

## POSTERS NEUROLOGY

### 1. MILD COGNITIVE IMPAIRMENT – MCI: A KEY NEUROPSYCHOLOGICAL NOTION STILL UNDER DEBATE

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**Introduction/Objectives:** The central idea of our presentation is MCI - a conceptual and pathological entity defined by Petersen et al. in 1995 and still under debate, surrounded by a sustained attention mainly because it is a stage where suitable medical and non-medical interventions could potentially be more successful by comparison with later stages in which the changes are more and more dramatic and less susceptible to be amended.

**Participants, Materials/Methods:** The first part of our paper attempts the actual issues of the debate upon MCI concept: its usefulness, definition, etiology, clinical appearance and evolution, heterogeneity of the assessment scores, scales and criteria of definition, conversion predictors, cohorts under study, research outcomes, treatment algorithms etc., as well as to its position in the aging and cognitive pathology matrices. As practical topics, the differential diagnosis, prediction, the epidemiologic and risk factors and the drug and non-drug, preventive and curative interventions are also called into discussion. A special attention is paid to the exceptional high complexity of biological and functional changes that determines the MCI heterogeneous appearance.

**Results:** The outcomes of our epidemiological, risk factors and the rate of conversion to Alzheimer's Disease studies in a cohort of MCI patients, as part of the EADC's DESCRIPA Project, are also overviewed.

**Conclusions:** The main conclusion is that the heterogeneities related to MCI could potentially be overcome by defining "clusters" of neuro-pathological, neuro-psychological and functional changes to be monitored in their dynamics, aside to the requirement of "personalized attempt" and ethical issues concerning MCI patients' evaluation and therapeutic intervention design.

### 2. OUTCOME OF PATIENTS WITH DISORDERS OF CONSCIOUSNESS IN ACUTE STROKE

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**Introduction/Objectives:** Disorders of consciousness is frequent in the acute stroke. Determine the severity of stroke and mortality in relation to the type of disturbance of consciousness in patients in the acute phase of stroke.

**Participants, Materials/Methods:** We retrospectively analyzed 201 patients with acute stroke at the Department of Neurology, University Clinical Center Tuzla, in the period from July 1st to December 31st 2008. The stroke was confirmed in all patients by computed tomography within 24 hours after hospitalization. Disorders of consciousness are divided into quantitative and qualitative. Assessment of disorders of consciousness is performed by Glasgow Coma Scale<sup>1</sup> and the Diagnostic and Statistical Manual of Mental Disorders - Fourth Edition<sup>2</sup> after admission. The severity of stroke was determined by National Institutes of Health Stroke Scale<sup>3</sup>.

**Results:** Fifty-four patients had disorders of consciousness in acute phase of stroke (26.9%). Patients with disorders of consciousness on admission ( $19.9 \pm 9.5$  vs.  $7.9 \pm 5.1$ ,  $p < 0.001$ ) and discharge ( $11.4 \pm 10.5$  vs.  $4.3 \pm 3.9$ ,  $p = 0.003$ ) had a more severe stroke than patients without disturbances of consciousness. There was no statistically significant differences in the severity of stroke at admission ( $p = 0.3$ ) and discharge ( $p = 0.8$ ) in patients with qualitative and quantitative disorders of consciousness. Mortality was significantly higher in patients with disorders of consciousness (55.6% : 4.1%,  $p = 0.0001$ ), and there was no difference in mortality in relation to the type of disturbance of consciousness ( $p = 0.8$ ).

**Conclusions:** In the acute phase of stroke patients with disorders of consciousness have a more severe stroke and higher mortality compared to patients without disorders of consciousness. No difference in mortality and the severity of stroke between patients with quantitative and qualitative disorders of consciousness.

### References

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### 3. A CASE OF A BOY WITH OLFACTORY EPILEPSY

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**Introduction/Objectives:** Olfactory epilepsy is a type of temporal lobe epilepsy that involves distortion of olfactory perception. Our aim is to differentiate the olfactory epilepsy from olfactory hallucinations caused by other neurological and psychiatric disorders.

**Participants, Materials/Methods:** We document a case of temporal lobe epilepsy of a young boy, whose

complaints are feeling of an unpleasant smell, that is followed by confusion, and that lasts few minutes. These complaints are not provoked by any stimuli. Electroencephalography, psychological exam and brain MRI were conducted.

**Results:** Interictal EEG shows irritative activity, with sharp waves of high voltage on parieto temporal region bilaterally, whereas brain magnetic resonance reveals bilateral hippocampal sclerosis. After instilling medication, the symptoms attenuated, but did not disappear completely.

**Conclusions:** Olfactory epilepsy can be induced by hippocampal sclerosis. The irritation of this area may have caused olfactory phenomenon in our case.

### 4. FEBRILE CONVULSIONS AMONG CHILDREN IN KOSOVO AND CLINICAL ELECTOENCEPHALOGRAPHY

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**Introduction/Objectives:** Febrile convulsion associated with significant rise in body temperature. These most typically occur between the ages of 6 month and 6 years, and are twice as common in boys as in girls. Many processes related to febrile convulsions are known, however there are non-distinctness and disagreements among the epileptologists concerning the existence of genes responsible for convulsions, possibility for transformation of disease to epilepsy ambiguity in determination of the exact mechanism through which these convulsion are manifesting and the consequences from them, as well as uncertainty in therapeutic and etiological approach, especially concerning prevention of relapses

**Participants, Materials/Methods:** A total of 117 children with febrile convulsion, 66(56,41%) of them were boys and 51(43,5%) girls were analyzed. Methodology of this study was developed using clinical histories, neurological examinations, laboratory and diagnostic methods such as EEG in Department

of Neurology and the Pediatric Clinic in University Clinical Center of Kosova. H<sub>2</sub> test was statistically used, based on non-parametric information.

**Results:** From the overall number of patient 117, atypical form of convulsion (complex) was found in 52 children (44,44%), while in 65 children (55,56%) typical form (simple) was found. In the groups analyzed, we had the opportunity to observe the following characteristics: in the group with atypical febrile convulsions, EEG changes of disrhythmic type and irritations observed in 69,23%, while in the typical ones, only in 3,08%; the risk age around the first year of age; mean duration of the seizures of 15 minutes; infections of respiratory pathways dominated; neurological findings normal; mean values of febricity between 38C and 39C.

**Conclusions:** Febrile convulsions in childhood are a serious problem, in the first line for the health of the children, and the family too. The vast majority of patients do not require treatment for either their acute presentation with a seizure or for recurrence

Key word: *febrile convulsions, electroencephalography*

## 5. HIGH INITIAL D/DIMER VALUES COULD PREDICT OUTCOME IN STROKE PATIENTS

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**Introduction/Objectives:** Stroke is one of the most common cause of death worldwide and a significant cause of disability among adults. D-dimers (Dd) are marker of thrombin generation and also of cross linked fibrin turnover. This study investigated the utility of plasma D-dimer.

**Participants, Materials/Methods:** Plasma samples were drawn from 74 consecutive patients who were admitted to the emergency neurology department under the stroke diagnosis during one year and assayed for fibrinogen and D-dimer. D-dimers were measured by the D-Dimer PLUS (Dade Behring, USA)

**Results:** High Dd and fibrinogen were obtained in 45 (61%) and 47 (64%), respectively. Obtained initial

plasma levels of D-dimer, fibrinogen and D/F ratio were 248ng/mL, 4.1g/L and 61, respectively, for all patients. The proportion of patients that did not survive was 16%. Logistic regression model was set up and Dd OR 1.00 95% CI (1.0003-1.003) p=0.015, and hyperlipidemia p=0.01 OR 0.07 95% CI (0.01-0.56) were major independent predictors of fatal outcome. Of all attributes, only D-dimer (and consequently d/F ratio) level had significant ability to discriminate between survivors and non-survivors (P<.0001). The optimal cut point for predicting outcome was 376 mg/L, resulting in specificity 83%, sensitivity 81%, 35% positive predictive value, and 96% negative predictive value.

