagnoses of asthma, hay fever and chronic bronchitis were based on the same questions as used in most epidemiologic studies on respiratory symptoms. Associations were assessed in multivariate analyses, estimating prevalence odds ratios (ORs) with 95% confidence intervals (CI).

Results: Among the 51,383 subjects who answered the headache questions; 98.1% also answered the questions about asthma and chronic bronchitis, and 91.5% answered the question about hay fever. Both migraine and non-migrainous headache were approximately 1.5 times more likely among those with current asthma, asthma related symptoms, hay fever, and chronic bronchitis than among those without. The strength of the association increased with increasing headache frequency.

Conclusions: This large questionnaire-based study confirms that migraine and other headaches are associated with respiratory and allergic disorders. Headache frequency seems to have a greater impact on the association with respiratory or allergic conditions than headache diagnoses. Whether this represents a causal relationship is uncertain, but the results underline the importance of considering comorbid disorders among patients with frequent headache.
P1434
SEASONAL VARIATION IN MENSTRUALLY-RELATED MIGRAINE
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Objective: The aim of the present study was to study seasonal variation in migraine headache in a group of women with menstrual related migraine compared with non-menstrual migraine.

Patients and methods: Via newspaper advertisement, we invited women with migraine living in North Norway, an arctic area of extreme light conditions, to participate. By a two-step procedure (questionnaire and telephone interview), we diagnosed the patients and recorded data according to the protocol. We prospectively recorded migraine attacks from a 12-month headache diary performed by a group of 62 women with a mean age of 36.0 years (range 16–46 years), who fulfilled the criteria of migraine without aura or combined migraine with and without aura (29 with menstrual related migraine and 33 with non-menstrual migraine). Those with “pure” migraine with aura were excluded.

Results: Mean ratio between number of attacks in the light arctic season (May-June-July) divided with total number of migraine attacks during 12 months was 0.24 (9.4/38.4) in the group of menstrual related migraine compared with 0.25 (5.6/22.1) in others, p=0.84. Also there were not relatively more migraine attacks in the dark season in an arctic area (November-December-January) in any group. We found a higher migraine attack rate in those with menstrual related migraine as expected, but no indication of more or less frequency of attacks during the bright arctic season.

Conclusion: These findings support the assumption that menstrual related migraine and seasonal variation of migraine with extreme light and dark exposure are independent phenomena.

P1435
NEUROPATHIC ITCHING SYNDROME: A PRELIMINARY STUDY
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Itching is a common manifestation in systemic disease as malignancy, haematological disorders, uraemia and allergy. Micro-neurography studies showed that itch is mediated by a functionally distinct subset of C-fibres and dedicated neuronal pathways. We examined 6 patients (3 men and 3 woman, 55–72 years-old) complaining of itch at trunk and legs, with subacute onset, several years (1–10) before our first observation. In all patients itching was induced by ambient warmth and was associated with a persisting burning-like heat sensation. Extensive dermatologic and allergologic investigations were unrevealing; treatment with antihistaminergic and low-dosage oral steroids for several months did not modify the clinical picture. Physical examination was negative. Patients underwent clinical, laboratory examination, Neuropathy Pain Questionnaire, and nerve conduction studies (NCS). Small fibre impairment was investigated by skin biopsy at proximal thigh (Pth) and distal leg (Dl) and quantitative sensory testing (QST). Neurological examination showed the presence of thermal hyposthesia in 3 pts, warm hyperalgesia in 3 pts. Laboratory investigations revealed only in one pt mild eosinophilia, in 1 pt neutrophilic leukocytosis, whereas chemistry profile, serum and urine immunofixation, screening for immunologic, infectious, and neoplastic disease was negative in all. Cerebrospinal fluid examination performed in 2 pts was normal. Nerve conduction studies and needle electromyography, was normal. Intraepidermal nerve fibre (IENF/mm) density was reduced in all patients, (pth 9.46/mm±4.09; dl 5.04/mm±2.51). Our preliminary data show the presence in this kind of pts with distinctive feature of itch and functional and histological impairment of small fibres, of itching Small Fibre Neuropathy.

P1436
THE BROAD ANALGESIC PROFILE OF LACOSAMIDE IN ANIMAL MODELS OF PAIN
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Lacosamide is a novel investigational anticonvulsant which is currently being evaluated in phase III clinical trials involving patients suffering from painful diabetic neuropathy. It has a novel dual mode of action: enhancement of sodium channel slow inactivation and modulation of collapsin response mediator protein 2. The aim of the studies was the characterization of lacosamide in a large variety of animal models representing different pain syndromes. Lacosamide was evaluated in the tail flick model of acute pain, the formalin model of sustained pain, the streptozotocin (STZ) model of diabetic neuropathic pain, the chronic constriction injury (CCI, Bennett) model of peripheral neuropathic pain, the vincristine model of chemotherapy-induced neuropathy, the Carrageenan and Complete Freund’s adjuvants (CFA) models of inflammatory pain, the monosodium iodoacetate (MIA) model of osteoarthritic pain, tumour-induced bone cancer pain, dideoxycytidine (ddC)-induced neuropathic pain, the spinal cord injury model of central pain and the infraorbital nerve injury model of trigeminal neuralgia pain. Overall, lacosamide in the dose range 3–30 mg/kg i.p. showed a broad antinociceptive efficacy on various endpoints (thermal and tactile, allodynia and hyperalgesia) in animal models of chronic pain. In contrast, lacosamide did not affect sensory thresholds in a model of acute pain. In the STZ model, where lacosamide was directly compared to clinically used analgesics such as amitriptyline, pregabalin, gabapentin, levetiracetam, lamotrigine or venlafaxine, lacosamide was the compound with the broadest efficacy. These results suggest that lacosamide may specifically have anti-hyperalgesic activity under conditions of chronic neuropathic, cancer and inflammatory pain.

P1437
CHRONIC PRIMARY HEADACHE IN THE GENERAL POPULATION
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Background and aims: To provide prevalence data on chronic primary headache.

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Methods: In a cross-sectional epidemiological survey, a random sample of 30,000 persons from Akershus County, aged 30–44 years, received a mailed questionnaire. Those with self-reported chronic headache within the last month and/or year, were invited to a semistructured interview and a neurological and physical examination conducted by neurological residents with experience in headache diagnostics. The diagnoses were made according to the revised International Classification of Headache Disorders. The Regional Committees for Medical Research Ethics and the Norwegian Social Science Data Services approved the project.

Results: Both the questionnaire response rate and the participation rate of the interview were 71%. Of those with chronic headache 42% had a primary form. Additional cases were given a probable primary diagnosis because of medication-overuse. The one-year prevalence of chronic tension-type headache (CTTH) and probable chronic tension-type headache (pCTTH) was 1.6% and 1.2%, respectively. The prevalence of chronic primary headache in different subgroups were: CTTH with migraine 0.6%, CTTH without migraine 0.9%, pCTTH with migraine 0.7%, pCTTH without migraine 0.5%, chronic migraine 0.01%, probable chronic migraine 0.09% and others 0.04%.

Conclusion: Chronic primary headache occurs in a large group of those with chronic headache. CTTH and pCTTH are the most common forms. Persons with CTTH and pCTTH often have co-occurrence of migraine. Chronic migraine and other chronic primary headaches were rare.

P1439
Efficacy of Duloxetine in the Treatment of Generalized Anxiety Disorder in Patients with Clinically Significant Painful Physical Symptoms
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Background: Anxiety disorders often are accompanied by painful physical symptoms. This report assessed the effectiveness of duloxetine in improving anxiety symptoms, pain severity, and patient functioning in adults diagnosed with generalized anxiety disorder (GAD), who presented with clinically significant pain symptoms.

Method: Data were pooled from 2 multicentre, randomized, double-blind, placebo-controlled clinical studies evaluating the efficacy of duloxetine 60 to 120 mg once daily, compared with placebo in the treatment of GAD. The primary patient population for these analyses were patients with baseline Visual Analog Scale (VAS) overall pain severity score ≥30.

Results: Approximately 44.5% of GAD patients in the intent-to-treat population were identified as having baseline VAS score ≥30 (duloxetine n=208, placebo n=146). In this subgroup of patients, duloxetine-treated patients had significantly greater improvement compared with placebo-treated patients on anxiety symptoms as measured by the Hamilton Anxiety Scale total score, and on patient functioning as measured by the Sheehan Disability Scale (SDS) Global Functional Impairment Score and across all SDS domains, including work/school, social life, and family/home management. In the same group of patients, duloxetine-treated patients also demonstrated significantly greater improvements compared with placebo-treated patients on five of six VAS pain.

Items: Overall pain, headache, shoulder pain, daily interference due to pain, and the proportion of day while awake with pain.

Conclusion: These results suggest that in patients with GAD who present with clinically significant painful physical symptoms, duloxetine may be effective in reducing anxiety symptoms, pain severity, and in improving function.

P1440
Interictal Cognition in Migraineurs: A Study Correlating Psychometric and Neurophysiological Tests
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Background: A deficit in habituation of evoked potentials (EP) characterises migraineurs interictally. Habituation is thought to facilitate learning. Whether migraineurs have persistent interictal cognitive disturbances remain controversial.

Objective: To investigate if selective cognitive deficits can be found interictally in migraineurs and if cognition is correlated with visual/auditory EP patterns.

Methods: An extensive neuropsychological evaluation (digit span, Block-tapping, CVLT, d2 cancellation, Stroop tests; compute-
rized subtests from the attention test battery (TAP-1.7): alertness [simple, cued reaction time with a warning signal], divided attention, flexibility, working memory; MIDAS, BDI, STA1) was performed in 28 headache-free migraineurs (MIG; 22 without-, 6 with aura) and in 17 matched controls (CTRL). Visual (VEP) and intensity-dependent auditory EP (IDAP) were recorded as described before. Results: Cognitive performances did not differ significantly between MIG and CTRL. In MIG, a positive correlation was found between IDAP slope and D2 test (omitted responses) exploring selective attention (p=0.03). A similar correlation was found for divided attention test (p=0.02), while it was reversed for the number of omitted responses in that test (p=0.02). Higher attack frequency and longer disease duration were associated with increased (corrected) errors in Stroop reading test (p=0.02, 0.01) and with decreased correct responses in phasic alertness test (p=0.02, 0.01).

Conclusions: In our small cohort, cognitive performance was normal in headache-free migraineurs. However, in individual patients selective attention and reaction time were correlated to IDAP slope, probably reflecting impaired central serotonergic transmission. Phasic alertness test suggests that coping with interfering stimuli worsens with disease duration and severity.

P1442
PERIPHERAL NERVE NEUROSTIMULATION MODIFIES LASER STIMULUS-RESPONSE FUNCTION TO THE RIGHT IN MAN
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Electrical peripheral nerve neurostimulation (PNS) is controversially discussed as effective neuromodulatory treatment in chronic pain. The human experimental study hypothesized right-handed shift of stimulus-response function as marker of antinoceptive and analgesic PNS effects. Modulation of somatosensory processing was explored in 29 healthy volunteers (20–38 years, 19 male, 10 female). Conditioning innocuous PNS (100 Hz, 200 μs, 23 min) was applied to left superficial radial nerve trunk (radialis). Local cutaneous anesthesia provided for preferential radialis nerve trunk stimulation. Painful laser heat pulses in series (50 stimuli each) were applied to left hand dorsum in radialis innervation territory before, during, and after PNS. Laser stimulation intensities were adjusted to 10 levels (1–10) between individual perception and tolerance thresholds as determined at the beginning of experimental session. Laser-evoked vertex potentials (LEP) were measured and ratings were documented. Data analysis was performed in low (2–4), medium (5–7) and high (8–10) laser intensity groups. Stimulus-response functions were calculated and laser detection (LDT) and pain (LPT) thresholds were interpolated. LEP amplitude and ratings correlated to laser intensities (p<0.001). Under PNS, LDT (6%) and LPT (33%) increased (p<0.05). LEP amplitude decreased at medium (–6.3±9.5 μV, p<0.05) and high intensities (–9.5±11.3 μV, p<0.05). Ratings decreased at medium (–7.8%, p<0.01) and high intensities (–5%, p<0.05). Elevation of LDT and LPT during PNS implicates inhibition of AΔ- and C-fiber mediated nociception. LEP amplitude and rating reduction at pain and tolerance levels provide for right-handed shift of stimulus-response function during PNS emphasizing antinoceptive and analgesic PNS effects in man.

P1443
ELECTRICAL LOW-FREQUENCY STIMULATION INDUCES LONG-TERM DEPRESSION OF SENSORY AND AFFECTIVE COMPONENTS OF PAIN IN HEALTHY MAN
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Cutaneous electrical low-frequency stimulation (LFS) evokes long-term depression (LTD) of nociception and pain. So far it has been shown that LFS reduces global pain perception. As pain consists of sensory and affective aspects, the aim of this study was to investigate effects of LFS by multidimensional assessment. In 19 healthy volunteers (25.0±2.7 years; 10 female, 9 male) nociceptive AΔ-fibres of the left hand dorsum were electrically stimulated by a concentric electrode. Both, test stimulation (15 per series, 0.125 Hz) and conditioning stimulation (LFS: 1 Hz, 1200 pulses) were applied via the same electrode with stimulus intensities of about 4-fold the pain threshold. After each stimulus volunteers were asked to rate pain intensity and unpleasantness (0–100). Pain ratings were additionally obtained on SES questionnaire (Pain Perception Scale, Geissner, 1996) and on MPQ (McGill Pain Ques-
tionnaire, Melzack, 1975). After LFS, pain ratings of intensity (−29%) and unpleasantness (−35%) significantly decreased (p<0.001) compared to baseline and control session without LFS. SES revealed significant reduction in sensory (−12.1%) and affective (−9.4%) aspects (p<0.001). Sensory descriptors “stinging”, “pounding”, “shooting” and affective descriptor “torturing” were significantly less frequently chosen after LFS. MPQ demonstrated significant decrease (p<0.001) in total number of words chosen (NWC: −29%) and in sensory NWC (−28.6%). These findings indicate that both questionnaires are applicable to show decrease in pain qualities before and after LFS. Both pain intensity and unpleasantness are reduced by LFS.

P1444

VISUAL EVOKED POTENTIAL (VEP) CYCLE-RELATED AMPLITUDE CHANGE IN MIGRAINE
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Background and aims: Abnormal VEP amplitude habituation to repeated stimuli has been found in some migraine studies. Increased event-related (CNV) amplitude before the migraine attack has been reported. We intended to investigate if amplitude (and habituation) for VEP to medium and large checks (31’ and 62’) changes in the pre-attack and post-attack periods.

Methods: Monocular 1.9 Hz pattern reversals were presented in 41 adult migraine patients (8 with aura) and 28 controls. On 3 days, 4–10 days apart VEP was recorded from Oz with Fz reference in 4 blocks with 50 reversals each. N1P1 amplitude (N70 to P100) and P1N2 amplitude (P100 to N145) were measured by a blinded investigator. Clinical data were obtained from a headache diary and sessions were classified as pre-attack, post-attack or baseline (>72 hours from an attack). Paired statistics were performed with ANOVA.

Results: Migraine patients had significantly higher P1N2 amplitude before the attack for large checks compared to a paired baseline recording (p=0.03), while N1P1 amplitude did not differ. Neither N1P1 nor P1N2 amplitude (or habituation) was seen to change after the attack.

Conclusion: Increased amplitude in the second major VEP component was observed for large checks within 72 hours before the next migraine attack. The visual magnocellular channel in secondary visual cortex may be slightly hypersensitive before an attack. The estimated effect was small (0.6–1.2 μV), i.e. about 5–10% of the average VEP amplitude. However, the earliest VEP component, reflecting activity of the primary visual cortex was not affected by the migraine cycle.

P1445

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Background: In former retrospective studies pregnancy has been associated with less headache.

Objectives: To examine the prevalence of headache and migraine among pregnant women in a large, population-based study.

Methods: In the Nord-Trøndelag Health Study in Norway 1995–97 (HUNT 2), a total of 27,700 (60%) out of 46,506 invited women responded to headache questions (Head-HUNT). 15,008 women were 50 years or younger and responded to questions on pregnancy and birth, and 569 of these reported to be pregnant when filling in the questionnaire.

Results: Adjusting for age and education level there was a significant negative association between headache and pregnancy (OR= 0.8, 95% CI=0.6–0.9). The association between headache and pregnancy was significant for nulliparous (OR=0.5, 95% CI=0.4–0.7), but not significant for multiparous women (OR=0.9, 95% CI 0.7–1.1). This was evident for both migraine and non-migrainous headache.

Conclusion: Headache, both migraine and non-migrainous headache, was less prevalent among nulliparous pregnant women as compared to non-pregnant women.

P1446

QUALITY OF LIFE IN PATIENTS WITH DIFFERENT TYPES OF PRIMARY HEADACHES AND MYOTONIC DYSTROPHY TYPE 1
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Background: The prevalence of primary headaches among those who visit a neurologist in Russia is very high. Different types of primary headaches might influence health-related quality of life (QL) differently. Sometimes primary headaches influence QL more than incurable muscular dystrophies.

Objective: To assess the health-related QL in patients with primary headaches (migraines and tension-type headaches), to compare the results in these groups with patients with myotonic dystrophy Type 1 (DM1) and healthy controls.

Methods: We saw 153 patients, aged 17–59 years living in Ufa, Russia: 39 patients with episodic migraine, 26 patients with episodic tension type headache, 59 patients with chronic tension type headache (CTTH) and 29 patients with DM1. We examined 20 healthy individuals as a control group. QL was assessed by Medical Outcomes Study 36-Item Short Form questionnaire (MOS SF-36).

Results: All patients with primary headaches and DM1 showed significantly worse results in all eight SF-36 scales than healthy controls (p<0.05). Women were less satisfied by their lives than men. Patients with CTTH had always the lowest scores among those with all primary headaches. Emotional and social states of patients with CTTH were much worse than in patients with DM1. Physical functioning was the worst in patients with DM1.

Conclusion: Patients with primary headaches suffer a lot. QL is the poorest in patients with chronic conditions. In terms of QL, patients with CTTH are often comparable to patients with severe disabling conditions like DM1. Supported by the grant for young scientists from the President of Russia.

P1447

TRANSCUTANEOUS TEMPORAL ELECTROTHERAPY IN CHRONIC MIGRAINE: A PILOT STUDY OF SHORT-TERM EFFICACY AND MODE OF ACTION
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**Background:** Chronic migraine (CM, ICHD-II 1.5.1) is a disabling complication of migraine. TopMig is a device delivering high frequency currents over the temples and claimed to be effective in headaches including migraine (http://www.topmig.com/fr). It is thought to act by blocking transmission at 2nd order trigeminal nociceptors.

**Objectives:** To assess efficacy of TopMig in 10 CM patients and its influence on pain perception and the nociception-specific blink reflex (nsBR).

**Methods:** 10 CM patients applied TopMig 3×/week 30 min up to the highest tolerable intensity. Treatment, headache frequency and intensity were monitored with diaries. Before and after electrotherapy, we measured perception and pain thresholds as well as the nsBR using a custom-built electrode. For comparison, we studied 10 healthy subjects of comparable age and sex distribution.

**Results:** After 15 days, TopMig decreased mean headache frequency (p=0.024), intensity (p=0.038) and duration (0.033). It had meaningful effectiveness in 50% of patients, as 5 of them continued the treatment after 30 days, while 2 preferred to interrupt it at 15 days and 3 at 30 days. TopMig increased perception (p=0.03), but not pain threshold (p=0.13) at 15 days. It also reduced the AUC of the nsBR immediately after the 1st session (p=0.013) and after 15 days (p=0.026).

**Conclusions:** This study suggests that TopMig may be effective in disabled CM patients and that a larger controlled study may be worthwhile. Its mechanism of action could be acute and durable decrease of excitability in the nociceptive trigeminal system possible.

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**P1449**

**SUBCLINICAL INVOLVEMENT OF EXECUTIVE FUNCTIONS IN PATIENTS WITH MIGRAINE: EVIDENCE FROM EVENT-RELATED POTENTIALS TO THE STROOP TEST**

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**Background and objective:** The aim of our study was to investigate patterns of cortical activation in the Stroop colour/word test, a test used to evaluate executive function in patients with migraine.

**Methods:** 12 patients with migraine with visual aura (MA) (age 38±12 yrs), 10 without (M) (age 39±11 yrs), and 11 normal subjects of similar age participated in the study. 5 patients in M and 5 in MA group had silent MRI white matter abnormalities (WMA). Reaction times (RT) and 29-channel event-related potentials (ERPs) in a computerized version of the Stroop test were obtained.

**Results:** No significant group effects were found on accuracy and speed of RTs. MA had a significant higher P300 amplitude over central-posterior regions compared to controls and to M patients (p<0.05; Student t-test). The frontal N4 had a higher amplitude in MA compared to M (p<0.05) and to controls (p<0.025). N4 latency did not significantly differ between M and MA but was increased in both groups compared to controls (p<0.019; ANOVA). Only patients with WMA, and not patients without, had increased N4 latency compared with healthy controls (p<0.013).

**Conclusions:** The higher ERPs expression over posterior and frontal regions in MA suggest that increased cortical excitability in these patients may extend beyond regions involved in the origin of visual aura. The finding of delayed long-latency ERPs in migraineurs with WMA, suggesting the presence of slowing of higher-order stimulus processing, may be related to disruption of cortico-cortical connections.

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**P1450**

**ASSESSING THERMALGESIA BY APPLYING RADIANT HEAT TO THE SKIN. RELIABILITY AND APPLICATION IN NEUROLOGICAL DISORDERS**

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**Background and aims:** Thermalgesia disorders and somatosensory diseases are present in some neurological syndromes as multiple sclerosis, dysautonomia, sympathetic dysfunction in peripheral neuropathy, lumbar radiculopathy, diabetic neuropathy, fibromyalgia or Reynaud's dysfunction. Great difficulty in assessing thermal pain sensitivity exists in humans. We can provide a non-invasive procedure without tissue damage on the skin.

**Objective:** To prove the reliability (test-retest) of thermal thresholds with radiant heat applied to the skin.

**Methods:** Participants: 32 subjects (18 male and 14 female). Procedure: 2 assessment sessions, were performed (test and 28 days later retest) in forearm and forehead skin. Means were compared using a repeated measures ANOVA (test-retest). 2 heat sensitivity
thresholds (perception and unpleasantness) were assessed with a 16.6 mcal/cm² stimulus to 17.3 cm² surface of the skin. Technique: latency (time in seconds to perceive stimulus or unpleasantness).

**Results:** No significant differences were found between the 2 sessions and retest (28 days later) in perception or unpleasantness thresholds on forearm or forehead skin. Significant correlations between test and retest were found: for perception thresholds [forehead (0.86), forearm (0.86)] and for unpleasantness thresholds [forehead (0.81), forearm (0.88)].

**Conclusions:** We suggest assessing thermal pain sensitivity (using radiant heat latency technique) in trigeminal and somatosensory disorders to early detection of some neurological syndromes because the high reliability, simplicity and low-cost in this method.

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### P1451

**CHRONIC DAILY HEADACHE (CDH) AND SLEEP DISTURBANCES: A CASE-CONTROL STUDY**


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**Background and aims:** There is little information about the spectrum of sleep disturbances associated with CDH. The aim of our study was to evaluate the prevalence of sleep disturbances in patients with CDH compared to patients with episodic headache.

**Methods:** Patients with CDH were matched by age, sex, and type of headache at onset with patients with episodic headache. Both groups underwent a structured interview assessing sleep and headache variables.

**Results:** 105 patients with CDH (81 F, 24 M; mean age 48.6±14 years) were compared to 102 controls (78F, 24M; mean age 48.1±14 years). In the CDH group, 82 patients (78.1%) had migraine without aura before developing CDH, 13 (12.4%) had episodic tension-type headache, 7 (6.7%) had migraine with aura and 3 (2.8%) had CDH at onset. According to the ICHD-II classification, 50 patients (47.6%) had probable chronic migraine (CM) and 3 (2.8%) had CDH at onset. Among CDH patients, 46.7% complained of insomnia, 26.7% reported daily hypnentic intake, 36.2% reported daytime sleepiness, 48.6% reported snoring and/or sleep apnoea and 27.6% reported actual or previous paraesthesia. In contrast, 12.4% of control subjects complained of insomnia, 9.7% reported daytime sleepiness, 27.6% reported snoring and/or sleep apnoea and 27.4% reported actual or previous paraesthesia.

**Conclusions:** Patients with CDH complained of several sleep disturbances. The prevalence of insomnia, daytime sleepiness, and snoring was higher in CDH patients than in episodic patients.

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### P1452

**DAILY CHRONIC MIGRAINE (DCM) AND PSYCHIATRIC COMORBIDITY**

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**Structured Format:** Naturalistic study of prevalence of psychiatric disorders in outpatients suffering from DCM.

**Background and aims:** It is a debated question if patients suffering from migraine are affected by psychiatric disorders, but this association has been poorly documented. Most studies have found that DCM is mainly associated with Major Depression and Anxiety Disorders. Our purpose was to investigate and quantify the presence of psychiatric comorbidity in patients affected by DCM.

**Methods:** Patients suffering from DCM were submitted to a psychiatric evaluation with a psychiatric interview (M.I.N.I.) and by tests that investigated different areas of personality and of affectivity (MMPI, Staxi, Poms, Quid, HDRS).

**Results:** 100 outpatients affected by DCM were selected and 79 were evaluated with a psychiatric interview. Patients suffering from a concomitant psychiatric disorder were 58.2% and they were mainly affected by Affective Disorders (depression (11.4%) and dysthymia (11.4%) were equally distributed) and concomitant Affective and Anxiety Disorders (11.4%), while GAD was the most representative of Anxiety Disorders (15.2%). Diagnosis of blind depression was possible in the 3.6% of cases.

**Conclusions:** DCM is associated with psychiatric disorders in more than half of the sample of outpatients, but psychiatric disorders seem of mild gravity. Further clinical investigations are required to understand the nature of this chronic disorder but it should be important to manage this pathology with a team work of neurologists and psychiatrists.

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### P1453

**PSEUDOMIGRAINE WITH LYMPHOCYTIC PLEOCYTOSIS AND TRANSIENT NEUROLOGICAL SYMPTOMS: ROLE OF HERPETIC INFECTION?**

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Pseudomigraine with lymphocytic pleocytosis and transient neurological symptoms (PMP), also referred to as headache with neurological deficits and cerebrospinal fluid lymphocytosis (HaNDL), is a benign self-limiting neurological illness mainly seen in young adults. We report on an 18-year-old woman with clinical findings compatible with the diagnosis of PMP. She was admitted because of severe headache associated with transient motor aphasia and right sensory-motor hemi syndrome. She had a history of headache and sore throat 3 weeks before admission. More than 400 lymphocytic cells were found at CSF analysis. In addition, there was serological evidence of a recent viral infection with herpetic virus HHV6. EEG performed during an episode of headache and transient neurological deficit, and 5 hours after, showed minimal slowing of the left temporal area. Cranial magnetic resonance imaging (MRI) with angiographic studies revealed meningeal enhancement. The clinical course was characterized by 7 more episodes during the following 16 days. Between the episodes the patient remains asymptomatic. The outcome was favourable, without similar symptoms after 6-month follow-up.

We suggest that herpetic infection had a role in triggering or amplifying the clinical expression of PMP in our patient. Viral infection might be implicated in the pathogenesis of PMP, supporting the hypothesis of activation of the immune system inducing a meningeal vasculitis.

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### P1454

**LACOSAMIDE DISPLAYS ANTINOCICEPTIVE EFFECTS IN A RAT MODEL OF MUSCULOSKELETAL PAIN**

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Chronic musculoskeletal pain, which is not traced to a specific structural or inflammatory cause, occurs with fibromyalgia, myo-
facial pain syndromes or low back pain. Non steroidal anti-inflammatory drugs, muscle relaxants, and benzodiazepines are all frequently used musculoskeletal pain treatments, but none are particularly helpful in chronic conditions clearly indicating a need for improved treatment modalities. Lacosamide is a novel investigational anticonvulsant which is currently evaluated in clinical trials for painful diabetic neuropathy. Aim of the current experiments was to profile lacosamide in an animal model for musculoskeletal pain. Intramuscular injection of tumour necrosis factor-alpha (TNFalpha) in rats displays an animal model of musculoskeletal pain. In this model we tested the anticonoceptive action of lacosamide (3, 10, 30 mg/kg i.p.) in comparison to gabapentin (100 mg/kg i.p.) and metamizol (2 mg/kg i.p.). Mechanical withdrawal thresholds to muscle pressure were measured with an algometer exerting pressure on the gastrocnemius muscle previously injected with TNFalpha. A complete reversal of hyperalgesia was seen after treatment with lacosamide at 30 mg/kg. Significant effects were also seen for gabapentin and metamizol. In addition, forelimb grip strength was measured with a digital grip force meter after TNFalpha injection into the biceps brachii muscles. In biceps muscle hyperalgesia, a significant inhibition of hyperalgesia was seen with lacosamide at 10 mg/kg as for gabapentin and metamizol. These results demonstrate that lacosamide effectively reduces muscular hyperalgesia in a rat model for myalgia and is more efficacious than gabapentin and metamizol.

P1455
EFFECTS OF TRANSCRANIAL DIRECT CURRENT STIMULATION (tDCS) ON VISUAL EvOKED POTENTIALS (VEP) OF HEALTHY SUBJECTS AND MIGRAINEURS
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Background: Migraineurs are characterized interictally by lack of VEP habituation that is reversed to a normal habituation by 10 Hz of repetitive transcranial magnetic stimulation (rTMS). Transcranial direct current stimulation (tDCS) that is another non-invasive method, induces reversible cortical excitability changes, either excitatory or inhibitory, outlasting stimulation in time. Cathodal tDCS inhibits, while anodal tDCS activates the underlying cortex.

Objectives: To study the effects of tDCS on VEP habituation in healthy volunteers (HV) and migraineurs.

Material and methods: Cathodal, anodal or sham tDCS (10 minutes, stimulating electrode Oz, reference Cz., 1mA) was applied over the visual cortex in HV (n=10) and migraineurs (n=10) between attacks. VEPs were averaged before and after tDCS in blocks of 90 responses during 3 minutes of uninterrupted stimulation (3.1 Hz). The recordings were repeated up to 28 min after tDCS.