**Conclusions:** Initial measurement of D-dimer level, can predict outcome in stroke patients. The optimal cut point for predicting outcome was 376 mg/L. The higher values were obtained in non-survivors who died of VTE complications. When D-dimer above 376 mg/L occurs, further diagnostic testing is necessary to exclude the presence of DVT in stroke patients.

## 6. BOTULINUM TOXIN A IN EXPERIMENTAL MIGRAINE

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**Introduction/Objectives:** Control studies in humans indicate that botulinum toxin type A (BoNT/A) alleviates symptoms of migraine. However, this problem was not investigated in details in experimental animals. Infraorbital nerve constriction injury is a model used both in trigeminal neuropathic pain and in migraine. We have assessed mechanical allodynia and dural extravasation in this model after single unilateral injection of BoNT/A (3.5 U/kg).

**Participants, Materials/Methods:** Neuropathic behavior in rats was induced by a chronic constriction injury of the infraorbital nerve, and BoNT/A was administered into whisker pad either ipsilaterally or contralaterally to the side of nerve injury. The effects of BoNT/A on bilateral pain were assessed for a period of a month by measuring mechanical allodynia with Von Frey filaments. Animals which developed mechanical allodynia were administered with Evans

blue intravenously and dural extravasation of Evans blue - plasma protein complexes was assessed.

**Results:** Both mechanical allodynia and dural extravasation were reduced by a single unilateral BoNT/A (3.5 U/kg) injection on the side of the toxin injection, and on the opposite side, as well.

**Conclusions:** Both migraine signs: pain and dural extravasation were reduced after BoNT/A injection. For the first time we show presence of dural extravasation after infraorbital nerve constriction injury. Bilateral antinociceptive effect and even more reduction of dural extravasation suggests a central mechanism of BoNT/A actions.

## 7. OUR ONE-YEAR EXPERIENCE WITH INTRAVENOUS THROMBOLYSIS

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**Background:** Acute stroke is a major cause of death and long-term disability.

Our aim was to present our one-year experiences of implementing intravenous thrombolysis for acute ischemic stroke in our hospital.

**Methods:** Selection and treatment of patients were in accordance with well known guidelines. NIHSS score was assessed at baseline, 2, 24 hours and 7 days after thrombolysis, and at discharge of hospital. Computed tomography (CT) scans was assessed as recommended in guidelines.

**Results:** 8, 1 % patients (pts) of all acute ischemic stroke hospitalized pts were treated with alteplase. The mean age was 66, 9 years- 26 males and 21 females. The delay from onset to presentation at the hospital was 57 and the time from presentation to initiation of thrombolysis ranged from 55 to 110 minutes (median 78 minutes). Initial median NIHSS score was 11, 6 (range 5-23) and 4, 1 (range 0-16) at discharge of hospital. Eight (17 %) of them were without neurological deficit at discharge. CT revealed in 17% cases of intracerebral haemorrhage (1 (2, 1%) big and symptomatic, and 7 asymptomatic and smaller than 1

cm). Four patients died because cardiological reasons after 10 days, one because of sepsis, and three (6, 3%) died because neurological worsening. One of them had a symptomatic intracerebral hemorrhage after implementing alteplase. At 3 months 33 patients (70, 2%) were functionally independent with a modified Rankin scale score of 2 or less.

**Conclusion:** Our first experiences with intravenous thrombolysis confirm good outcome results and benefit of treatment. We have to increase number of pts treated with alteplase, improve outcome and reduce number of complications.

## 8. SPONTANEOUS BILATERAL CAROTID ARTERY DISSECTION IN A PATIENT WITH MIGRAINE

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**Introduction/Objectives:** Spontaneous bilateral internal carotid arteries dissections have are rare. Here we report the clinical case of a patient with non-traumatic bilateral internal carotid artery dissection with a history of migraine without aura and a preceding respiratory infection.

**Participants, Materials/Methods:** A 45 year old female patient with a history of several years' migraine headaches without aura presented 2 days dull right sided headache and neck pain as well as a bruit in her right ear. Except for migraine without aura there was no history of concomitant disease. The neurological examination was normal and Doppler examination of neck arteries revealed increased blood flow in both vertebral arteries.

**Results:** Brain MR was normal but MRA revealed dissection of both internal carotid arteries in the neck, just at the carotid entrance in the bone channel. CT and CT perfusion (CTP) were normal. Physical examination and routine blood tests were unremarkable. A control Doppler examination 4 days later was normal. No physical signs of inherited connective tissue disorders were observed. In addition, cardiac and abdominal sonology were performed revealing no specific pathology. Eye and skin examination were unremarkable.

**Conclusions:** Our clinical case suggests that migraine could be associated with spontaneous dissection of carotid arteries. Additional factors such as infection may trigger carotid dissection.

## 9. MYASTHENIA GRAVIS IN THE TWO BROTHERS

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**Introduction/Objectives:** Aim of the report is to present a rare familial case of Myasthenia Gravis (MG) in two brothers.

**Participants, Materials/Methods:** Two brothers suffered from MG in the family without genetic disorders. Neurological medical report and history.

**Results:** Case report: In the family without genetic disorders, three brothers were born. First of them, the oldest on is in good health condition, without and clinical disturbances. Two of them, have developed a myasthenic disturbances; one at the age of 66, other at 67 yrs. In the both patients a myasthenic symptoms were mainly bulbar, with dysphagia and dysphonia. In both of them a positive anticholinesterase antibodies were found, without thymoma or thymus hyperplasia. After the corticosteroid therapy and cholinesterase inhibitive therapy symptoms of MG, were well tolerate with almost complete recovery. Brothers were living a normal life with routine daily activities, but a younger brother always in physical hyperactivity, mainly in his garden hobby working, many hours daily. In the year 2009th. the younger brother, after respiratory inflammation, combined with hard physical work, in his garden, developed a myasthenic crisis. He was admitted at the hospital severely immobile, with terminal respiratory insufficiency. The right lung pneumonia has been recognised by the X-ray examination. An artificial respiration was necessary together with antibiotics, plasma exchanging, immunoglobulin therapy and high doses of corticosteroids. His recovery was complete after 35 day of hospital treatment. Older brother, living an easy life with proper medication, and routine neurological control checks never suffered similar disturbances.

**Conclusions:** Although MG is not a genetic disorder several familial cases were reported, also the combinations of MG and other autoimmune diseases. These patients are not only interesting because of familial MG, but also as warning how the same diseases may develop different problems owing to the patient's behaviour.

## 10. TRANSCRANIAL DOPPLER SONOGRAPHY IN THE EVALUATION OF PATIENT'S COLLATERAL BLOOD FLOW WITH ASYMPTOMATIC PROXIMAL INTERNAL CAROTID ARTERY OCCLUSION OR SEVERE STENOSIS

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**Introduction/Objectives:** The intracranial collateral channels are not active under normal circulatory conditions. A collateral channel is active when pressure gradient develops between the two anastomosing arterial systems. Transcranial Doppler ultrasound (TCD) can detect the following collateral pathways: (1) The artery communicant anterior (ACoA): provides blood flow from hemisphere to hemisphere, (2) The artery communicant posterior (ACoP): provides blood flow between the posterior and the anterior circulation, (3) The ophthalmic artery (OPHT): provides a channel from the extra cranial carotid artery (ECA) to the intracranial internal carotid artery (ICA) through the orbit.

**Participants, Materials/Methods:** 80 asymptomatic patients (n= 51 male, n= 29 female), average 64 year, with unilateral internal carotid occlusion (n=46) or high-grade stenosis (n=34) demonstrated by Duplex scanning were studied with Transcranial Doppler sonography (TCD).

**Results:** It was found collateral blood flow through one vessel at 8 patients, what is 10% of evaluated (ACoA 5%, ACoP 3,7%, OPHT 1,2%), two collateral pathway at 44 patients what is 55% ( ACoA + opht 32%, ACoA + ACoP 17,5%, ACoP + opht 4,5%), three collateral channels were active in 35% of cases.

**Conclusions:** In case of asymptomatic carotid disease two or three collateral channels occur together in higher percent, and this is the reason why neurological deficit doesn't exist.

### 11. REVERSED FLOW OF BASILAR ARTERY WITH OCCLUSION OF BOTH ARTERIES VERTEBRAL IN CASE OF DEVELOPED COLLATERAL FLOW

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**Introduction/Objectives:** The basilar artery arises from the vertebral arteries. It bifurcates to the left and right posterior cerebral arteries, which form posterior part of the circle of Willis. The basilar artery flow is anterograd in common conditions. Reversion flow through AB occurs in conditions with occlusion of both vertebral arteries in case of activation collateral blood flow from anterior circulation.

**Participants, Materials/Methods:** We reported the case of 53-years old patient with severe occipital headache, vertigo, double vision, weakness of left side, dismetria and broad-based gait. From anamnesis he had poorly controlled hypertension and dyslipidemia. During two weeks, difficulties disappeared gradually

**Results:** Color Duplex ultrasonography of the vertebral arteries show reduction in the measured flow velocities with amplified resistance. TCD examination from transoccipital approach didn't find flow through the vertebral arteries, but we observed complete reversal direction of flow in the BA. From transtemporal approach we noticed accelerated flow through the both ACI and PCoA. MR angiography confirmed preserved flow in distal segment of the basilar artery with retrograde flow down the rostral basilar artery from the carotid-posterior communicating artery system.

**Conclusions:** Thanks to a good developed collateralization through the circle of Willis from anterior circulation in condition of occlusion of the both of vertebral arteries, we can explain absence of neurological signs in our patient.

### 12. EXTENT OF THE OXIDATIVE DAMAGE TO DNA (8-OXO-2DG) IN MULTIPLE SCLEROSIS

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The mechanism of the degenerative process in MS is not completely understood. There are some hypotheses that oxidative damage to DNA secondary to inflammation may contribute to irreversible alterations in MS plaques. To test this assumption, we have estimated the level of a DNA oxidative marker, a purine oxidation product, 8-oxo2 dG in lymphocytes of MS patients. Peripheral blood was collected from 27 patients. The control group to make 33 healthy volunteers. DNA was isolated from peripheral blood lymphocytes. In order to determine 8-oxo2 dG level, the nucleoside mixture was applied to the HPLC/UV system. The mean level of 8-oxo2 dG in MS patients was 19.6±35.1 and in control subjects 12.3±7.2. The comparison of 8-oxo2 dG in subgroups of patients divided according to duration of the disease showed the higher number of cases with DNA damage in patients of the subgroup with shorter duration of the disease. When the patients were classified according to results of EDSS scale, the higher level of oxidative marker of DNA damage was noted in patients with values higher than 2.0 points. The mean level of 8-oxo2 dG in gadolinium positive MS cases was 30.4±49.1 and in gadolinium negative ones 9.6±4.0

Oxidative damage to DNA is not a general feature in MS patients but it may frequently appear in the period of the disease shorter than 5 years. The higher level of oxidative marker of DNA damage in MS, noted in active period of the disease, testifies to the relationship between the studied variable and MS process.

### 13. ASSOCIATION BETWEEN EEG AND NEUROPSYCHOLOGICAL DISTURBANCES IN PATIENTS WITH IDIOPATHIC PARKINSON'S DISEASE AND SLEEP DISORDERS

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**Introduction/Objectives:** In Idiopathic Parkinson's disease non motor clinical signs are often, such as sleep disturbances, associated with neuropsychological and EEG changes.

**Aim:** To investigate EEG and neuropsychological changes in patients with Parkinson's disease (PD) and different types of sleep disorders (insomnia, parasomnia, unpleasant dreams, anxiety, difficulties in sleeping, often weakening).

**Participants, Materials/Methods:** 96 patients were included, at the age of 39-80 years, 66 men and 30 women. Investigation was made at the University Neurology Clinic in Skopje, Macedonia, at the Movement Disorders Department. In a period of 2008-2009 year. For the evaluation of sleep disturbances Parkinson's disease sleep scale (PDSS) and Non motor symptom questionnaire (NMSQuest) tests were used as well as EEG and neuropsychological findings (Minimental, Wexler test for intelligence, Rey test, Rey-Osterit complex figure).

**Results:** Showed sleep disturbances in 68% in patients with idiopathic Parkinson's disease, EEG changes in 57%. The most frequent changes are irregular alpha activity, theta activity and groups of sharp slow waves in 28%. The most frequent neuropsychological changes are reduction in cognition in 63%.

**Conclusions:** Most often sleep changes in examined group on patients with Parkinson's disease are difficulties in starting sleeping, early weakening and restless sleep. Association with neuropsychological changes in patients with idiopathic Parkinson's disease showed reduction of the cognitive functions.

### 14. RELATIONSHIP BETWEEN EEG REACTIVITY AND NEUROPSYCHOLOGICAL TESTS IN VASCULAR DEMENTIA

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**Introduction/Objectives:** Vascular dementia is a degenerative cerebrovascular disease that leads to a progressive decline in memory and cognitive functioning.

**Participants, Materials/Methods:** All of 35 patients with vascular dementia (VaD) representing moderate to severe stage of the disease and 35 age-matched control subjects were examined with spectral analysis of EEG and a neuropsychological test battery comprising visual, praxic, verbal and memory functions as well as Mini-Mental Status test.

**Results:** VaD patients did not have less activity in the alpha band than control subjects, but the alpha amplitude ratio between eyes closed (EC) and eyes open (EO) situations (EC/EO ratio) was decreased in VaD patients, compared to controls. In VaD the variables of the awake background EEG with eyes closed (amplitude of alpha, beta, theta and delta activity; mean frequency) had only a few correlations to neuropsychological test scores. However, the (EC)/(EO) alpha ratio showed significant correlations with several neuropsychological variables in the temporo-occipital and centroparietal derivations and some of these correlations were lateralized to the left or right hemisphere. Frontal EEG derivations with less alpha activity did not reveal any correlations to neuropsychological variables.

**Conclusions:** We conclude that the dynamic EC/EO alpha ratio variable may be even more sensitive in the assessment of brain dysfunction in VaD than the background EEG variables.

## 15. CLINICAL AND EPIDEMIOLOGICAL STUDY OF PARKINSONISM IN SKOPJE

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**Introduction/Objectives:** The Parkinson disease is a degenerative disease appearing predominantly in older age and at the end leads to patients disability in performing activity of daily living. The disease is progressive having its own specific evolution stages, which, without treatment, make the patient being disable. The disease has been characterized by rigor, tremor, bradykinesia, postural instability as well as vegetative disturbances.