Results: Similarly to previous data, the multivariate model showed a decreased VEP habituation in migraineurs (p=0.045). Generally, cathodal stimulation decreased and anodal stimulation increased VEP amplitudes in both groups. However, a GLMM analysis revealed that the 3 stimulation modes had no significant effect on habituation in any of the groups.

Conclusion: The present study shows that tDCS has not the same effect on VEP habituation as rTMS. This is probably due to the different modes of action of tDCS (which modulates the spontaneous firing rates of neurons) and rTMS (which induces externally triggered changes in the neuronal spiking pattern). Moreover, the study also confirms that VEP habituation is deficient in migraine between attacks.

P1456
EFFECTS OF LIGHT DEPRIVATION ON 5HZ RTMS MOTOR EVOKED POTENTIALS IN MIGRAINEURS AND HEALTHY SUBJECTS
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Background: Among the various electrophysiological tests showing that the cerebral cortex is interictally dysexcitable in migraineurs, we have found that, during a rTMS train at 5 Hz, the motor evoked potential (MEP) decreases whereas it increases in healthy volunteers (HV).

Objectives: To explore if this finding could be due to hyperexcitability of cortical inhibitory interneurons (CII) by studying the effect of light deprivation (LD) which is known to decrease the activity of CII both in visual and motor cortices.

Methods: We averaged 5 trains of MEP elicited by 20 pulses of 5Hz rTMS at 110% of the motor threshold (MT) before and after 1h of LD in 7 migraineurs (4 with aura-MA) and 7 HV. We measured MT, mean MEP amplitude over 20 responses and the amplitude ratio between the 1st and the last response.

Results: There was no significant difference in MT or initial MEP amplitude before/after LD in either group. As in our previous study, there was an exaggerated global inhibition pattern of 5 Hz rTMS in migraine, but this was not modified by LD. The average MEP amplitude over 20 responses was increased by LD in all groups, more so in MA (ratio after/ before 2.16) than in HS (1.13) (p=0.07).

Conclusion: Hyperexcitability of CII is thus not likely to be responsible for the more marked MEP inhibition during 5 Hz rTMS in migraineurs. However, decreased activity of CII after LD might explain the increase in average MEP amplitude and could be more pronounced in migraine.

P1457
ONLINE SURVEY OF PATIENTS TAKING MIGRAINE PROPHYLACTIC TREATMENT IN THE UK
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Aim: To assess patients’ primary aim and satisfaction with prophylactic migraine treatment.

Method: Online survey of patients in the UK currently receiving prophylactic treatment, undertaken via the Migraine Action Association (MAA) website. The survey appeared on the website throughout January 2007. Respondents chose from a pre-defined list of 8 aims of treatment to identify the most important aim of treatment. Patient satisfaction was assessed via a 7 point scale (1= totally dissatisfied, 7=very satisfied).

Results: 900 responses were received, mean age 47 (SD 11.6), 86% (n=771) of whom were female. 24% were receiving treatment with propranolol (n=216), 19% amitriptyline (n=167), 15% pizotifene (n=135) and 12% topiramate (n=107). 59% had been receiving treatment for >12 months (n=533), 49% (n=439) respondents had seen a neurologist or headache specialist prior to receiving their current treatment and 74% were happy with the extent to which they were involved in discussions about their treatment (n=667). 74% (n=662) reported their most important aim with their current treatment was to reduce the frequency of migraine; 17% (n=150) reported reducing severity was most important. Overall, the mean level of satisfaction was 4.8 (95% CI 4.71-4.92).
**Conclusions:** The results from this survey show that for patients currently taking prophylactic treatment for their migraines, reduction in migraine frequency is the most important aim of treatment. The mean level of migraine prophylactic treatment satisfaction was 4.8/7.

**P1458**

**A RANDOMIZED, PLACEBO-CONTROLLED, PARALLEL-GROUP TRIAL OF FROVATRIPTAN AND SUMATRIPTAN FOR A SINGLE ACUTE MIGRAINE ATTACK**

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**Objective:** Compare the efficacy and tolerability of sumatriptan 100 mg, frovatriptan 2.5 mg, and placebo in the treatment of moderate to severe migraine.

**Design and methods:** Patients were randomized to double-blind treatment and administered study medication for a moderate/severe migraine. Assessments included headache response (ie, no/mild headache) at 2, 4, 6, 12, and 24 hours, headache recurrence within 24 hours of initial response at 4 hours, functional ability, and adverse events (AEs).

**Results:** Most migraineurs were women (>85%), white (>97%), experienced ~3 migraines/month, with a mean 19-year history of migraine. Frovatriptan (37%) and sumatriptan (43%) provided significantly better headache responses than placebo (23%) beginning at 2 hours postdose (p<0.001). Significantly more patients responded to sumatriptan than frovatriptan at 2 and 4 hours postdose only (p<0.01); at 6, 12, and 24 hours postdose, response rates were nearly identical. The time to first headache response (comparison of survival curves) was comparable for frovatriptan and sumatriptan. Recurrence was numerically lower with frovatriptan (25%, 61/242) than sumatriptan (31%, 86/279; p>0.05), or placebo (31%, 20/65; p>0.05). Functional improvement improved similarly with frovatriptan and sumatriptan versus placebo (p=0.027); Nausea, paresthesia, skeletal pain, vomiting, and asthenia were more frequent with sumatriptan than frovatriptan (p<0.05). Chest pain was reported in 3% (sumatriptan) and ≤1% (frovatriptan and placebo) of patients.

**Conclusions:** Sumatriptan exhibited a greater headache response at 2 hours. However, rates of AEs were significantly lower and headache recurrence numerically lower with frovatriptan, which was associated with similar improvements in patient function and response over time for both triptans.

**P1459**

**PARATRIGEMINAL OCULOSYMPATHETIC SYNDROME**

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**Objective:** When evaluating patients with mixed features of trigeminal nerve pathology and signs of oculosympathetic impairment, lesions of the middle cranial fossa and carotid disease must be ruled out. We describe a case of Paratrigeminal oculosympathetic syndrome of idiopathic cause that responded well to antiepileptic medication.

**Methods:** A 53-year-old man, with a history of cigarette smoking and tensional headache was admitted in our hospital with a chief complaint of 1-week-onset right Horner syndrome accompanied by paroxistic stabbing right periocular pain and hemi-cranial dull headache. On physical examination the patient had a right palpebral ptosis, miosis and ipsilateral facial anaesthesia (V1 territory, corneal reflex abolished) (Figure 1).

**Results:** Blood analysis which included hemogram, biochemistry, immunological studies, tumor markers were anodine. Neuroimaging (CT, MRI, Angio-MRI), neurovascular studies (Transcranial and Carotid Doppler), and a Cervical-Thoracic-Abdominal CT scan were normal. After prolonged treatment with NSAID and corticosteroids there was no improvement. Carbamazepine 200 mg BID was highly effective alleviating symptoms (Figure 2).

**Conclusions:** Paratrigeminal oculosympathetic syndrome is seldomly reported and still remains a diagnostic challenge. The essential keypoints for diagnosis are persistent oculosympathetic paralysis and trigeminal involvement. Neuroimaging and neurovascular studies are necessary to rule out parasellar lesions or carotid disease. In idiopathic cases, treatment with antiiepileptic medication can be useful to alleviate acute pain and prevent relapses.

**P1460**

**CEREBRAL METASTASES MIMICKING MIGRAINE**

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**Objective:** Headache is a frequent symptom associated with brain tumours, though migraine with aura is rarely reported as a sole manifestation. We report a 46-year-old woman in whom migraine with aura disclosed cerebral metastases.

**Methods:** A 46-year-old woman with no family/personal history of headache and history of heavy cigarette smoking, mild arterial hypertension and major depression began experiencing infrequent migraine headaches with aura. The auras consisted of photopsias in the right visual hemi-field and transient right hemianopsia (5 minutes duration). These auras were followed by left-sided hemicranial throbbing headaches associated with nausea, phonophobia, photophobia and facial paresthesias. One month later the frequency of these migraine-like headaches increased to daily attacks with poor response to medication, therefore seeking neurological consultation.

**Results:** A cranial CT scan showed a left extra-axial parietal lesion with surrounding oedema suggestive of meningioma. A brain MRI confirmed the presence of two lesions: a left parietal lesion near the falx cerebri and a 9 mm left frontal ring-enhanced lesion. Neurosurgical resection of the lesions was indicated and histopathological studies confirmed the presence of squamous-cell carcinoma metastases. Further studies revealed a nodular lesion in the right superior pulmonary lobe (III segment), suspected as the primary tumour.

**Conclusions:** Headache is a common chief complaint in clinical practice. Patients suffering migraine with aura are not always investigated radiologically, nevertheless in selected cases further studies are mandatory. Our patient fulfilled diagnostic IHS criteria for migraine with aura, yet the clinical course and age onset obliged us to rule out secondary causes.
P1461
MULTIPLE SCLEROSIS AND ASSOCIATED HEADACHES
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Background and aims: Headache is not considered a common symptom of Multiple Sclerosis (MS). Recent data though show a high incidence of headache in MS. We aimed to describe the prevalence of primary and secondary headache (diagnosis using ICHD-II criteria) in our patients with MS using various parameters described below.

Methods: In this prospective study, a group of 66 patients suffering from definite MS was given a questionnaire in order to obtain information about headache frequency, duration, quality, intensity, localization and its possible association with MS or disease modifying therapy (DMT) for MS.

Results: The prevalence of all headache types in patients with MS was 36.36% (24 out of 66 patients) Headache was migraine in 5 cases (20.8%), tension-type in 16 (66.6%) and secondary to MS or DMT in 5 (20.8%). Among patients who were on disease modifying therapy with interferon, 3 were suffering from migraine, 12 from tension type and 26 were free of headache.

Conclusions: In our study we used no control group of people without MS; but a previous study with the prevalence of primary headache among the general population in our region exists. According to that previous study, prevalence was found 46% for migraine and 36% for tension type headache. In contrast, among patients with MS, we estimated migraine prevalence 20.8% (approximately twice less than that among the general population). Tension-type headache prevalence in patients with MS was 66.6% (about twice of that found among general population).

P1462
THE PREVALENCE OF PATENT FORAMEN OVALE IN PATIENTS WITH MIGRAINE IN KOREA; THE TRANSCRANIAL DOPPLER SONOGRAPHY STUDY
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Patent foramen ovale (PFO) is a well established risk factor for ischemic stroke in young patients. Recent studies concluded that the prevalence of PFO in migraine with aura is significantly higher than in normal controls, and is similar to the prevalence of PFO in young stroke patients. These findings could be helpful in understanding the relationship between migraine and stroke. We tried to determine the prevalence of PFO by contrast-enhanced transcranial Doppler (TCD) in migraine patients in Korea. 148 patients with migraine with aura, 116 patients with migraine without aura were included. All the subjects underwent bilateral TCD monitoring with injection of contrast medium during normal ventilation and during Valsalva manoeuvre. The Criteria for diagnosis of right to left shunt was the presence of at least 1 microbubble within 30 second from injection. PFO was detected in 106 (53%) patients; 43 (51.19%) of migraine with aura, 63 (54.31%) of migraine without aura. There was no specific subgroup associated with presence of PFO. Our findings suggested that prevalence of PFO was higher in the patients with migraine without aura as well as in those with aura in Korean. The presence of PFO did not predict specific clinical patterns of migraine.

P1463
COST-EFFICACY OF ALMOTRIPTAN VS. ERGOTAMINE/CAFFEINE FOR ACUTE MIGRAINE
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Objectives: To determine the cost-effectiveness of almotriptan vs. ergotamine/caffeine from both the Spanish NHS and societal perspective.

Methods: The course of an acute migraine attack over 24 hours was modelled with a decision tree, where patients could end in one of the following states: no relief, 24 hours sustained relief (from severe or moderate to mild or no pain), initial relief with resolved recurrence, and initial relief with unresolved recurrence. 2 hours post-dose response and recurrence rates were obtained from a recent randomized double-blind clinical trial comparing 12.5 mg almotriptan and 2/200 mg ergotamine/caffeine. Societal costs included drug costs, and losses due to absenteeism and reduced productivity, assuming patients would miss work while suffering severe pain and experience a 33% productivity loss with moderate pain. NHS costs only included the reimbursement of almotriptan. Utility values for the four model states were retrieved from comparable published research.

Results: Response rates were 57.7% for almotriptan vs. 44.5% for ergotamine/caffeine. 67.5% vs. 49.5% of non responders had moderate pain, while 32.5% vs. 50.5% had severe pain. Differences in recurrence and response rates after a second dose were not statistically significant. Societal costs amounted to € 36.34 vs. € 43.84, NHS costs to € 5.19 vs. € 0. Average utility values during the migraine attack were 0.582 vs. 0.422. From the NHS perspective, the incremental cost-utility ratio for almotriptan was € 15,104 per QALY.

Conclusions: Compared to ergotamine/caffeine, almotriptan leads to incremental health benefits, is cost saving from the societal perspective, and can be considered cost-effective from the NHS perspective.

P1464
MIGRAINE WITH AURA AND RESTLESS LEGS SYNDROME
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Objective: To report a family fulfilling clinical diagnostic criteria for both migraine with aura (MA) and restless legs syndrome (RLS).

Methods and setting: General neurology outpatient clinic.

Results: Proband was a 65-year-old woman with headache onset in teenage years with features conforming to clinical diagnostic criteria for MA. In her twenties she developed leg aching, worse at night and better with movement, conforming to suggested clinical diagnostic criteria for RLS. Family history reveal that of her 5 children, all three daughters had both MA and RLS, and one granddaughter had features of RLS aged 9 years.

Discussion and conclusions: This pedigree with comorbid MA and RLS may be informative in the search for genetic loci linked to both MA and RLS. At the pathophysiological level, the concordance may suggest shared aetiopathogenesis.
We performed a prevalence study of migraine in Svalbard, a population of immigrants living in a group of islands belonging to Norway located between 74 and 81 degrees north, one of the northernmost populated areas in the world. Secondly, we recorded self-reported changes in migraine headache after moving to Svalbard. We mailed a questionnaire to all inhabitants aged 12 years or older living in Svalbard. Except 2 respondents, all migraineurs were workers. Of a total of 1569, 1029 (66%) returned the questionnaire. The average residential time was 6.5 years and the mean duration of migraine was 21 years. Of them reported 184 (18%) presence of headache without exposure to alcohol, trauma or viral infections. After telephone interview, 88 had migraine according to the revised criteria set by the International Headache Society (IHS). We diagnosed migraine in 32 men (36%) and 56 women (64%). The prevalence of migraine in Svalbard was 8.5% in the total population. We classified 28 as migraine with aura (32%) and 60 without aura (68%). We conclude that the prevalence of migraine in people living in Svalbard is lower than previous reported in central part of Norway. The patients did not report more or less burden of headache after moving to Svalbard. There is no indication from these data that migraine represents a substantial health impact in this arctic population.

**P1466**

**CLINICAL CORRELATION OF PHOSPHENE PERCEPTION IN MIGRAINE PATIENTS**

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**Introduction:** Although controversy exists with regard to the presence of hyperexcitability versus hypereexcitability of the visual cortex in migraine patients, there remains a group who do not perceive phosphenes (P-). However, its clinical implications have not been systematically addressed. In this study, we hypothesize that P- patients have distinct clinical features.

**Methods:** 33 migraine patients (7 men; mean age: 45; median: 46; range: 23 to 65) were consecutively entered into the study. Visual cortex transcranial magnetic stimulation (TMS) was performed in the migraine interictum.

**Results:** Twenty-nine migraine patients without aura (MO) and 4 migraine patients with aura (MA) were included. Of these, 22 (67%) were able to perceive phosphenes (P+), while 11 (33%) were not able to after repeated TMS (P-).

We found no significant difference between MO and MA groups in terms of phosphene threshold (p=0.38), headache frequency (p=0.27), duration (p=0.89) and pain score (p=0.18). However, P- patients had significantly higher headache frequency (p=0.012) and pain score (p=0.002) compared with P+ patients. There was significant positive correlation of phosphene threshold with pain score (r=0.44, p=0.03) in P+ patients.

**Conclusions:** Our study is in keeping with the hypothesis that interictal visual cortex excitability is reduced in relation to the severity of migraine, and lack of phosphene perception may be related to significantly elevated thresholds beyond the output of TMS stimulators.

**P1467**

**OPEN-LABEL MULTICENTRE STUDY OF LONG-TERM EFFICACY AND TOLERABILITY OF ELETRIPTAN TBL. 40 MG IN THE TREATMENT OF MIGRAINE ATTACKS**

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**Aim of the Study:** To assess the long term efficacy and tolerability of Eletriptan tbl. 40 mg. in the treatment of migraine attacks in local conditions.

**Material and methods:** 55 patients with the diagnosis of migraine with and without aura were observed in 4 centres in 409 attacks. Significant relief, complete relief of pain and the effect on accompanying symptoms were evaluated as primary endpoints. The occurrence of side effects, the recurrence rate and overall subjective acceptability of the drug by the patients were also studied.

**Results:** Mean pain intensity, decreased significantly from 2.18 at the time of dosing to 1.12 after 1 hour, and to 0.62 after 2 hours. Significant pain relief defined as decreasing of pain intensity by 2 points or more was found in 38.8% of attacks after 1 hour, and in 67.1% of attacks after 2 hours. In 30.6% of attacks the patients were completely pain free after 1 hour, and in 60.9% of attacks they were pain free within 2 hours. A statistically significant decrease of accompanying symptoms of migraine was observed in all evaluated periods. The recurrence rate was 22.7%. Undesirable side effects were observed in 18.1% of attacks. The subjective overall acceptability of the treatment was reported by 93.9% of the patients.

**Discussion and conclusions:** The results of our recent study confirmed very good long term efficacy and tolerability of Eletriptan 40 mg tbl. in our patients.

**P1468**

**AN OBSERVATIONAL STUDY TO INVESTIGATE THE EFFICACY AND TOLERABILITY OF LEVETIRACETAM IN TRIGEMINAL NEURALGIA (TN)**

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**Aim of the Study:** To assess the long term efficacy and tolerability of levetiracetam (LEV) on Trigeminal Neuralgia (TN).

**Methods:** 40 patients suffering from TN (primary or secondary) refractory to previous treatments were recruited for LEV treatment (3000–4000 mg/day) for 16 weeks, after a drug-free observational period of 2 weeks. Rescue medication (paracetamol/caffeine/codeine combination, several times/day as needed) was allowed in both baseline and treatment phases. Pain scores, side effects and drug consumption were recorded in a daily diary. Primary end points were (1) number of attacks per day (any unilateral facial pain, typical for TN, with severity more than 5 on a 11-point scale), (2) the patients’ efficacy evaluation (visual analog efficacy scale) and (3) the patients’ global evaluation for both safety and efficacy (visual analog scale). The Hamilton rating scale for anxiety and depression and the SF 36 questionnaire were also used to assess depression and quality of life changes related to pain.
Results: By January 2007, 38 patients completed the study protocol. After treatment and compared to the baseline phase, daily attacks decreased by 70.7 (p<0.0001), the mean patient's evaluation for either efficacy or for both safety and efficacy improved by 55.7% and 51% respectively (p<0.0001). The global SF-36 score decreased by 4.6% (p=0.56). Seven patients withdrew from the study (2 due to lack of efficacy and 2 to side effects). Side effects were reported by 13 (34.2%) patients, most commonly dizziness. Conclusions: LEV may be effective and well tolerated in TN treatment. Confirmation in a randomised controlled study is needed.

P1469
INVOLVEMENT OF NMDA RECEPTORS IN ANTINOICEPTIVE EFFECTS OF ASCORBIC ACID
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Ascorbate is present in high concentration in the nervous system and is believed to act as a neuromodulator. This study investigated the efficacy of ascorbic acid in neuropathic pain condition and the role of NMDA receptors on this effect. Neuropathic pain induced by chronic constriction injury of sciatic nerve (CCI model). Thermal and mechanical nociceptive thresholds were assessed with paw withdrawal latency (PWL) to radiant heat and paw withdrawal threshold (PWT) in response to linearly increasing pressure. Intraperitoneal injection of 5 and 10 mg/kg but not 1 mg/kg ascorbic acid increase mechanical and thermal threshold in the second week after CCI. Ascorbic acid (1 mg/Kg.i.p.) also produced significant inhibition of MK-801 (0.01 mg/kg i.p.) and ketamin (5 mg/kg i.p.) – induced antinociception response. Taken together present results indicate that ascorbic acid produced a dose dependent antinociceptive effect that seems to be mediated through its interaction with NMDA receptors.

P1470
HEADACHE AS A PRESENTING SYMPTOM IN STROKE PATIENTS
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Background: According to the ICHD-II, headache attributed to ischemic cerebrovascular disorders has moderate intensity without specific clinical features. Headache occurred in 17–34% stroke patients, more frequently with carotid territory infarcts. The aim of the present study is to evaluate headache occurrence in stroke patients.

Methods: Headache occurrence as one of the presenting symptoms in acute stroke was studied in 278 consecutive patients, treated during one year. The headache occurrence was analyzed according to type, size, stroke localization and past history data of primary headache disorder, as well as the outcome of stroke.

Results: 76 (27.3%) patients had headache. There was no difference in headache occurrence in patients with cerebral infarction compared with patients with transient ischemic attacks, as well as between the patients with territorial vs. lacunar stroke. Surprisingly, headache occurred more frequently in patients with stroke in vertebrobasilar territory (p=0.027) and among patients with history of migraine (p=0.008). There was no difference regarding stroke outcome (mortality and functional disability measured by Rankin score) between the patients with and without headache.

Conclusions: According to our results, headache is one of the presenting symptoms in nearly a third of patients with acute ischemic stroke, more frequently occurring with stroke in vertebrobasilar territory and in migraine patients. Headache had no predictive value for the outcome in our patients.

P1471
ASSESSMENT OF MENSTRUAL HEADACHE IN MEDICAL STUDENTS AT TABRIZ UNIVERSITY OF MEDICAL SCIENCES
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Background and subjects: Menstrual headache was described by Von Der Linder in 1666. Menstrual headache has recently been divided by the international headache society into 2 subcategories. 1. Menstrually (attacks occurs during premenstrual and other times of the month) 2. Pure menstrual (does not occur at the other times). Materials and method: In this study were 300 female students (18–26 years old). 50 of them were medicine students, 50 dentistry, 50 pharmacology, 50 Nutrition, 50 obstetric and 50 nursing students at TABRIZ University, and observed from April 2005 to April 2006. This was a cross and observed sectional descriptive analytic study.

Results: All of the interviewers completed the questionnaire. The prevalence of pure menstrual headache was 27.3%. A positive family history of headache found 62.9%. 20% of native and 34.2% of not native students had experienced menstrual headache. The prevalence of migraine was 30.5% and tension type headache was 69.5%. 47.6% of the students had attacks occurring 2 days before onset of menstruation and 41.6% had attacks 3 days after the menstrual period.

Conclusion: The result of this study shows the menstrual headache is highly prevalent among medical students at this university especially in medicine students.

Key words: Pure menstrual headache, menstrual related headache, Family headache, medical students.
thrombin III activity, coagulation factor VIII activity, activated partial thromboplastin time, lupus anticoagulant (DRV), anticoagulant antibodies, G1691A Leiden genotype, antinuclear antibody screening and androgene hormones.

**Results:** Median BMI was 29.8 kg/m² (range 20.4–48.8 kg/m²) in cases and 26.4 kg/m² (range 20.2–42.6 kg/m²) in controls, p=0.2. No single parameter differed significantly between cases and controls (Fisher’s exact tests). 13 of 19 cases (68%) and 12 of 15 controls (80%) had one or more abnormal test result.

**Conclusions:** The present controlled study does not support hypercoagulability in IIH. Although based on a small population, a significant difference between cases and controls should be expected if coagulation abnormalities were of importance in IIH. Other neurobiological mechanisms should be identified.

P1473

**ANTINOICINEFFECT OF TIANEPTINE, A SEROTONIN REUPTAKE ENHANCER**

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**Introduction:** Tianeptine is a widely used antidepressant in Europe, with a particular mechanism of action, totally different from the mechanism of action of all the other antidepressants, because instead of inhibiting the reuptake of serotonin, tianeptine stimulates the reuptake of serotonin (serotonin reuptake enhancer), decreasing the levels of serotonin in the brain. Our aim was to study the effect of tianeptine in three animal models of acute pain. Our initial hypothesis, based on tianeptine’s mechanism of action, was that tianeptine will show a significant hyperalgesia.

**Material and methods:** The experiment was carried out in 2 groups of 8 mice each. We administered tianeptine (2 mg/kg oral) to one group and saline solution to the other group. To test the effect of tianeptine on nociception we used the hot plate, the tail flick and the paw pressure tests. For statistical analysis we used Student’s t test.

**Results:** Tianeptine increased the latency time in all three tests used.

**Conclusions:** Tianeptine had a significant antinociceptive effect. This was a surprise for us because our initial expectation was a significant hyperalgesic effect of tianeptine. Further studies are needed to explain the mechanism of action of tianeptine on nociception. We also think that we need to study the effect of tianeptine on pain in humans, especially volunteers and patients with neuropathic pain.

P1474

**PREVALENCE OF TENSION-TYPE HEADACHE (T-TH) AMONG ADOLESCENTS WITH OROMANDIBULAR DYSFUNCTION (OMD)**

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**Aim:** OMD and psychosocial stress are considered as the most probable causes of T-TH. The aim of the study is to access the prevalence of T-TH among adolescents with OMD.

**Material and methods:** The methods of investigation were based on clinical examination and survey. The diagnosis of T-TH and OMD was established in accordance with IHS and IASP standards. Results were statistically analyzed. Studied population consisted of 2373 students (1431 girls and 942 boys) aged 13–19.

**Results:** T-TH was observed in 817 students (34.4%), including 592 girls (41.4%) and 225 boys (23.9%). In population of 639 students with OMD, T-TH was present in 50.1% (320 subjects), including 55.3% girls (233 subjects) and 39.9% boys (87 subjects). IET-TH was present in 7.7% students with OMD and among 4.5% of total studied population (p<0.01). FET-TH was diagnosed in 41% students with OMD and among 28.7% of total studied population (p<0.001). CT-TH was observed in 1.4% students with OMD and among 1.3% of total studied population (p<0.05). Influence of OMD signs and symptoms on T-TH prevalence was also reported. T-TH was diagnosed in 55.4% students with occlusal parafunctions (grinding and clenching teeth), in 52.6% students with abnormal and painful mandibular movements, in 47.2% students with acoustic sounds in TMJ and among 44% students with non-occlusal parafunctions (nail, tongue, lip, cheek biting).

**Conclusions:** OMD signs and symptoms do influence the prevalence of T-TH among adolescents. Prevalence of OMD and T-TH correlates with subjects gender.

P1475

**CHARACTERISTICS OF PERIMENSTRUAL HEADACHE**

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**Introduction:** Perimenstrual period includes 2 days before, the first day and the following 2 days of menstruation. Migraine without aura (MWA) is frequently provoked by menstruation and headache is one of the most important symptoms of premenstrual syndrome. Connection between sexual hormones and headache is well-known, but the exact mechanism through which headache is influenced by menstruation remains unclear. Aim of the present study is to determine whether the perimenstrual headache in examined participants meets diagnostic criteria for MWA or is a headache which, as a part of the premenstrual syndrome, has specific characteristics.

**Methods:** The study analyzed data obtained from 34 women with perimenstrual headache. Questionnaire for headache was used to identify clinical characteristics of headache. Intensity ratings of premenstrual syndrome (PMS) were estimated with a questionnaire for premenstrual syndrome.

**Results:** 76.5% of women met diagnostic criteria for MWA and 73.5% of women met diagnostic criteria for PMS. Neither tested clinical characteristics of headache, nor number of fulfilled diagnostic criteria for MWA were significantly correlated with intensity ratings of premenstrual syndrome. Most of women, 55.8%, had MWA and PMS; 20.5% of women had MWA mostly provoked by menstruation; 17.7% of patients had non-migraine headache as a part of PMS and 5.8% of them fulfilled neither diagnostic criteria for MWA nor PMS.

**Conclusions:** Results of this study indicate that perimenstrual headache does not show uniform clinical characteristics and includes different entities.

P1476

**EFFECTS OF AQUEOUS EXTRACT OF SEED OF FOENICULUM VULGAR ON NEUROGENIC AND INFLAMMATORY PAIN IN MICE**

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A little of previous investigation show that the seed of the Foeniculum vulgar (FV) has many medical effects. The aim of this work is
assessment of the role of aqueous extract of seed of FV on acute and chronic pain in formalin test in mice. In this study male albino mice (25–30 gr.) in 6 groups (n=42), were used. FV (100, 200, 500 and 1000 mg/kg) and saline were injected 30 min before the formalin test. Indexes of signs were licking and foot elevation for assessment of acute pain (5 min) and chronic pain (15–40 min) after injection of formalin 5% (25μl) in the right paw. Findings indicate that FV has analgesic effect in duration of acute and chronic phases in comparison with control and saline groups. In this study results indicated that Fv has analgesic effect on pain in both doses in acute and chronic phases (p<0.05). Finding above showed that FV can modulate acute and chronic pain. Further research is required to determine the mechanisms by which FV has an inhibitory effect on pain sensation.

P1477
MAGNESIUM AND MIGRAINE
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Objective: The exact pathogenesis of migraine has not been discovered yet. The findings suggest the idea that there might be some major physiological disorder which increases the hyperexcitability of the central nervous system and leads to migraine. The reason for increased neuronal excitability may be multifactorial; one of the factors may be low level of magnesium. The aim is assessment of serum magnesium level in migraine patients.

Methods: In a case-control study, 140 patients suffering from migraine were chosen. Their levels of serum magnesium were determined using atomic absorption spectrophotometer technique and the results were compared to those of 140 healthy people.

Results: 140 patients (22 male and 118 female) suffering from migraine, with the mean age of 33.8±10.31, and 140 healthy people (26 male and 114 female) not suffering from migraine, with the mean age of 34.19±9.95 were enrolled. 40 patients had aura and 100 patients did not have aura. The average serum magnesium level in patients with migraine was 26.14±4.3 and in normal people it was 31.09±4.32 (p<0.05). There was no significant difference between the mean level of magnesium in migraine with aura and without aura. Between the amount of magnesium and the frequency of headache there was a significant linear relationship.