**Participants, Materials/Methods:** This study is retrospective and observation study. This study were realized in University Clinic of Neurology-Skopje, Department for extrapyramidal diseases. For achieving the aims of this study was used method of epidemiologic-observation. With surveys in our study, which was retrospective for 10 years period (1994-2003), were included and analyzed totally 239 patients with Parkinson disease with in the territory of Skopje.

**Results:** The average incidence for 10 year period (1994/2003) is 3,8 in 100 000 inhabitants. The period of prevalence (P) from Parkinson disease with in the territory of city Skopje is 5,1 in 100 000 inhabitants.

From total 239 patient included in this study, 188 (78,7%) of which have idiopathic parkinsonism, 30 (12,5%) patients have secondary parkinsonism and the other 21 (8,8%) patients are in the group with Parkinson plus syndrome. In all types of secondary Parkinsonism majority of the patients were male which was proofed with statistical results. The average age of patients included in the study was 60,95 age. From the relations with the age we can conclude, that the major number of patients, 83 (34,7%) are in a age from 61 to 70 age.

**Conclusions:** Conclusion. From clinical symptoms which are characterized by the disease and are present in Parkinson disease in this research were analyzed and concluded: existence of rigor (in 92,9%),

tremor (in 93,7%), dyskinesia (in 32,2%), bradykinesia (in 91,2%), reduced postural reflexes (in 82,4%) and bradyalalia (in 56% of surveyed patients).

## 16. EARLY CLOPIDOGREL THERAPY IN ACUTE ISCHEMIC STROKE

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**Introduction/Objectives:** It is uncertain why early clopidogrel in acute ischemic stroke is effective in preventing death and dependence several months after stroke. Like mean antiplatelet drug in the first hours after ischemic stroke, the doses are going from 3-6 tablets a 75mg clopidogrel with or without anticoagulant therapy.

However, it probably reflects early initiation of secondary prevention of stroke and other thrombotic complications rather than a direct neuroprotective effect on the ischaemic brain itself. This is because the early initiation of clopidogrel within the first 2-4 weeks of acute ischemic stroke is associated with a highly significant reduction in the risk of early recurrent ischemic stroke.

**Participants, Materials/Methods:** We followed 100 consecutive patients with ischemic stroke during one year. No one of them had recurrent ischemic stroke.

**Results:** Early clopidogrel therapy combination with low-molecular-weight heparins are associated with an excess of about 2 intracranial hemorrhages and 1 extra cranial hemorrhage per 100 patients treated, but these small risks are more than offset by the greater reductions in recurrent ischemic stroke (5 per 100) in no treated patients. Early clopidogrel therapy, after few hours of ischemic stroke in dose between 150 mg and 400 mg is nearly associated with intracranial hemorrhages. Five randomized trials of antiplatelet therapy in patients with acute ischemic stroke show that allocation to clopidogrel significantly reduces the odds of pulmonary embolism by 17 %, and two trials show that clopidogrel is associated with a 17% reduction in the odds of deep venous thrombosis (DVT).



**Conclusions:** For patients with ischemic stroke, clopidogrel has many advantages as a first-line agent for thrombus prophylaxis: needs only once to twice-daily administration, does not require injections and is associated with a very low risk of bleeding.

### 17. NEWS IN THE CONCEPT OF A SYSTEMIC DETERMINISM IN STUDYING OF REGIONAL ASPECTS OF PSYCHOORGANIC DISORDERS IN PATIENTS WITH VASCULAR DEMENTIA IN ARAL SEA REGION OF THE REPUBLIC OF UZBEKISTAN

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**Introduction/Objectives:** Ground: the etiology of psychoorganic disorders revealed in a deserted steppe zone of the Republic of Uzbekistan in 25 % of the cases remains insufficiently studied. One of the important aspects in this direction is regional specificity of systemic determinism. Aim: to study the revealed new aspects of psychoorganic disorders in patients with vascular dementia in the concept of systemic determinism in Aral Sea region of the Republic of Uzbekistan.

**Participants, Materials/Methods:** Patients (n=356) have been divided into 4 groups: A- patients with acute ischemic stroke (n=84), B - patients with transient ischemic attack (n=121), C - patients with hemorrhagic stroke (n=21) and D - patients with consequences of the transferred brain stroke (n=130).

**Results:** 7 factors defining the connection of psychoorganic disorders with the accompanying syndromes are revealed. F1 is connected with atherosclerosis of cerebral vessels and enhancing of manifestation of hypertensive illness (18,1 %); F2 is connected with transient ischemic attacks in diabetes mellitus (14,2 %); F3 - with discircular encephalopathy and enhancing of convulsive syndrome (21,8 %); F4 - with the type of cerebrovascular disorders (12,4 %); F5 - with the decrease of risk of parkinsonism and increase neurotic and climacteric syndromes (13,5 %); F6 - with ischemic stroke in ischemic heart disease (12,5 %); F7 - with angiopathic diseases in adiposity (7,7 %).

**Conclusions:** Authors have proved and have added the general and regional system mechanisms of psychoorganic disorders and the accompanying pathology, defined by a variation of alternative, synergic and neutral forms of systemic determinism.

### 18. THE MICROVASCULAR DECOMPRESSION IN TRIGEMINAL NEURALGIA

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**Introduction:** Trigeminal neuralgia is defined as „sudden, usually unilateral, severe, brief, stabbing or lancinating, recurrent episodes of pain in the distribution of one or more branches of the fifth cranial (trigeminal) nerve“ (IASP Code 006.x8a). If conservative treatment of trigeminal neuralgia is ineffective, operative treatment is necessary. Recent literature and our own experiences indicate, that about half of all patients eventually require an operation for pain relief. Nowadays the theory of microvascular compression of the root-entry-zone of trigeminal nerve based upon the original observation of Dandy 1929 and popularized by Jannetta 1976, is widely accepted. Clinical material and methods During a 10 years period (1996 - 2005) 286 patients, 100 male (35 %) and 186 female (65 %) underwent a microvascular decompression by the same surgeon. The mean patient age was 51 (28-84) years, the mean period of disease was 6 years (4-49). In the present retrospective study we analysed the postoperative outcome. The mean follow-up rate was 9,2 years with a range from 1-10 years. Results

Immediately after microvascular decompression 99 % (283), up to 3 years 96,9 % (277), up to 6 years 95,1 % (272), and up to 10 years after operation 92 % (263) were painfree. 28 patients (9,8 %) had partial relief and required medication, 11 of them additionally underwent percutaneous radiofrequency rhizotomy. Negative predictors for this operation are symptoms lasting more than 10 years ( $p < 0,001$ ), and previous ablative treatment ( $p = 0,006$ ).

**Conclusion:** Microvascular decompression is the therapy of choice especially in patients with good conditions. The key to efficient treatment is to establish whether or not the pain is indeed trigeminal. In our experiences the MR-angiography in 3D-gradient-

echosequence has a high significance of 92 % in the identification of an actual deformity at root-entry-zone of the trigeminal nerve. This finding may be helpful in suggesting the causative factor preoperatively.

### 19. INTRATHECAL PAIN THERAPY WITH ZICONOTIDE

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**Introduction:** Since decades it is possible to apply drugs intrathecal with implanted pump systems to therapy chronic pain. As present first-line of drugs morphine and hydromorphone are used. Now with ziconotide a new intrathecal option is available to therapy severe chronic pain. It provides analgesia via binding to N-type voltage-sensitive calcium channels in the spinal cord.