Conclusion: The average serum magnesium in patients suffering from migraine was significantly lower than that of the normal people.

Keywords: Migraine with aura, migraine without aura, magnesium

P1478
MANAGEMENT OF PAIN IN NEONATES
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Objective: To increase awareness that neonates experience pain and to evaluate the response to analgesics and their side effects.

Methods: A survey performed during 3 years’ time on 1011 newborn patients that experienced pain (evaluated with the CRIES scale) has revealed that 905 of them received first level analgesic treatment, while 106 necessitated third level analgesic treatment for curing severe pain as well as for preventing pain to result from invasive manoeuvres.

Results: This study demonstrated that the CRIES scale is valuable and reliable for evaluating pain in neonates. By using adequate doses of analgesics, control of pain was achieved and its immediate and long term consequences could be avoided (changes in metabolism, behavioural response). Giving adequate doses of analgesics permitted avoiding their side effects, demonstrating that fear regarding the use of analgesics in neonates has no basis.

Conclusion: The study emphasizes the importance of evaluating and curing pain experienced by newborns, in accordance to WHO analgesics scale. At present, there are numerous methods for the evaluation of pain in neonates. No restraints should occur regarding analgesic treatment in this age group.

P1479
THE SIGNIFICANCE OF EEG DURING THE INVESTIGATION OF AN EPISODE OF SPORADIC HEMIPLEGIC MIGRAINE
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P1480
LEVETIRACETAM AS MIGRAINE PROPHYLAXIS: AN OPEN-LABEL STUDY
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P1481
ANALGESIC EFFECT OF ESSENTIAL OIL OF SALVIA VERTICILLATA IN BALB/C MICE
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P1482
ANTINOCICEPTIVE EFFECT OF ALCOHOLIC EXTRACT OF PETROSELINUM CRISPUM LEAVES IN BALB/C MICE
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P1483
CLINICAL AND MORPHOLOGIC CHARACTERISTICS OF ATYPIC FACIAL PAIN IN PULPITIS
M. Gerasimova, A. Domian, M. Gaspyryan, B. Davyдов
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THE EFFECTIVENESS OF IBUPROFEN IN THE TREATMENT OF MIGRAINE IN CHILDREN
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LONG-TERM REPETITIVE PROPHYLACTIC TREATMENT IN MIGRAINE
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P1486
OLANZAPINE AND PERPHENAZINE IN THE TREATMENT OF CHRONIC DAILY HEADACHE
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P1487
TOLOSA HUNT SYNDROME IN A CASE WITH A PREVIOUS HISTORY OF EPISODIC CLUSTER HEADACHE
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P1488
QUALITY OF LIFE OF CHILDREN WITH CEPHALGIA
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MIGRAINE RELATED STROKE
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P1491
SOMATOSENSORY AND BRAINSTEM AUDITORY EVOKED POTENTIALS IN ADOLESCENTS WITH CERVICOGENIC HEADACHES
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PERSONALITY PROFILE AND CHRONIC MIGRAINE
C. Lovati, A. Brambilla, P. Bertora, C. Mariani
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LASER-EVOKED POTENTIALS (LEPS) IN THORACIC PAIN SYNDROME: A CASE REPORT
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TRANSCRANIAL STIMULATION IN THE COMPLEX THERAPY OF CERVICAL DORSOPATHIES IN PARTICIPANTS OF CONTEMPORARY MILITARY EVENTS
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EFFECTICITY AND TOLERABILITY OF PREGABALIN FOR MIGRAINE PROPHYLAXIS IN CHRONIC AND REFRACTORY HEADACHE
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MIGRAINE HEADACHE IS INAPPROPRIATELY MANAGED
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COMPARISON OF THE EFFECTS OF PROPRANOLOL AND TRANSCUTANEOUS ELECTRICAL NERVE STIMULATION IN THE PREVENTION OF MIGRAINE
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TOPIRAMATE IN THE TREATMENT OF CORNEAL PAIN
G.M. Nampiaparampil, A.G. Prasad, D.E. Nampiaparampil
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DEPRESSION IS ASSOCIATED WITH MIGRAINE
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PAIN RELIEF AND “BENIGN” TRIGEMINAL
NEURALGIA
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N. Fayed
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Hospital Miguel Servet, 4Servicio de Neurofisiologia, Clinica Quiron
Zaragoza, 5Departamento de Radiologia, Clinica Quiron Zaragoza,
Spain

P1501
PROPHYLAXIS THERAPY WITH LEVETIRACETAM
ELDERLY PATIENTS WITH MIGRAINE: AN OPEN LABEL
STUDY
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POSSIBLE HEMICRANIA EPILEPTICA?
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Abstract cancelled

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NEUROMODULATORS IN CHRONIC MIGRAINE
PREVENTION
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P1505
MIGRAINE AND TRIGGERS OF MIGRAINE
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2Jakomerc, Krusevac, 3Telekom, Krusevac, Serbia

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I.V. TRAMADOL: EFFECTIVE FOR MIGRAINE
TREATMENT
V.B. Scott-Krusz, J. Cagle, S.K. Hall, D. Cammarata,
J.C. Krusz
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I.V. TREATMENT OF REFRACTORY MIGRAINES
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I.V. KETAMINE FOR REFRACTORY MIGRAINES
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ATYPICAL GRADENIGO’S SYNDROME SHOWING
ISOLATED FACIAL PAIN
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BOTULINUM TOXIN TREATMENT FOR PERICRANIAL
PAINS IN THE ELDERLY
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BURNING MOUTH SYNDROME (BILATERAL
TONGUE PAIN) ASSOCIATED WITH A THALAMIC
INFARCTION
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P1512
BOTULINUM TOXIN TREATMENT IN NUMB-CHEEK
SYNDROME
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P1513
EVOLED POTENTIALS AND MIGRAINE
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East Azarbigan, Iran
Neurorehabilitation; Neurotoxicology; Spinal cord and root disorders

P1514
SAFETY AND EFFICACY OF HIGH DOSES OF BOTOX IN THE TREATMENT OF CEREBRAL PALSY
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Cerebral palsy can be a severely debilitating condition, which often has a devastating effect upon patients and their families. Since the underlying insult results in irreversible damage to the CNS, treatment strategies are essentially palliative. The goal is to reduce the painful spasticity that accompanies CP in order to relieve patient suffering and increase level of function. Botox injections have been found to be an effective palliation for dynamic spasticity in CP patients. However, there is a relative paucity of data regarding the maximum dose tolerated in the child population. The present study examines the safety and efficacy of botox therapy at up to 40 U/kg administered in divided doses. 40 patients from the Movement Disorders clinic at Children’s Hospital of Michigan were treated with botox injections for spasticity from 1995 to 1999. The population included nine adult patients and 31 children and young adult patients. Patients were separated into three groups according to diagnosis: diplegia (n=18), hemiplegia (n=11), and quadriplegia (n=11). They are evaluated for clinical response to therapy, as measured by the improvement in Modified Ashworth Scale score and subjective feedback provided by primary caregiver. The incidence and severity of complications is also reported. The significance of these data is also commented upon. This study suggests that botox therapy is safe, efficacious, and cost effective in this population at doses higher than previously recommended. It has an acceptable side effect profile at these doses.

P1515
REORGANIZATION OF THE HAND MOTOR AREA IN UNILATERAL STROKE PATIENTS AFTER REPETITIVE TRANSCRANIAL MAGNETIC STIMULATION
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Background: Stroke is a leading cause of persistent motor disability. Transcranial magnetic stimulation (TMS) is a non-invasive technique that allows mapping of the human primary motor cortex (M1). High frequency repetitive TMS increase cortical excitability and could modulate neuronal plasticity. The aim of the study was to explore if rTMS have a beneficial effect in rehabilitation after stroke.

Methods: In the study were included 10 patients with recent ischemic stroke (the first three months). Before applying rTMS, we established the motor threshold (MT) in first interoseus space and we mapped the hand motor area on affected side, using the single pulse TMS at 120% from MT. The cortical excitability of the affected motor area was increased by the use of rTMS (5 Hz, 10 trains of 25 pulses). Immediately after rTMS session, we repeated the hand motor area mapping. As control, we performed sham stimulation in the same manner on a different day.

Results: Before rTMS session, the hand motor area mapping, showed small amplitude motor evoked potentials with a reduced cortical area of distribution as compared with contralateral unaffected hand motor area. Consecutive to rTMS, the amplitude of the motor evoked potentials increased with a non-significant modification of the projection area.

Conclusion: Results indicate that cortical stimulation with high frequency rTMS could induce an active reorganization of the motor area. These changes in hand motor area mapping, may provide a neural substrate for acute compensatory plasticity of the motor system in response to stroke.

P1516
MOTION ANALYSIS OF SWALLOWING IN STROKE PATIENTS
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Background and aims: Videofluoroscopic swallowing study is a standard method for dysphagia patients. However, we cannot disregard the abnormal coordinated movement of anatomical structures. The purpose of this study is to evaluate the coordination of pharyngeal structures through motion analysis in stroke patients.

Methods: We did the VFSS of 20 normal volunteers and 28 dysphagic stroke patients. For motion analysis, we captured the frames of VFSS, and digitized 7 points. We compared the trajectory pattern of epiglottis and hyoid bone in stroke patients with normal volunteers.

Results: There were two patterns of abnormalities – uncoordinated pattern and decreased movement pattern – in hyoid bone and epiglottis each. Among the combination of patterns, uncoordinated pattern of hyoid bone and uncoordinated pattern of epiglottis combination (Type4) was 16, decreased movement pattern of hyoid bone and uncoordinated pattern of epiglottis combination (Type 2) was 10, and the other combination (Type 1 & 3) was one each. For the stroke lesion, in right hemisphere involvement, Type 4 was 8 and Type 2 was 4. In left hemisphere involvement, Type 4 was 8 and Type 2 was 6. For the etiology, in infarct cases, Type 4 was 13 and Type 2 was 5. In haemorrhage cases, Type 4 was 2 and Type 2 was 4.

Conclusion: Not only uncoordinated motion of pharyngeal structures but also decreased movement pattern can cause dysphagia in stroke patients. Brain lesion sites may not be related to the movement pattern of pharyngeal structures. However, there might be some relation between aetiologies.

P1517
FUNCTIONAL EVALUATION OF CONSTRAINT-INDUCED MOVEMENT THERAPY (CIMT) IN ACUTE STROKE
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Aim: The aim of the study was to evaluate the efficacy of CIMT in acute stroke in terms of activities of daily living (ADL).

Methods: Patients: We include 12 patients, aged 65±15yrs, 2–8 days after first ischaemic stroke. All had partial impaired function of the right (8) or left (4) upper extremity.

Assessment tools: We use Assessment of Motor and Process Skills (AMPS). It is an observational assessment providing information about the quality of ADL motor and ADL process skills while a patient carries out a meaningful task. It consists of 16 motor and 20 process skills.

Procedure: 5 patients were assigned to control group and 7 to treatment group. They were assessed prior and post 2 weeks therapy and followed up at three months. Both groups were included
in intensive 2 hours function focused therapy. In CIMT group the unaffected hand was restrained with a sling for additional 6 hours. Study was approved by Medical Ethics Committee. SPSS and AMPS software were used for analysis.

**Results:** In CIMT group: improvement on AMPS motor was statistically important from initial to discharge assessment (p=0.16) and also from discharge to follow-up (p=0.04). Improvement on AMPS process was only statistically important from initial to follow-up assessment (p=0.20). In control group: there was only statistically important change from initial AMPS motor–discharge (p=0.28).

**Conclusions:** Our results support evidence of efficacy of CIMT in early stroke. Further work is needed to clarify the effectiveness of method, measured with changes of ADL motor and ADL process skills.

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**P1518**

**TRANSPLENTATION OF HUMAN NEURAL STEM CELLS OVER-EXPRESSING OLG2, ENHANCES REMYEINATION AND Locomotor RECOVERY FOLLOWING SPINAL CORD INJURY**

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**Background and aims:** Cell replacement therapy with stem/progenitor cells holds promise for improving functional outcome after various CNS injuries. Continual injury to the spinal cord is complicated by a delayed loss of oligodendrocytes and demyelination. Transplantation of neural stem cells (NSCs) that are genetically modified to differentiate into oligodendrocyte lineage cells could be a rational strategy to repair the injured spinal cord.

**Methods:** Immortalized human NSCs (HB1.F3 cells) were transduced with retroviral vectors encoding a full length coding region of bHLH transcription factor Olig2 to generate a new cell line stably overexpressing Olig2 (HB1.F3.Olig2). HB1.F3.Olig2 cells were grafted into rat spinal cord one week after contusive injury at T9 segment. Locomotor recovery was assessed by BBB test, footprint analysis, and grid walk. The extent of myelination was measured at the ventral white matter.

**Results:** Overexpression of Olig2 resulted in a forced differentiation of hNSCs into oligodendrocyte lineage in vitro, as evidenced by expression of oligodendrocyte-specific markers. Grafted HB1.F3.Olig2 cells more frequently migrated towards the white matter compared to HB1.F3, and most of HB1.F3.Olig2 cells in the white matter differentiated into oligodendrocyte lineage. Animals transplanted with HB1.F3.Olig2 cells showed enhanced recovery in BBB scores and foot print analyses compared to either control or HB1.F3 transplanted group. Transplantation of HB1.F3.Olig2 cells increased the extent of myelination in the ventral white matter compared to the other groups.

**Conclusions:** Transplantation of human NSCs genetically modified to differentiate into oligodendrocyte lineage may be an effective strategy to promote locomotor recovery after spinal cord injury.

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**P1519**

**EFFECT OF RHYTHMIC AUDITORY CUES ON GAIT OF STROKE PATIENTS**

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**P1520**

**EFFECTS OF SENSORY DEFICITS ON DYNAMIC BALANCE IN PATIENTS WITH DIABETIC NEUROPATHY**

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**Background and aims:** Dynamic balance ability, such as moving the body’s centre of mass (COM) within a fixed base of support, is essential for many activities of daily living and closely associated with falls and disability. Somatosensory inputs from the foot sole provide critical information for maintaining dynamic balance, but is often affected in patients with diabetic neuropathy. The purposes of this study were to determine how sensory deficits affected dynamic balance ability and to identify the neuromuscular factors associated with this ability.

**Methods:** 31 patients with diabetes participated in this study. Tactile sensory threshold of the foot, lower extremity strength, basic mobility and level of physical activity were measured. A Vicon motion analysis system was used to record the body kinematics during Forward Reach Test (FRT) to derive the COM data. FRT, which requires subjects to reach forward as far as possible without moving the feet or losing balance, is widely used clinically to reflect dynamic balance.

**Results:** Patients with sensory deficits had significantly smaller range of COM displacement than those without. Plantarflexor strength (R2 change=0.346), tactile sensory threshold of the big toe (R2 change=0.168), and level of physical activity (R2 change=0.094) were significant contributors to the range of COM displacement.

**Conclusion:** Dynamic balance ability was limited in diabetic patients with sensory deficits. Motor function and activity level also contributed to such ability. Clinically, special attention in sensorimotor screening and balance test should be given to patients with diabetes for early detection and prevention of falls and disability.
**P1521**
**GAMMA-TOCOPHEROL EXERTS A NEUROPROTECTIVE EFFECT IN CEREBELLAR NUCLEI OF RATS**
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Ethanol causes oxidative stress, triggering neuronal damage and cell death. Cerebellum is one of the most vulnerable structures to ethanol. Glutamate has been demonstrated to play a key-role in excitotoxicity. We tested the hypothesis that alpha-tocopherol (AT) and gamma-tocopherol (GT) exert a neuroprotective effect in cerebellar nuclei using the model of NMDA-induced modulation of glutamate. We assessed the effects of a pre-administration of AT (4mg/L; 6 rats) and GT (4mg/dL; 5 rats) on glutamate using microdialysis. Probes (3 mm) were located in left cerebellar nuclei. We administered ethanol (20mM) followed by NMDA (10mM; 60 minutes) locally. A control group of 4 rats (ethanol) was used. Microdialysates were collected every 20 minutes and concentrations of glutamate were assessed. Pre-administration of AT and GT reduced the levels of glutamate as compared to the controls. Peak of glutamate was 116.71% in the control group, as compared to 76.46% in the AT group and 53.70% in the GT group. Glutamate concentrations decreased to 34.99±6.52% at 60 minutes following NMDA infusion in the GT group (control group: 66.92±16.65%; Mann-Whitney test: p=0.008) and to 62.83±19.78% in the AT group (p=0.394). This is the first demonstration of an in-vivo protective effect of pre-administration of AT/GT in the alcoholic model of cerebellar nuclear toxicity, with a predominant effect for GT. These results illustrate the potential of vitamin E for the prevention of brain damage induced by ethanol.

**P1522**
**CHANGES IN Suprathreshold CAMPIMETRY AFTER VISION RESTORATION THERAPY (VRT)**
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**Background and aims:** Small controlled and prospective studies have shown improvement in visual field testing after VRT, where a specific pattern of stimulation is delivered to the border between the seeing and the blind field. The objective of this study is to evaluate the results of VRT in a large US cohort, explore the influence of baseline demographic factors, and to understand the dynamic of visual field change.

**Methods:** Individuals with retrochiasmatic lesions and a homonymous visual field defects (VFD) >3 months from injury were treated with VRT (6 modules). Suprathreshold campimetry was obtained at baseline and after each module. The primary outcome was the change in the detected stimuli after therapy. The influence of age, time from lesion and type of VFD was analyzed.

**Results:** 161 patients with a mean age of 59 years were studied. The mean absolute improvement in detected stimuli was 12.8%, which translated into a 4.9º shift of the edge of the border. An improvement >3% was noted in 76% of those treated. Response of >3% after 3 modules was associated with better final outcome. Age, time from lesion and type of VFD did not correlate with degree of improvement.

**Conclusion:** Improvement in stimulus detection was observed in about ¾. Better performance at 3 modules predicts greater chance of success. The baseline demographic factors evaluated did not have an impact on outcome. This study validates prior reports and supports the use of VRT for some patients with VFD from retrochiasmatic lesions.

**P1523**
**MULTIFOCAL SYMMETRICAL LEUCOENCEPHALOPATHY AFTER HEROIN INHALATION: CHASING THE DRAGON**
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**Background:** Progressive multifocal leucoencephalopathy following inhalation of heated heroin vapor was first described in Netherlands in 1982 involving 47 people. Since then more than 100 cases were described in Europe and the United States. In all cases, the mode of ingesting heroin was inhalation of heroin vapor heated on aluminum foil, the practice known as “chasing the dragon” or “Chinese blowing”.

**Methods:** We present 3 cases of toxin – induced leucoencephalopathy, in white, otherwise healthy male patients, age 25–40, with history of inhaling heroin vapor. Diagnosis was established based on clinical presentation, anamnestic data of heroin use and characteristic findings on brain MR imaging. Other possible etiological causes were eliminated by detailed electrophysiological, immunological, serological and cerebrospinal fluid studies.

**Results:** Onset of symptoms was abrupt in all 3 cases presenting on admission with disturbance of consciousness and development of organic psychosyndrome, followed by signs of lesions in cerebellum and corticospinal tract. Brain MR imaging showed diffuse symmetrical disturbances in white matter, predominantly in cerebellum, internal capsule and globus pallidum. After treatment with antioxidants (coenzyme Q10), and other symptomatic therapy, minimal clinical improvement was observed in all patients, mostly in regression of organic psycho syndrome and improvement of consciousness, with persistence of neurological symptomatology at discharge.

**Conclusion:** The diagnosis of heroin-induced leucoencephalopathy should always be taken in consideration in young patients presenting with clinical and radiographic signs of multifocal symmetrical leucoencephalopathy, especially if other possible metabolic or toxic etiological causes could not be identified.

**P1524**
**DATA BASE FOR THE EVALUATION OF PATIENTS WITH DIAGNOSED VEGETATIVE STATE**
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In the daily clinical practise the term “vegetative state” is currently used incorrectly. This is mainly due to a lack a cross-linked basic information about this clinical picture. There is no exact data about the incidence and only little about the prevalence. Many aspects of the pathophysiology, mainly concerning reduced consciousness as a cardinal symptom, are still unclear. There is no approved hypothesis about developing vegetative state, whereon a causal or at least a symptomatic therapy could be based on. Up to now, only limited research of the effect and outcome of neurological rehabilitation on patients with vegetative state has been done, neither for the acute phase nor for long term consequences. For this reason, basic information and guidelines for documentation and treatment are needed. To resolve these problems a data-base was
established by our department. We will provide fundamental information about the incidence of vegetative state and its associated variables, primarily for the metropolitan area of Vienna. Another aim of this study was to collect suitable data to achieve a precise definition of the often variable clinical picture. Furthermore, the latest diagnostic techniques will be used to form and to test a well-founded hypothesis about the pathogenesis and the pathophysiology of the marked clinical picture and its remission. Prospectively, this data base will be used as a basis for the systematic analysis of the Public Health Service facing medical care of patients with vegetative state (“Health Service Research”).

P1525

A2D MODULATORS FOR MANAGEMENT OF COMPRESSIONS NEUROPATHIC PAIN: A REVIEW OF 3 CASE SERIES

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Background and aims: The α2δ modulators gabapentin and pregabalin are effective against neuropathic pain. Numerous brands of α2δ modulators are available in India, and are expected to have equivalent clinical effects. We describe clinical outcomes in 3 series of cases of neuropathic pain treated with 3 available brands of α2δ modulators.

Methods: 194 consecutive patients with neuropathic pain secondary to MRI-documented compression radiculopathy received either LYRICA (LYR), a locally available generic brand of pregabalin (PGN), or a locally available generic brand of gabapentin (GBN), respectively. Drug treatment was continued till adequate pain relief. In each of the 3 groups, mean pain scores were analyzed at Days 0, 15, 60 and 90, and daytime sedation scores at Days 1, 15, 60 and 90.

Results: Mean pain score was significantly lower in LYR series as compared to PGN and GBN series at Days 15, 60 and 90. As compared to PGN and GBN series, greater proportion of patients in LYR series could discontinue drug therapy following adequate pain relief, by Day 90. Daytime sedation scores were significantly lower in LYR series as compared to PGN and GBN series at Days 1, 15, 60 and 90, and as compared to PGN series at Day 90.

Conclusion: These results indicate the effectiveness of α2δ modulators for management of neuropathic pain secondary to compression radiculopathy. The results also suggest a possible therapeutic superiority of LYRICA over locally available generic brands of pregabalin and gabapentin. These findings need to be further examined in RCTs.

P1526

COMPARATIVE STUDY OF NEURODEVELOPMENT TREATMENT WITH AND WITHOUT DYSPORT INJECTION IN THE MANAGEMENT OF SPASTICITY OF HEMIPLEGIC PATIENTS

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Background and aims: Spasticity is one of the motor disorders of which treatment is usually troublesome. The aim of this study was to compare the effect of NDT with dysport injection and NDT alone in reduction of spasticity and improvement of the quality of movement patterns in hemiplegic patients.

Methods: 20 spastic hemiplegic patients 9 female, 11 male with age ranging 41–78 years participated in this study. Severity of spasticity according to original ashworth scale (OAS) was between 1 and 3. 10 patients (group 1) were treated by NDT (10 sessions) and 10 patients (group 2) were treated by NDT and dysport. Baseline assessments consisted of: spasticity severity in plantar flexor’s muscles according to OAS, active and passive range of motion of ankle joint and quality of movement patterns of lower limb in standing position according to NDT. Injection of dysport was performed in gastrocneuemius (200 u), soleus (75 u) and tibialis posterior muscles (50 u).

Results: In 2 groups, decreasing of OAS, increasing of active and passive range of motion and quality of movements patterns were seen (p<0.05). All these changes were more significant in group 2 (p<0.05).

Conclusion: NDT with inhibition of abnormal patterns, fascilitation of normal responses and increasing the ability of patients to perform discrete movements can reduce spasticity, increase range of motion and quality of movement patterns. Direct effect of BTX-A on muscle tone and reduction of spasticity can increase the effectiveness of NDT.

P1527

CONTRIVERSIVE PUSHING IN PATIENTS WITH HEMIPARESIS DUE TO UNILATERAL CEREBRAL LESIONS

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Some patients with brain damage may exhibit pusher behaviour (PB) of actively pushing away from the nonhemiparetic side and resisting against passive correction. The purpose of this study was to determine the incidence, associated neuropsychological symptoms and clinical evolution of contraversive pushing (CP) in patients with hemiparesis due to acute unilateral cerebral lesions. All patients with hemiparesis due to stroke, TBI, tumour and encephalitis consecutively admitted during a 1-year period to neurorehabilitation unit were evaluated for CP by using a standardized Scale for Contraversive Pushing (SCP). All patients underwent a neuropsychological assessment, Barthel Index (BI) and Scandinavian Stroke Scale (SSC) evaluation. A total of 68 (13.23%) from 514 examined patients exhibited CP. 62 patients had stroke, 4 patients had brain trauma and 2 patients had tumour ablation. 49 patients had right-hemisphere brain lesion. Significant correlations were found between CP and hemispatial neglect and anosognosia. Mean SCP score at 1 month after onset was 4.25, at 2 months – 1.5 and at 3 months – 0.75.

Conclusion: The majority of patients (91.18%) who exhibited PB had a stroke. It was found a tendency of pushing score reduction by time increasing after disease’s onset. The stroke patients with PB had more a severe stroke as expressed by lower SSC score and lower BI score. Rare, but pusher behaviour may occur in patients with non-stroke cerebral lesions. Pushers were more likely to have right hemisphere lesions (72% versus 28%, p<0.05). The presence of hemispatial neglect and anosognosia was significantly more frequent in patients with CP.
P1528
REVERSIBLE STUTTERING AND PERINDOPRIL
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Introduction: We report a stuttering time related to perindopril. This side-effect has never been described.

Case-report: A 73-year-old man of university level was admitted to the emergency room for disturbances in verbal expression. A week ago perindopril 4 mg was added to his treatment for cardiac failure, during hospitalization in the cardiology department. On the 1st day of treatment he presented stuttering beginning in the morning and since then relapsing each day. On the 9th day perindopril was given only at 10:30 and stuttering begun at 12 am. Since then perindopril was stopped and stuttering did not reappear. This patient has never suffered stuttering before.

Conclusion: Concerning perindopril, cough is a common side-effect, while a case of reversible dysthria has been described. Stuttering is almost always a developmental disorder improving with age. Mechanism of perindopril induced stuttering will be discussed.

P1529
SEVERE TRANSITORY ENCEPHALOPATHY WITH SEIZURES AND REVERSIBLE LESIONS OF THE CLAUSTRUM SECONDARY TO EXPOSURE TO ORGANIC SOLVENTS
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Background: Exposure to organic solvents can occur both in occupational and household settings. Toxicity may result from inhalation, ingestion, and skin or eye exposure. CNS toxicity has been reported, particularly with chronic exposure or highly concentrated solutions.

Case-report: A 39-year-old policeman was admitted due to seizures. An insect bite had occurred three weeks earlier, followed by frontal headaches and ocular congestion. Behavioural and cognitive changes, namely aggressiveness and judgement impairment, followed. His previous medical history was unremarkable. On admission the general and neurological examinations were unremarkable except for confusion, inattention, and anterograde amnesia. Blood and CSF examinations were normal, including toxicological, immunological and serological tests. EEG showed slow background rhythm, left temporal paroxystic activity and right fronto-temporal continuous slowing. Cranial MRI (1.5 T) depicted T2/FLAIR hyperintensities on both claustra and external capsules. His condition slowly improved. He then admitted having repeatedly disinfected the insect bite wound with a highly concentrated phenol solution (creolin 50% phenol). He was removed from further exposure to phenols, antiepileptic therapy was continued. One month later he was asymptomatic. Routine EEG, 1.5T cranial MRI and neuropsychological tests, repeated two months after discharge, were normal.

Conclusions: For this encephalopathy with seizures, the toxic etiological agent – creolin 50% phenol - was identified. Particularly interesting is the finding of reversible bilateral claustrum and external capsule T2/FLAIR hyperintensities. To our knowledge this is the first report of this MRI pattern related to subacute exposure to organic solvents.

P1530
REHABILITATION OF THE WORKING MEMORY: A MULTIFACTORIAL PROGRAMME APPLIED TO A SINGLE CASE STUDY
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Our program of neuropsychological rehabilitation aims at the improvement of three functions of the central executive component of the working memory: processing load, updating and interference management, by the acquisition of three reorganization strategies (double coding, serial work and work at the patient’s rate). Our program proposes 2 stages: a cognitive rehabilitation (graduated neuropsychological exercises) which enables to acquire the specific strategies and an ecological rehabilitation, including analyses of scenarios and real settings in situation, with an aim of transferring the strategies learned to everyday life situations.

This program was applied to a single case who presented working memory deficits after a surgical operation of a gangliogliome, situated in the left internal temporal lobe. The temporal paradigm of multiple baselines was used to measure the effectiveness of our rehabilitation.

Our project highlights the following conclusions:
1. The whole program proved to be effective on the functioning of the 3 working memory components (comparison between pre- and post-cognitive tests);
2. There was generalization of effects to the everyday life situations (comparison between pre- and post-test ecological tests);
3. The assets are maintained over a long period of time (comparison between post-test immediate and 2 months later);
4. The results indicate a modularity of the 3 functions and a limited interdependence of the functions of processing load and interference management;
5. Each rehabilitation (cognitive and ecological) had a specific effect on the tests in the same way standard and this effect was transferred partially the other type proof.