**Patients and Methods:** In the period between March 2007 and March 2009 12 patients (10 men, 2 women) received intrathecal Ziconotid in our clinic. It concerned chronic pain patients with low-back-pain (n=6), traumatic cross section (n=3), neurofibromatosis (n=1), CRPS (n=1), and traumatic nerve-root-lesion (n=1). These patients either did not respond to opioide-therapy or suffered from massive opioide side effects. The middle age amounted 49,5±15,4 years. The ziconotide dose started with 2,4 µg / 24h and was increased depending on the VAS data of the patient. The patients were evaluated prospective with regard to VAS, opioide reduction, quality of life (SF 36) and side effects.

**Results:** In 7 patients a drug pump could implanted after positive test-phase. The average testing-time was 15±12 days. The presurgical mediane pain level was reduced from VAS 9 to VAS 2 (median follow up 20.6 weeks). The mean dose of ziconotide was 3,9±2,6 µg / 24h. The preexisting oral and transdermale opioide-therapy could be reduced on an average around 60.7%. The most frequent initial side effects were concentration disturbances and commemorative disturbances (n=2), taste disturbances (n=1), ataxia (n=2), and burning dysesthesia (n=2). All side-effects were receded within two weeks. In one case we had to explant the pump system because of an infection.

**Conclusion:** With ziconotide an effective alternative to the therapy of chronic pain is available for more than 50 % of the patients. For all these patients the intrathecal opioide-therapy was not practicable any more. Important for the successful therapy is the selection of the patients with evaluation of pain reduction and the exclusion of severe side effects before definitive pump implantation.

### 20. QUALITY OF LIFE IN AMBULATORY PATIENTS WITH MULTIPLE SCLEROSIS

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Multiple sclerosis is the most common non-traumatic neurodegenerative disease found in adults. Most of the patients have physical and mental deficits which reflect the dissemination of the lesions in the central nervous system.

The aim of this study is to compare the quality of life of ambulatory patients suffering from multiple sclerosis.

A study was performed using ambulatory patients with a relapsing remitting form of multiple sclerosis (McDonald's criteria). The quality of life was assessed by the use of the SF-36 questionnaire. The severity of Multiple sclerosis was evaluated using the disease duration, EDSS and MSSS values. The patients were divided into groups according to gender and disease duration. Results were also compared with the results of study performed among Croatian citizens without multiple sclerosis.

All together 62 patients were included in the study (Female/Male 40/20, mean age 35,45±9,3, mean EDSS 2,48±0,89; mean MSSS 5,25±1,91; mean disease duration (DD) 4,05±4,29 years).

The mean scores were as follows: physical functioning (PF) 59,92 (all), 58,50 (female); 62,50 (male); 59,63 (DD<3y); 60,45 (DD>3y), role-physical (RP) 36,56 (all); 34,17 (female); 40,91 (male); 43,33 (DD<3y); 24,24 (DD>3y); bodily pain (BP) 64,48 (all); 63,00 (female); 67,16 (male); 62,44 (DD<3y); 68,18 (DD>3y), general health (GH) 48,31 (all); 48,50 (female); 47,95 (male); 47,50 (DD<3y); 68,18 (DD>3y); vitality (VT) 48,47 (all); 48,00 (female); 49,32 (male);

48,75 (DD<3y); 47,95 (DD>3y), social functioning (SF) 63,91 (all); 64,69 (female); 62,50 (male); 61,25 (DD<3y); 68,75 (DD>3y), role-emotional (RE) 18,28 (all); 18,33 (female); 18,18 (male); 23,33 (DD<3y); 9,09 (DD>3y), mental health (MH) 60,39 (all); 59,60 (female); 61,82 (male); 59,20 (DD<3y); 62,55 (DD>3y) and health transition (HT) 43,54 (all); 45,00 (female); 40,91 (male); 40,00 (DD<3y); 50,00 (DD>3y).

Our preliminary results showed that the patients with multiple sclerosis have a lower quality of life in comparison to those Croatian citizens without multiple sclerosis. In general female patients have the lowest quality of life excluding social functioning. The quality of life was better among patients with longer disease duration (over 3 years) except when physical and emotional limitations were taken into account.

## 21. THE ASSOCIATION OF OBESITY AND CEREBROVASCULAR DISEASE IN YOUNG ADULTS

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Obesity has been recognized as an isolated risk factor for stroke. Also in obese patients more frequently other risk factors for stroke as hypertension, hyperlipidaemia, ischemic heart disease and obstructive sleep apnea are present. The aim of this study is to investigate the presence of obesity among other risk factors for stroke in younger adult patients with ischemic stroke.

This was a pilot study performed on ischemic stroke patients of age between 18 and 55 years. In all patients beside routine diagnostic procedure the height, weight and waist circumference were measured.

The study included 50 patients, 23 females and 27 males, the mean age of male patients was 39,8 ±10,5 years and for females 41,6±7,7years. In control group BMI was 22,66 ± 1,26 kg/m<sup>2</sup> for males and 21,77 ± 3,04 kg/m<sup>2</sup> for females. In male stroke patients BMI was 23,82 ± 4,17 kg/m<sup>2</sup> and 21,81±2,93 kg/m<sup>2</sup> for female stroke patients. Significant difference was present comparing average abdominal girth in

male controls (94,9±5,8 cm) and in male stroke group (102,6±9,8cm), p<0,05. In female group no significant difference was present for abdominal girth neither for body mass index in all groups.

According to our results we can conclude that in young male stroke patients increased risk for stroke could have been associated with abdominal obesity.

## 22. ARE SERUM LIPIDS MEASURED ON STROKE ADMISSION PROGNOSTIC?

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**Background:** It has been hypothesized that serum lipids measured in early period of stroke are predictive of stroke severity and outcome. The optimal time for lipid measurement is not established. We explored whether lipid profile assesses within the first 24 hours after stroke onset: (i) differs from healthy individuals; (ii) differs between stroke subtypes and (iii) is predictive of stroke severity and outcome.

**Methods:** We prospectively enrolled 70 acute ischemic stroke patients who presented to the Stroke Unit within the 24 hours of the onset of stroke symptoms, and 68 stroke-free controls.

**Results:** Triglycerides (p<0.001) and HDL cholesterol (p<0.001) were significantly lower in patients, than in controls, whereas Apo B/Apo A-I ratio was higher in patients (P=0.019). HDL cholesterol was different across stroke subtype classified according to TOAST scale (P=0.035). Patients with more severe stroke had higher serum triglycerides (OR 2.755; P=0.030).

**Conclusion:** Lipid profile is different between stroke patients and controls as well as between stroke subtypes. Higher serum concentration of triglycerides is associated with more severe stroke.

Further work is required to examine the time dependent changes in lipid profile in acute ischemic stroke. If proven to have some predictive role on a larger patient cohort, blood profile may serve as useful aid in management of acute stroke patient care.

### 23. SPORADIC CREUTZFELDT JAKOB DISEASE IN PATIENT WITH EPISODES OF NONCONVULSIVE STATUS EPILEPTICUS-CASE REPORT

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Creutzfeldt Jakob disease (CJD) is the most common form of human prion diseases. A 57 year old woman was transferred to our Department from a local hospital, where she was treated for two weeks due to consciousness disorders and convulsive epileptic attacks that were progressed to refractory status epilepticus. The electroencephalography showed diffuse outbreak spike-wave complexes and a development of nonconvulsive status epilepticus. We excluded the causes of metabolic encephalopathy and a paraneoplastic syndrome. Using a combination of clinical features and the findings of diagnostic procedures, including electroencephalography, biomarkers in the cerebrospinal fluid and MRI findings, we could conclude with great probability that patient was affected with sCJD.

*Key words: prion diseases, sporadic Creutzfeldt Jakob disease, sCJD-diagnosis, nonconvulsive status epilepticus*  
*Using a combination of clinical features of disease and the findings of diagnostic treatments, including electroencephalography, biomarkers in the cerebrospinal fluid and MRI images, can conclude with great probability that the patient was involved with sCJD.*

### 24. CAROTID STIFFNESS IN MIGRAINE

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Recently migraine was associated with increased arterial stiffness and with risk for brain white matter lesions (WML) and stroke, especially in migraineurs with aura (MA). The aim of this study was to explore beta stiffness index (BSI), the most relevant clinical stiffness parameter, in migraineurs compared to

age matched controls. T-test was used for statistical analysis. Fifty-five patients were examined (45 women), and matched with 45 controls with no history of headache (30 women). Subjects and controls were normotensive ( $123 \pm 12$  over  $79 \pm 10$  mmHg and  $117 \pm 8$  over  $75 \pm 7$  mmHg) and had normal BMI ( $25,04 \pm 4,06$  kg/m<sup>2</sup> and  $23,71 \pm 2,71$  kg/m<sup>2</sup>). In 7 migraineurs migraine onset was belated (after 40 yrs). In all patients genetic analysis revealed heterozygous or homozygous mutation in MTHFR (35 pts and 8 pts with MA), PAI-1 (35 pts and 6 pts with MA) and ACE converase gene (30 pts and 10 pts with MA). Four pts had a single mutation, 10 had two mutations, 2 pts had all three mutations and were lesion free on CT scan, and 4 were without analysis. CT and MRI brain scans showed WML in 11 pts, 4 in MA pts. Average BSI was  $7,80 \pm 8,71$  (right CCA) and  $8,00 \pm 11,15$  (left CCA) in migraineurs while in controls  $5,56 \pm 3,63$  (right CCA) and  $5,64 \pm 4,77$  (left CCA) ( $p < 0,05$ ). In conclusion, we noted increased carotid BSI in migraineurs and increase in mutation of coagulation regulation genes. We believe that pts having both and MA should be more often monitored due to greater chance of future stroke occurrence.

### 25. TRANSCRANIAL SONOGRAPHY IN EVALUATION OF PATIENTS WITH MOVEMENT DISORDERS: 5 YEARS FOLLOW-UP STUDY

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**Purpose:** Since there is no widely accepted test to help us confirm Parkinson's disease (PD) or essential tremor (ET), clinical examination of well-established symptoms is the still most accurate way of diagnosis. However, the misdiagnosis rates for PD and ET in the early stages is as high as 20-30% in PD and in about one of three patients in ET. We initiated this study to assess the usefulness of the transcranial sonography (TCS) in the evaluation and differential diagnosis of the patients with movement disorders, initially and after 5 years follow up period.

**Methods:** Our study was performed on 180 individuals, including 60 patients suffering from ET, 60 PD patients, and 60 matched controls. TCS was

applied by standardized protocol, SN was displayed, encircled, and measured two times. Mean area was calculated initially and after 5 years.

**Results:** In the control group and PD group, bilateral combined mean SN size was 0.17 cm<sup>2</sup> ( $\pm$ 0.07) and 0.27 cm<sup>2</sup> ( $\pm$ 0.06), which showed significant difference ( $p < 0.001$ ). Patients with ET had mean SN size of 0.15 cm<sup>2</sup> ( $\pm$ 0.04), for the right side 0.15 cm<sup>2</sup> ( $\pm$ 0.04) and 0.16 cm<sup>2</sup> ( $\pm$ 0.05) for the left, which was significantly different from PD group ( $p < 0.001$ ), but not from control group ( $p = 0.240$ ). No significant changes were found after follow up period.

**Conclusion:** Our study confirmed previous finding that SN hyperechogenicity in TCS is a highly specific finding of PD, which might help in confirming PD diagnosis in doubtful clinical cases or in the early stages of the disease when symptoms of PD and ET might be overlapping. Also, after 5 years period SN finding did not differ, suggesting that SN hyperechogenicity is a stable PD marker.

## 26. TRANSCRANIAL SONOGRAPHY IN DIFFERENTIAL DIAGNOSIS OF RESTLESS LEGS SYNDROME

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Restless legs syndrome (RLS) has a prevalence of around 10% in general population. Still, it is one of the most underdiagnosed neurological disorders. Non-idiopathic RLS is more frequently found in patients with anaemia. Recent transcranial sonography studies have shown that substantia nigra (SN) hypoechogenicity appears to be the frequent finding in RLS, just as it is increased blood flow velocity in a. cerebri media (ACM), measured by TCCS, in anaemic patients.

Aim of this study was to evaluate the usage of combined TCS/TCCS imaging in differential diagnosis of idiopathic and secondary RLS.

Patients and methods: Twenty patients with RLS symptoms (diagnosis was made according to IRLSSG criteria), ten patients with anaemia (hemoglobin values  $< 12$  g/dl) and RLS symptoms, and 20 controls underwent neurological and sonographic examination.

**Results:** Bilateral mean SN area measured on TCS was significantly lower in idiopathic RLS patients versus controls (0.09 $\pm$ 0.01 cm<sup>2</sup> vs. 0.18 $\pm$ 0.02 cm<sup>2</sup>;  $p < 0,01$ ). Values of mean blood flow velocity measured in ACM by TCCS were also higher in RLS patients (123,24 $\pm$ 7,33 vs 80,7 $\pm$ 6,55;  $p < 0,01$ ) with anaemia, with normal finding of SN area.

**Conclusion:** TCCS in combination with TCS is a useful tool in diagnosing idiopathic RL syndrome, just as it is in differentiating idiopathic from secondary RLS due to anaemia.

## 27. NEUROFIBROMATOSIS WITH QUADRUPARESIS

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Neurofibromatosis type-1 also known as von Recklinghausen disease is a hereditary illness with an autosomal dominant mode of inheritance. The condition is characterized by variety of congenital abnormalities of the skin, nervous system, bones or other tissue. The diagnosis is usually based on clinical findings.

We report a 58- year- old patient presented with progressive quadriparesis and hyperpigmented lesions of the skin also known as café au lait. He suffered from multiple subcutaneous neural tumors. Spine magnetic resonance imaging showed nodular tumors in cervical and lumbar regions. We discuss the patient's diagnosis, treatment and prognosis.

## 28. ACUTE CEREBROVASCULAR INCIDENT CAUSED BY SEPTIC EMBOLI

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Septic emboli (SE) is a rare disorder associated with infective endocarditis, urinary tract infections,

bone infections, femoral thrombophlebitis and sinusitis. We present a case of 53-year-old patient with multiple systemic embolism and cerebral infarction resulting from aortal thrombus after a surgical treatment of right fibular maleolar fracture with osteosynthetic material placement. After a surgery the patient became antisocial, with decrease in appetite and substantial weight loss.