P1531
RELATION OF EMG PARAMETERS TO CLINICAL FINDINGS IN PATIENTS WITH ULNAR NERVE LESION IN THEIR ELBOW
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Ulnar nerve lesion in their elbows (UNE) is clinically characterized by paresthesia and pain in mild cases, by numbness in ulnar nerve region in moderate cases, and by interosseal and hypothenar atrophy with muscle weakness in severe cases. In moderate and severe cases we usually find abnormal EMG findings. The sensitivity of conduction studies is only 78%, non-localizing abnormalities in 17% and normal findings in 5%. In 50 patients with non-professional or professional UNE we accomplished clinical examination, ulnar nerve conduction studies, needle EMG, and ultrasonography of ulnar nerve in elbow. Conduction studies were focused on MCV across elbow, amplitude of CMAP and amplitude of SNAP. In patients with low segmental MCV we performed motor nerve inching study across elbow. Surgery was done in 10 patients; in 7 of them with intratunnel pressure measurements. Searching for relation between clinical findings (pain, paresthesia, hypesthesia, weakness, atrophy) and EMG parameters we used statistical analysis. We disclosed significant relations (p-value <0.05): 1. In
patients with muscle atrophy (segmental MCV, amplitude CMAP, amplitude SNAP), 2. With weak muscles (segmental MCV), 3. In pure paresthetic form (amplitude SNAP). No correlation between clinical and USG findings was found. Typical clinical findings are not sufficient for the diagnosis of UNE, but it should be supported by EMG findings and in certain cases by neuroimaging. Results of our study show, that segmental MCV, amplitude CMAP and amplitude SNAP are statistically significant in moderate and severe UNE patients.

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P1532

BILATERAL PYRAMIDAL TRACT SYNDROME AS THE FIRST NEUROLOGICAL PRESENTATION OF A PATIENT WITH A LARGE CERVICAL PLEXIFORM NEUROFIBROMA WITH MULTIPLE INTRASPINAL EXTENSIONS. A CASE REPORT

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Introduction: Neurofibromas are benign tumours originated from the nerve sheath and usually appear as one of clinical manifestations of neurofibromatosis type 1 (NF1: Von Recklinghausen Disease). Plexiform neurofibromas (PNs), usually cutaneous or subcutaneous, are rarely located by the spinal cord, arising from spinal nerve roots. In the accessible literature, we can find only sporadic reports of spinal PNs, extending into the spinal canal causing myelopathy.

Case Report: We describe the case of a 61-year-old man who came to our Department complaining of gait disorder and right limbs’ weakness. Clinical examination showed right hemiparesis. Tendon reflexes were found diminished in upper whereas enhanced in lower limbs. Plantar responses were both extensor. There were not detected sensory disorders. Cerebral MRI revealed two T2 high-signalling areas, in the right thalamus and left hippocampus, with no tumour characteristics, as it was ascertained by MR Spectroscopy. These areas were therefore defined as UBOs (Unidentified Bright Objects), a common finding in NF1. Cervical MRI showed a large PN, consisting of sequential nerve roots with at least 3 intraspinal extensions, causing severe compression of the spinal cord. Surgical resection was proposed to patient, but he refused. The diagnosis of NF1 was ensured according to the NIH Consensus Development Conference criteria.

Conclusion: PNs with intraspinal extensions is a rare manifestation of NF1. In the case reported we notice that a PN with multiple penetrations into the canal, resulting in serious compression of the spinal cord, is a rare but severe CNS complication of NF1.

P1533

SUBACUTE COMBINED DEGENERATION: THREE CASES

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Vitamin B12 deficiency is a systemic disease that often affects the nervous system. One of the most prevalent manifestation is subacute combined degeneration of the spinal cord. Neurological symptoms may occur in the absence of haematological abnormalities. The neurological disorder associated with cobalamin deficiency is a vacuolar myelopathy, characterized pathologically by white matter vacuolization in the posterior and lateral columns of the spinal cord that is often associated with concomitant neuropathy and behavioural or psychiatric symptoms. Vitamin B12 deficiency may result mainly from insufficient dietary intake, gastrointestinal diseases that may render the transfer vitamin B12, nitrous oxide poisoning and genetic defect of methylmalonyl coenzyme A mutase. We present three cases; one male (28 years old) and two female (44 and 58 years old) patients with subacute combined degeneration, with typical radiological findings: symmetric, hyperintense signal changes in the posterior columns of the cervical cord in T2 weighted MR images. Subacute combined degeneration was developed in two patients following nitrous oxide anaesthesia. The underlying cause of subacute combined degeneration of the other patient was revealed as inadequate dietary intake of vitamin B12. All three patients had haematological changes consistent with megaloblastic anemia. We treated the patients with 1000 mcg/day intramuscular cobalamine injections for two weeks and maintained the treatment three months with weekly injections. Three months after the initiation of the treatment we detected significant clinical and radiological improvement.

P1534

DEPRESSANT EFFECT OF CALMODULIN ANTAGONISTS ON 7-KETOCHOLESTEROL-INDUCED MITOCHONDRIAL DAMAGE AND CELL DEATH IN PC12 CELLS

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Background: Oxysterols such as 7-ketocholesterol and 25-hydroxycholesterol formed under enhanced oxidative stress in the brain are suggested to induce neuronal cell death.

Methods: The present study investigated the effect of calmodulin antagonists (trifluoperazine, W-7 and calmidazolium) against the cytotoxicity of 7-ketocholesterol in relation to the mitochondria-mediated cell death process and oxidative stress. PC12 cells exposed to 7-ketocholesterol revealed nuclear damage, decrease in the mitochondrial transmembrane potential, cytosolic accumulation of cytochrome c, activation of caspase-3, increase in the formation of reactive oxygen species and depletion of GSH. N-Acetylcysteine, trolox, carboxy-PTIO and Mn-TBAP reduced the cytotoxic effect of 7-ketocholesterol. Calmodulin antagonists attenuated the 7-ketocholesterol-induced nuclear damage, formation of the mitochondrial permeability transition and cell viability loss in PC12 cells.

Results: The results suggest that calmodulin antagonists may prevent the 7-ketocholesterol-induced viability loss in PC12 cells by suppressing a formation of the mitochondrial permeability transition, leading to the release of cytochrome c and subsequent activation of caspase-3. The effects seem to be ascribed to their depressant action on the formation of reactive oxygen species and depletion of GSH.

Conclusions: The findings suggest that calmodulin inhibition may exhibit a protective effect against the neurotoxicity of 7-ketocholesterol.

P1535

INHIBITORY EFFECTS OF VALDECOXIB ON SODIUM CURRENTS IN SENSORY NEURONS

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Background: Valdecoxib is a selective cyclooxygenase-2 (COX-2) inhibitor. It is effective in the treatment of rheumatoid arthritis, osteoarthritis, primary dysmenorrhea, and postoperative pain. Two kinds of sodium currents, tetrodotoxin-sensitive (TTX-S) and tetrodotoxin-resistant (TTX-R), are expressed in the dorsal root ganglia (DRG). Both sodium currents are implicated in the formation of normal and abnormal pain.

Method: The effects of valdecoxib on sodium currents in rat DRG neurons were investigated using the whole-cell variation of the path-clamp technique.

Results: Valdecoxib suppressed two types of sodium currents in a dose-dependent manner, without altering the activation and inactivation kinetics of either current type. It shifted the activation voltage toward a depolarizing direction and the steady-state inactivation voltage toward a hyperpolarizing direction, and suppressed resting channels to similar extents in both types of sodium currents. Valdecoxib slowed the recovery of both sodium currents from inactivation, and suppressed them a frequency-dependent manner.

Conclusion: The results suggest that valdecoxib may produce analgesic effects through the inhibition of sodium currents in sensory neurons as well as COX-2.

P1536
PREDICTORS OF SUBTHRESHOLD RTMS EFFECTIVITY IN STROKE PATIENTS

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The aim of this study was to study predictors of rTMS effectivity in patients with hemispheric ischemic stroke in the rehabilitation period.

Methods: We performed a study of 112 patients (64 man and 45 women, mean 52.2±9.17 years old) with brain hemispheric infarct. rTMS was implemented using the original methodic: intensity of magnetic field was 1.7 T, frequency – 10 Hz. The stimulated coil was applied on projection of stroke localization. The time of magnetic influence of the mentioned parameters was 10 min. The course treatment included 10 daily procedures of rTMS. We assessed an influence of stroke risk factors, clinical and MRI picture, data of neurophysiological and neuropsychological tests, US examination of brachiocephalic arteries and transcranial Doppler and rTMS parameters.

Results: Our results showed that most effectivity of rTMS was in patients without leukaemias (b=80.97) and internal hydrocephaly (b=31.57), without beta-rhythm focusing by regularity (b=54.28), with anatomically normal Willisii circle (b=27.4) and in subcortical infarct localization (b=1.7).

Conclusion: This results are important for indication of rTMS use introduction in rehabilitation of patients with hemispheric ischemic stroke and formation of expected results model in this group.

P1537
ACUTE PROFOUND THROMBOCYTOPENIA FOLLOWING CLOPIDOGREL THERAPY

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Backgrounds: The incidence of thrombotic thrombocytopenia purpura by clopidogrel is known as 4 per 1,000,000 patients treated. We observed a case of isolated profound thrombocytopenia after clopidogrel administration accompanying with multiple bruises. CASE: A 79-year-old female presented with right periorbital bruise/swelling and diffuse petechiae on her body, which had developed 6 days ago. She was treated with clopidogrel (75 mg per day orally) due to old cerebral infarction for 4 months. She was alert, well oriented. Platelet count was 5×109/L with hemoglobin of 12.5 g/dL and leukocyte count of 6.9×109/L. Her recent platelet count was normal (29×109/L) 6 months ago. The peripheral blood smear demonstrated severe thrombocytopenia with no microangiopathic changes. Haptoglobin was slightly low (12 mg/dL, normal range 19–170 mg/dL) and FANA was weakly positive. The lactate dehydrogenase, prothrombin time, and activated partial thromboplastin time were all normal and anti-platelet antibody was negative. Other blood tests were all normal. Brain computed tomography on her admission day was normal except multiple low signal intensity in bilateral periventricular white matters and basal ganglia. The diagnosis of clopidogrel-induced thrombocytopenia was suspected. Clopidogrel was subsequently discontinued and tranexamine(750 mg/day) was given daily. Ten days later, the platelet count rose to 15×109/L without platelet transfusion or steroids. On 15th day, she was discharged with a below normal platelet count (18×109/L).

Conclusion: Despite the safety of clopidogrel, it can be associated not only with thrombotic thrombocytopenic purpura but also with isolated thrombocytopenia without serious complications.

P1538
EXPRESSION AND ROLE OF C-JUN IN THE ORGANOPTYC SLICE CULTURES OF RAT HIPPOCAMPI

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We investigated the basal and stimuli-induced expression of c-Jun in the organotypic slice cultures of rat hippocampi which were prepared from 5- or 7-day-old rat pups. To examine the stimuli-induced changes of c-Jun expression, 14 DIV cultures were divided into three groups (n=30 each) and then cultured for 7 or 14 days in the three different media cultures: serum-containing media (SCM), serum free media (SFM) or SFM with vitamin D3 (10 nmol/ml). To assess the role of c-Jun on neuronal survival, the cultures were preincubated with 10M of antisense and nonsense c-jun for 24, 48, 72, and 96 hours. The basal c-Jun expression was grade 3–4 in neurons of the CA1 and CA3 areas of hippocampus at 3 and 7 DIV, grade 2 in the CA1 area and grade 3–4 in the CA3 area at 14 DIV, and grade 1 in the CA1 area and grade 2 in the CA3 area at 21 and 28 DIV. When compared to the SCM group, c-Jun expression was higher in the SFM group, but lower in the Vitamin D3 group at 21 and 28 DIV. In addition, the decreased level of c-Jun by antisense oligonucleotides significantly increased neuronal damage. In conclusion, the basal c-Jun expression in organotypic hippocampal slice cultures was highly maintained, and the stimuli-induced c-Jun expression was dependent on the types of stimulating agent. Our in vitro data suggests that the basal c-Jun expression plays a protective role in neuronal survival under a variety of cytotoxic stress.
Background: Early rehabilitation of severely impaired neurological and neurosurgical patients is intensive care and rehabilitative therapy.

Methods: Biographical data, severity, kind of illness, outcome of patients admitted in 2006 was analysed.

Results: We treated 105 patients, 56 were men. Age was 18–92 years, 8 younger than 40 years, 33 individuals 40–60 years, 64 were older than 60 years. We rehabilitated 3–154 days (mean: 38.5). The most frequent illness was a traumatic brain injury in 26, followed by subarachnoid haemorrhage in 24 individuals. The region of the ACM was infarcted in 19 cases. 10 patients had a cortical bleeding and 5 an infarction of brainstem. 3 had a bleeding into basal ganglia. Other diagnosis were: cerebral hypoxia, cerebellary bleeding, GBS, critical-illness, tumour.

Outcome was good: 47 patients qualified for a further rehabilitation. 16 individuals were discharged into a nursing home, 25 could be sent home, some of them independent. 4 died. For disability we used the Barthel scale with the scale of early rehabilitation (FRBS). The mean ameliorated from −91.1 to 8.2. Scale was not linear, subgroups were regarded: At admission, 5 patients had a FRBS ≤ 200., 47 patients ≤ 100. 38 individuals had another negative, 15 a positive FRBS. Finally, 32 patients remained < 0, 24 individuals did not qualify for a further rehabilitation (FRBS < 30). 26 patients had a good (FRBS 35–60), 18 patients a very good outcome with FRBS ≥ 65.

Conclusion: Early rehabilitation is useful to lower disability in severe neurological or neurosurgical disorders, also in the elderly.

P1540
SPINAL CORD ISCHEMIA DUE TO SELF INDUCED TRAUMA IN THE CERVICAL AREA IN A DRUG ADDICTED PERSON
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Objective: A case report of ischemic damage of the spinal cord SC right after the injection of heroin in the right supraclavicular area based on clinical and radiological data.

Case report: A 30-year-old male, drug addict, tried to inject a solution of heroin and lemon into the right jugular vein. Right after the injection numbness in both shoulder girdles appeared followed by weakness that within minutes extended from the shoulders downwards, involved the trunk and lower limbs. Clinically the patient suffered from flaccid tetraparesis that was more prominent on the right side and urinary retention. 24 hrs later reflexes could not be inflicted from the level of C7 downwards. There was also hypoaesthesia of the lower limbs and the trunk up to the level of T5 dermatome. Magnetic Resonance Imaging (MRI) of the cervical spinal cord showed ischemic damage of the ventral part of the spinal cord from C5 to T1 with coexisting oedema of the area. Electromyography that was performed 20 days later showed damage of the ventral horns of the spinal cord.

Conclusion: The ischemia of the superior part of the spinal cord may be due to vasospasm or direct damage of the thyrrocervical trunk that lies just below the jugular vein and gives out the anterior or radicular arteries that subsequently join and form the anterior spinal cord artery.

P1541
THE SYMPTOM OF FATIGUE IN SPINAL INJURY
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Background: The symptom of fatigue is common and yet remains poorly defined. It is likely to have a central, brain component. Patients with spinal injury present an interesting group in which to study fatigue, since CNS damage tends to be localised within the cord with preservation of normal brain architecture. Objective To characterise the features of fatigue as experienced by patients with spinal injury.

Methods: Five patients with paraparesis secondary to trauma or vascular malformations in the thoracic cord underwent semi-structured interview. Standard qualitative techniques of analysis were used; the study had ethical approval and all subjects gave written consent.

Results: Within the subjective experience of fatigue, physical, cognitive and emotional domains were identified. Typical descriptive language included ‘tiredness’ and ‘sleepiness’. Physical features included use dependent weakness in the muscle groups affected by the injury. Cognitive features related to concentration. Aggravating factors included physical activity as well as long periods of immobility. Many features showed diurnal variation and were relieved by rest or daytime sleep. Fatigue also engendered emotions such as defiance but at the same time frustration.