Computerized tomography (CT scan) showed several small hypodense zones in supratentorial and periventricular region of the brain as well as bilateral pleural effusion, large infarcts of the spleen and right kidney, smaller infarcts of the lower pole of the right kidney, discontinuity of the wall of the thoraco-abdominal aorta and the thrombus present in the distal part of the abdominal aorta. The findings primarily indicate septic emboli. X-ray of right ankle showed still present postoperative fracture gap of right fibular maleola with reduced bone mineralization but no signs of bone destruction. The control MSCT of the abdomen showed large spleen abscess size 10x6 cm. Due to edema of the right ankle, the ultrasound is preformed and the thick content in the joint is found so the patient was transferred to the Surgical Clinic where splenectomy with the evacuation of perisplenic abscess together with the extraction of the osteosynthetic material of the right fibular maleola was performed.

If not promptly diagnosed SE can cause devastating neurological damage. In our patient early diagnosis and intensive physical therapy facilitated almost complete regression of his neurological deficit.

## 29. RESULTS OF A CROATIAN PROSPECTIVE STUDY ON TRANSPLENTAL GENOTOXICITY OF ANTIPILEPTIC DRUGS

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**Introduction:** Antiepileptic therapy is significant medical challenge due to interindividual differences in type and aetiology of epilepsy combined with interindividual differences in metabolism of antiepileptic drugs (AED). Success of AED today, is also measured

by their side effects, which in some cases, such as their transplacental genotoxicity and impact on fetal development, have to be prevented. In majority of cases antiepileptic drugs are aromatase inhibitors. Some of them are described as potential teratogenic agents. Genome damage caused by antiepileptic drugs may be a consequence of their direct clastogenic or methylating effect on DNA. Target organs for genotoxic effects may be different in the mother and the foetus due to specific stage of developmental physiology and enzyme distribution and consequently different metabolic pathways in the foetus and the mother, causing different levels of genome damage in the mother and the foetus.

**Aim:** Mother-newborn cohort was launched for biomonitoring of genome damage after transplacental exposure to AED.

**Methods:** Using in vivo micronucleus assay (MN) in mother-newborn pilot study 20 control pairs and 14 pairs treated by AED were analysed.

**Results:** Statistically increased MN frequency was detected in newborns transplacentally exposed to AED in correlation with newborns of control mothers. Increased level of testosterone in these patients, which is described as clastogenic and aneugenic agent could cause, detected genome damage.

**Conclusion:** Similar to registry of pregnant woman treated by AED, launching of registry of their offspring could be valuable input on possible additional health risk which will enable targeted preventive measures such as monitoring of persons exposed to AED during fetal development in order to evaluate cancer risk in this specific population.

### 30. PROSPECTIVE SURVEILLANCE OF CROATIAN PREGNANT WOMEN UNDER LAMOTRIGINE MONOTHERAPY – ASPECTS OF PRE-PREGNANCY COUNSELING AND DRUG MONITORING

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**Purpose:** This is prospective study designed to follow up pregnancies of women with epilepsy treated with lamotrigine (LTG) and their offspring in order to provide additional data of teratogenic risk of LTG and to assess effects of preconception counseling and significance of drug monitoring.

**Method:** The data obtained from pregnant women included their age, previous abortions, parity, duration and therapy of epilepsy. The current pregnancy data included pregnancy planning, periconceptional folic acid intake, frequency of seizures, adjustment of LTG doses and outcome of pregnancy. Adjusted LTG doses after pregnancy were also collected.

**Results:** Six from 23 women had adverse effects: 1 elective termination of pregnancy, 1 intrauterine fetal death, 2 spontaneous abortions and 2 preterm deliveries. There were no congenital malformations in the offspring. There was large inter-patient variation during LTG monitoring and in the need for dose adjustment. No maternal toxicity of lamotrigine was observed. Planned pregnancy enabled proper periconceptional folic acid supplementation. Women with pregnancy planning and folic acid intake delivered babies with higher values of birth weight and height. All live-births are prospectively surveyed by Paediatricians and till now no adverse effects were noted.

**Conclusion:** This survey is 1st phase of an ongoing prospective study including pregnant women with epilepsy treated with all types of AEDs. These data indicate that treatment with LTG during preg-

nancy might be relatively safe. Pre-pregnancy counseling and individual approach to every woman and monotherapy with minimal effective LTG dose with frequent drug monitoring enlarges possibility for successful pregnancy.

### 31. PHYSICAL ACTIVITY AND STROKE

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Stroke remains one of the main causes of invalidity and death in Croatia. Despite extensive research and numerous new discoveries about its mechanism of occurrence, risk factors and treatment, prevention is still the most important factor in preserving health and stopping of disease.

Research has shown that persons over 40 years of age, who are in good physical shape decrease their risk of stroke for astonishing 50% in comparison to persons of same age who have difficulties climbing stairs or bending.

For longer period of time, physical therapy has important role in complete rehabilitation of patients after stroke incidents. When estimating the ability of rehabilitated persons, we can see not only improved motor functions, but also improvements in entire cardiovascular system. Today, in difference to prior opinions, we know that physical therapy does not end only couple of months after the stroke.

Physical activity in rehabilitation program of stroke patients has double role. Besides regaining motor functions, the role of exercising is prevention of another stroke which can occur more often in persons who already had one. This evidence is a huge reason that we can believe that physical activity is extremely important even in primary prevention of stroke.

Research which included almost 50.000 persons had shown that moderate physical activity (at least 4 hours per week; including walking, bicycle riding or moderate gardening) decreases risk of stroke for 25% so it can be recommended to all persons. On the other side, strong physical activity (more than 3 hours of exercise weekly, running, swimming, etc.) did not show additional decrease in stroke risk than moderate physical activity. Summarizing, both moderate and strong physical activity have protective role in development of

stroke in comparison to mild physical activity (reading, TV-watching, minimal physical activity).

Until now, we tried to evaluate effects of physical activity in rehabilitation, after the stroke episode. Now is the right time to focus on undoubtedly good effect of physical activity in preventing cerebrovascular disease.

### 32. SALT CONSUMPTION AND CEREBROVASCULAR DISEASES

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Stroke is the second leading cause of death and disability in Croatia. Risk factors for cerebrovascular diseases can be divided into evidence-based risk factors and those with supposed relationship. Strong evidence suggests that current salt consumption is one of the most important factors influencing the increase in blood pressure, along with the risk for cerebrovascular diseases. Hypertension is an important modifiable risk factor for stroke. Studies on salt have shown that decrease in blood pressure is in correlation with lower salt intake. Over-consumption of salt carries a higher risk for cerebrovascular disease in overweight individuals. Conservative estimates suggest that salt intake reduction of 3 g/d could reduce the stroke rate by 13%; this percentage would be almost double if we reduced salt intake by 6 g/d, and triple with a 9 g/d reduction. Salt intake reduction by 9 g/d could reduce the stroke rate by almost 30%. This represents about 20500 prevented strokes each year. Data show evidence supporting a positive correlation of salt intake and stroke, independent of hypertension. Introduction of salt reduction proposal should be considered in future updates of stroke prevention recommendations.