Conclusion: This pilot study revealed that fatigue in spinal injury clearly went beyond just use dependent muscle weakness in the lower limbs. There were also cognitive, emotional and behavioural components and a relationship to sleep. Further detailed examination of the features of fatigue in spinal injury, perhaps with comparison to neurological illness involving the brain, may yield insights into this important symptom.

P1542
THE COEXISTENCE OF BORRELLIA BURGDORFERI RADICULITIS AND DISC HERNIATION – A CASE REPORT
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Objective: B. burgdorferi radiculitis and disk herniation can co-exist. The nerve root alterations induced by disk herniation might create local conditions conducive to infection by B. burgdorferi. We report a case of a patient with L5 radiculopathy in whom we found the coexistence of disk herniation at the same level confirmed by CT and acute radiculitis caused by B. burgdorferi.

Methods: A 69-year-old countryman was admitted for severe low back pain and L5 radiculopathy on the left which did not respond to nonsteroidal anti-inflammatory drugs and analgesics. He was febrile a few days before the hospital admission. He had several tick bites. Neurologic examination showed that the straight leg raising test on the left was positive at 60° and there was no clinical evidence of meningeal involvement.

Results: CT of the lumbar spine showed herniation of the L4–L5 disk on the left and pressure on the left L5 root. The patient was treated with dexamethasone, which led to pain alleviation. CSF examination demonstrated a 170/mm³ cell count (95% lymphocytes), protein level of 1, 67 g/l, slightly decreased glucose level and the presence oligoclonal IgG bands by electrophoretic analysis.
of CSF. Serological tests for Lyme disease were positive in the serum and CSF (ELISA and Western blot). We continued the treatment with Ceftriaxone, which led to complete symptoms resolution.

Conclusion: In patients who reside in an endemic area and whose clinical manifestations suggest disk-related nerve root pain, B. burgdorferi infection should be looked for, as both aetiologies can coexist.

P1543
CROSS-SECTIONAL STUDY OF NEUROBEHAVIORAL EFFECTS OF CARBON DISULFIDE AMONG IRANIAN WORKERS
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Objectives: This cross-sectional study assessed prevalence of dysfunctions of the central nervous system in Iranian male workers who were occupationally exposed to carbon disulfide (CS2) in a chemical plant, and compared to non – exposed workers in the same plant.

Methods: 145 exposed workers (EW) and 82 non-exposed workers (CG) were included in this study. The measurement of exposure was performed by personal sampling according to NIOSH Standard method. The exposed workers were divided into two groups according to the average CS2 exposure being below TLV of CS2 (10 PPM) (EW1, n=52) and above TLV of CS2 (EW2, n=93). Every participant filled in the neurotoxicity symptoms questionnaire (Q16). Clinical neurological examinations and neurophysiological examinations (nerve conduction velocities) were performed.

Results: Prevalence of workers with more than 7 positive answers on the Q16 was significantly higher in both EW1 and EW2 compared to CG (p<0.02). Sensorimotor disorders were significantly worse in EW1 and EW2 compared with CG (both p<0.001) and both exposure groups had a higher proportion of positional tremor compared with CG (p<0.03).

Conclusions: Both neurobehavioral examinations and Q16 indicate disturbances in the central nervous system in workers on average exposed to CS2 concentrations below 10 PPM (TLV).

Questionnaire Q16 is a valuable means for selecting workers for further neurobehavioral testing.

P1544
CAPABILITY OF SELF-ATTENDING FOLLOWING A STROKE IN THE CASE OF WOMEN OLDER THAN 65
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Objective: Monitoring rehabilitation effects on the capability of self-attending in the case of women over 65 who have suffered a stroke

Material and method: 200 women were monitored. The neurological deficit level and rehabilitation effects were assessed with the application of the standard FIM test on admission and after 14, 30 and 90 days of rehabilitation. Each parameter – manner of walking, bladder emptying control and large intestine emptying control – was monitored separately.

Results: An analysis of the outcome of the treatment established a statistically significant improvement in all the monitored parameters during the rehabilitation, which was most visible in the period between the 3rd and 4th control p<0.05. By applying the multiple linear regression model, we obtain the following characteristics as the predictors of a more successful rehabilitation – a high salary, married status and life in an old people’s home.

Discussion: Early rehabilitation measures exert an important influence on the improvement of the neurological deficit, but social and economic characteristics have a significant influence on the improvement of the capability of self-attending during prolonged rehabilitation.

P1545
SOCIO-CULTURAL FACTORS IN STROKE
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Aims: The aim of our study was to examine how the social-cultural factors influence the development and rehabilitation of stroke.

Patients and Method: We have examined the social circumstances and lifestyle of 30 patients (15 men and 15 women) between the age of 40–60, who have already got over a stroke.

Results: The greatest number of the illness occurred in manual workers who had low educational qualification and low income. 55% of patients had high blood pressure, diabetes and venous thrombosis in the family. 78% of patients were overweight. In most cases hypertonia was known but it was not treated and checked. They did constant physical training neither before the stroke nor after it. But everybody changed his eating habits after the stroke. 80% of patients smoked and regularly drank alcohol. 70% of patients gave up smoking or drinking alcohol after the stroke or reduced it. Each patient had some residual symptoms: speech disorder, movement disorder, hemiplegia. After rehabilitation in the institute 78% of patients were self-supporting. But only 9% of patients could continue their original job and only those ones could do it, who had higher educational qualification and were given rehabilitation in their home.

Conclusion: Our study proves that educational qualification and the way of life considerably influence the development of stroke and the result of rehabilitation. But these factors can be influenced and in this way the incidence of illness can be reduced and restoration of health can be improved.

P1546
DATA AND EXPERIENCE FROM THE SPINAL CORD REHABILITATION CENTRE KLADRUBY, CZECH REPUBLIC, FROM 2002 UNTIL 2007
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Since 2002, a new system dealing with a subsequent treatment of patients with spinal cord injuries has been established in the Czech Republic. Within this system, fifteen neurosurgical departments, four spinal cord units, and three spinal cord rehabilitation units have been certified. The chief objective of spinal cord rehabilitation units is to increase the independence of the patients to an utmost possible level. The Spinal Cord Rehabilitation Unit at the Rehabilitation Centre Kladruby, functioning since 2002, has a capacity of 40 beds and approximately 110 patients are admitted.
here every year. The presented data show, chronologically, the prevailing causes of spinal cord injuries with our patients, the rates of various spinal cord segment lesions, the distribution of the patients according to their age and sex, the functional outcome of the patients including rates of wheelchair users, and complications of our treatment. Also presented are the accomplishments of a new study programme, called Leonardo Da Vinci. Launched at Kladruby in 2005, this programme has been focused on increasing computer skills of patients with a spinal cord injury who are in need of professional re-qualification.

P1547
EXPERIMENT OF APPLICATION OF PHARMACOTHERAPY IN COMPLEX REHABILITATION OF PATIENTS IN VEGETATIVE CONDITION
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Due to the development of neuroreanimatology, the number of patients in vegetative condition has increased. Referring to the reviewed literature, the pharmaceutical standard of treatment of patients of this group is not worked out (mostly symptomatic pharmacological therapy takes place). The aim of the research is to study the effectiveness of neuroprotective therapy in complex rehabilitation (gliatilin, cerebrolisin). 23 patients were observed and treated, all of them corresponded international criteria of the diagnosis “vegetative condition” with the duration of the disease from 4 months to 1 year, at the age from 20 to 45. All patients had symptomatic pharmacological therapy, complex rehabilitation program. Three groups were formed: 1 – in the first group (7 people) patients received cerebrolisin daily according to their individual scheme up to 60 ml a day 2 – in the second group (8 people) patients took gliatilin daily according to their individual scheme up to 6 grams a day 3 – control group (8 people). Three patients who got cerebrolisin as neuroprotective medicine, at the end of the fourth month there were noticed signs of “condition of little consciousness”, in form of long fixation of look, stable reaction of eyes’ monitoring, stable behavioural reaction to the corresponding stimuli the level of consciousness reached 12–13 points. Also there was noticed appearance of sensor component in the research of cognitive indications and diffuse changes of bioelectrical activity of brain, appearing of a strongly expressed alpha rhythm according to data from EEG. 4 patients from the third group – the way to “condition of little consciousness”. Neuroprotective pharmaceutical therapy in complex rehabilitation of vegetative patients is definitely effective and requires further investigation.

P1548
AXONAL POLYNEUROPATHY BASED ON THALLIUM INTOXICATION
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Object: Thallium is a rarely occurring metal element, it can be naturally found in compounds. Its compounds are toxic. It is used as a basic ingredient of some rat poisons or insecticides. It is used also in electrotechnical industry.

Method: We have explored a 22-year-old patient with medical history of pain in the calves with cramps and paresthesias for at least six weeks. She performed slow worsening of weakness in lower limbs, there is diagnosed light dysarthria and dominantly there is a visual sense damage. In a short time was hair lost to total alopecia. She was examined by electromyography, the axonal polyneuropathy was diagnosed. She underwent toxicological screening measurements with thallium positive in the urine 372 ug. In the serum it was 0.225 mg/dl.

Results: Treatment was started by forced diuresis, vitamins administration, it was used antidotal medication-Radiogardase which in insoluble Prussian blue capsules contains insoluble ferric hexacyanoferate(II). It was added pregabalin (Lyrica) to the treatment of lower limbs paresthesias with positive effect. The urine measurements of thallium were in normal ranges after 3 months.

Conclusion: Thallium and its soluble salts are well absorbed either in lungs, digestive tract or skin. It rapidly permeates into the cells, its affinity to SH-group of biomolecules interferes with the synthesis of proteins and cell respiration. Affinity of thallium to riboflavinum can be one of the reasons of its neurotoxicity.

P1549
SEXUALITY AND PATERNITY IN SPINAL CORD INJURY
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One of the main problems in spinal cord injury is the disorder affecting sexuality. The great majority of spinal cord injuries affects young people, 25% of whom are women and the remaining 75% men. These patients are in a sexually active and potentially fertile stage of their lives. Once the injury occurs, it gives rise to a series of disorders and physiological reactions which control their sexual activity, such as erection and ejaculation in males, orgasmic perception in both genders. These disorders often result in personality disorders, low self-esteem, fear of being abandoned. The Se.Pa. (Sexuality and Paternity) Unit was set up in our Institute to limit the serious problems connected with Erectile Dysfunctions (ED). In this respect, our Unit has not only gained experience in treating sexual dysfunctions in para and quadriplegics, but also, and above all, in the methods targeted at obtaining and “enhancing” ejaculate in these young patients, in view of their prospective paternity. Our Unit provided sexual-oriented advice to 352 patients: 307 males, 45 females. 443 tests for obtaining ejaculate by means of FERTICARE PERSONAL Vibrator, and 33 tests by means of Seager Model 14 Electroejaculator were carried out. The qualitative and quantitative test of the ejaculate highlighted that the majority of these patients certainly has serious fertility problems, although a periodic “sexual rehabilitation” See vibrator or electroejaculator, as well as a careful prophylaxis of bladder infections may render such ejaculate sufficiently fertile to enable the couple to undergo medically assisted procreation.

P1550
THE TEN-METRE WALKING TEST IN PATIENTS WITH LUMBAR SPINAL STENOSIS
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Background and aims: Lumbar spinal stenosis (LSS) plays a significant role in restriction of walking ability, especially in the elderly. The aim of the study is to evaluate a ten-metre walking test and correlate this simple examination with other signs frequently restricting mobility in patients with LSS.

Methods: A group of 68 patients suffering from LSS was evaluated. The independent relation between different initial parameters
Results: The gait velocity for 10 metres and the ability to run correlated with permanent weakness (OR 2.66, CI 1.23; 6.75) and NC (OR 2.73 CI 1.32; 7.32). EMG signs of radiculopathy (OR 0.62 CI 0.29; 1.34), coxarthrosis (OR 1.12 CI 0.19; 6.49), gonarthrosis (OR 1.57 CI 0.27; 9.23), and pain (OR 1.52 CI 0.63; 3.27) did not affect the ten-metre gait ability.

Conclusions: The gait velocity for 10-metre and ability to run for the same distance reflect the main factors that restrict the mobility of patients with LSS (neurogenic claudication and permanent weakness of lower extremities). Other factors (arthrosis, pain) do not influence mobility over a short distance significantly.

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P1551
THE FIRST WORK EXPERIENCE OF THE SCHOOL “REHABILITATION OF SLEEP” AT THE SPA-CENTRE
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We have organized a school for rehabilitation of sleep. Medical examination of patients was carried out at the place of their living and it was recommended to continue treatment at the spa-centre. The participants answered standard questionnaire developed by WHO, got individual medical consultations of neurologists, instructors on physical culture, dieticians. The programme included two seminars about physiology and pathology of sleep, the regimen of night sleep – from 22.00 to 07.00 and afternoon sleep from 14.30 to 15.30, physical training in the first half of the day for 1.5 hour, massage after day sleep, water treatments, sauna. The duration of the programme was 21 days. 450 participants have visited our school (at the age from 35 to 55 years – 359 male, 91 female). The length of sleep disorders from one week to 10 years, frequency of night sleep disorders – from 1 to 7 times a week. During the first year the number of participants was 80 people, during the second year – 450 people. 66.85% – female and 57.14% – male have noticed increasing the length of sleep for two hours. After the treatment programme the number of night awakenings decreased from 27.85% to 17.12% – female; from 38.46% to 23.30% – male. Increasing the number of participants proves the effectiveness of school work at the rehabilitation of sleep disorders. The participants have noticed increase of the length of sleep and reduction of night awakening. 92.80% of participants have rehabilitated the physiological regimen of sleep.

P1552
VESTIBULO-OCULAR REFLEX IN PATIENTS WITH CHRONIC CEREBROVASCULAR INSUFFICIENCY
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P1553
ADVANCED DRUG THERAPY AFTER TUMOR REMOVAL
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P1554
CURCUMIN, CAPSAICIN AND S-ALLYLCYSTEINE REDUCE OXIDATIVE STRESS IN RAT BRAIN HOMOGENATE
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P1555
EFFECTS OF MATRICARIA CHAMOMILLA EXTRACT ON MORPHINE WITHDRAWAL SYNDROME IN MICE
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P1556
PHYSICAL ANALGESIA IN NEUROLOGICAL PRACTICE – METHODS AND MECHANISMS
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P1557
NEUROLOGICAL COMPLICATIONS OF CHRONIC LITHIUM THERAPY
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P1558
MYELINOLYSIS IN AN ALCOHOLIC PATIENT WITHOUT ELECTROLYTE DISTURBANCE
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P1559
THE EFFECTS OF COMBINED EXPOSURE TO CHEMICAL AND PHYSICAL FACTORS ON THE NERVOUS SYSTEM HEALTH DURING ALUMINUM PRODUCTION
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P1560
EFFECT OF LOW FREQUENCY ELECTROMAGNETIC FIELD ON NON-ENZYMATIC GLYCOXYLATION OF PROTEINS IN MICE SERUM
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P1561
CHRONIC ALCOHOLIC ENCEPHALOPATHY
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P1562
USE OF PHYSIOTHERAPY IN THE TREATMENT OF INITIAL STAGES OF HEREDITARY SPASTIC PARAPLEGIAS
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P1563
PLAYING TECHNIQUE FOR DEVELOPING THE MANUAL MOTILITY
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