### 33. EMERGENT EEG AND DIAGNOSTIC YIELD

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We wanted to determine whether an acute loss of consciousness, mental status change or related symptoms correlate with presence of epileptiform abnormalities on urgent EEG. We analyzed 228 consecutive patients admitted to the ER during the past 12 months and referred to the urgent EEG evaluation. All patients had either a brief loss of consciousness, or acute brain disorder, with a clinical diagnosis of epilepsy, syncope, head trauma, headache, TIA or vertigo. Statistical analysis was performed using Spearman's rho test for group comparisons and multivariate regression analysis. Mean age of patients was  $48 \pm 20$  years. The frequency of referring clinical diagnoses was: 44.7% (102 out of 228) was epilepsy, 15.8% (36/228) was TIA, 15.4% (35/228) syncope, 11% (25/228) headache, 7.9% (18/228) vertigo and 5.3% (12/228) was an acute head trauma. 14.9% (34/228) had epileptiform abnormalities on the EEG and 9.2% (21/228) had focal slowing. Majority of them, 26% (21/81 patients), had a clinical diagnosis of epilepsy. There was a significant correlation between clinical diagnosis of epilepsy and epileptiform EEG, with Spearman's rho 0.13 ( $p < 0.04$ ). A multivariate regression analysis showed that there was no predictive value in clinical diagnosis of epilepsy and epileptiform EEG, with  $\beta = 1.483$ ,  $p = 0.16$ . In conclusion, epilepsy was the commonest clinical diagnosis for patients referred to an urgent EEG. There was a significant correlation between the diagnosis and specific EEG abnormalities, however, the diagnosis of epilepsy failed to predict epileptiform activity on the EEG. Our data suggest that urgent EEG has a high yield in patients with epilepsy.



#### 34. CORRELATION BETWEEN C-REACTIVE PROTEIN IN PATIENTS WITH ISCHEMIC STROKE (THROMBOSIS TYPE)

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For a long time is known that inflammation has an important role in the emergence and development of atherosclerosis, in relation to that origin and characteristics of the atherosclerotic plaque and the subsequent degree of stenosis of blood vessel. Depending on blood vessel that is affected.

The aim of the work - to determine the value of C-reactive protein in patients with ischemic cerebrovascular insult, with one hemisphere localization.

Subjects and Methods – in this research we analyzed 608 patients with ischemic cerebrovascular insult, (first time), at the Neurilogy Clinic in Sarajevo during the 2008. All subjects besides clinical review are done albumine levels with reference to CRP, and brain CT, which confirmed ischemic CV inzult in a large part of the brain hemispheres.

Results: 54.5% of respondents had CVI in the left hemisphere, and 45.4% in the right cerebral hemisphere. 86% of respondents had increased the value of serum C-reactive protein and 57.3% are women and 42.7% of men with life span that ranged from 46-80 years. Stenosis of carotid basin above the 50% with ultrasound method is confirmed in 36.9% of respondents.

Conclusion: Inflammation certainly has a big role in the development process of atherosclerosis, atherosclerotic plaque character and degree of stenosis of blood vessel. Serum C-reactive protein is elevated in many patients with ischemic CV insult with thrombotic genesis, which confirms an earlier hypothesis.

#### 35. THE EMERGENT MANAGEMENT OF TRANSIENT ISCHEMIC ATTACK (TIA) AND MINOR STROKE IN SESTRE MILOSRDNICE UNIVERSITY HOSPITAL

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Improved outcome of TIA patients was observed after implementation of the recommendations for stroke management and after multiple interventions like public campaigns focused on the awareness of the stroke and reorganisation of health services.

The aim was to validate the impact of interventions that improved management of patients with cerebral ischemic symptoms.

One year data of 5219 patients examined in emergent neurological outpatient department were analyzed. Patients were referred from general practitioner, emergency physician or were brought by relatives without being previously seen by a health service. The service is organized to improve care for TIA patients, providing a short and standardized clinical assessment followed by initiation of a comprehensive stroke prevention program. Demographic data, risk factors, stroke type, preceding TIA, ABCD2 score and admittance rate are analyzed.

Between 1th January and 31th December 2008, 1057 patients suspected to have stroke or TIA were examined. There were: 447 ischemic strokes, 99 TIA, 56parenchymal hemorrhages, 49 subarachnoid hemorrhages and 406 patients with nonspecific symptoms, other systemic or neurological illness. Out of 447 ischemic strokes (73±11 years) 196 were males. TIA preceded stroke in 29 patients (6,5%), and 197 (44%) patients were examined after worsening of stroke syndromes (133 within 24 hours, 47 within 48 hours, and 17 within 7 days). Out of 100 TIA (67±14 years) patients 55 were males. Mean ABCD2 score was 2,95. In all patients comprehensive stroke prevention program was started, 427/447 (95%) strokes and 31/99 (31%) TIA's were hospitalized in Neurology clinic. Four TIA patients developed stroke (4%) and were hospitalized, 3 patients after 2 days (ABCD2

score 3,4 and 5), and one after 7 days (ABCD2 score 5).

Preventive measures resulted in a low number of strokes after TIA (<7%), but a relative high percentage (44%) of stroke patients ignored initial symptoms and seek medical attention after persistence or worsening of the symptoms.

### 36. TRANSCRANIAL DOPPLER MONITORING OF MIDDLE CEREBRAL ARTERY DURING VERBAL STIMULATION IN APHASIC PATIENTS

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Testing of middle cerebral artery (MCA) by verbal stimulation in patients with stroke and aphasia can be noninvasively monitored by means of transcranial Doppler sonography (TCD).

In order to assess MCA activation during receptive and expressive verbal stimulation, 10 patients with MCA stroke within 3 days of onset and aphasia were tested by modified Boston Diagnostic Aphasia Examination. Both MCA were monitored simultaneously by means of TCD with 2 MHz probes. Basic mean blood flow velocities (BFV) MCA values were assessed and monitored during verbal stimulation. Verbal stimulation was performed with 30 photos of objects for daily usage, arranged by function. Same test was performed in 10 healthy controls.

Ten stroke patients (9 males, 1 female), mean age 53±17 years, were tested. Mean MBFV were 55 cm/s in the left MCA, and 56 cm/s in the right MCA. Mean 29% increase was observed in the left MCA, and 18% in the right MCA. In healthy controls mean 24% increase was observed in left MCA, and 21% in right MCA.

A trend toward higher percentage of MBFV increase was observed in left MCA during verbal stimulations in aphasic patients compared to controls.

### 37. VASCULAR COGNITIVE IMPAIRMENT IN STROKE-FREE PATIENTS WITH CAROTID STENOSIS OR OCCLUSION

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**Background and aims:** Vascular cognitive impairment (VCI) is nowadays deemed the most common form of cognitive decline that can potentially be prevented or ameliorated. Besides well known vascular risk factors that have a key role in the development of VCI, concomitant advanced stenosis or occlusion of the internal carotid artery (ICA s/o) could further increase the risk of cognitive decline due to chronic hypoperfusion. We therefore evaluated cognitive functions in patients with vascular risk factors with and without advanced carotid disease. **Patients and methods:** Cognitive status of 42 patients with vascular risk factors, diagnosed with mild cognitive impairment (MCI) and with advanced ICAs/o (PG) was compared with age and gender matched control group of 42 MCI patients with vascular risk but without ICAs/o (CG). Cognitive testing was performed using MMSE and Montreal Cognitive Assessment (MoCA). Cognitive performance on both tests and on cognitive domains covered by MoCA was correlated with vascular risk profile. **Results:** Compared to MCI patients without concomitant advanced ICA s/o, MCI patients with ICA s/o scored significantly worse on MoCA ( $p=0,049$ ) and on the short-term memory domain MoCA subtest ( $p=0,026$ ). MMSE cognitive scores did not differ significantly between groups. Analysis of cognitive domains covered by MoCA in subgroups of participants with different vascular risk factors showed significant association of impaired attention with hypertension, diabetes, hyperlipidaemia, smoking and with multiple risk factors (>2). Diabetes was also significantly associated with the impaired language domain ( $p< 0,05$ ).

**Conclusion:** Patients with vascular risk factors and concomitant advanced carotid disease seem to be at increased risk of developing cognitive decline. The pattern of cognitive impairment could be easily revealed when MoCA subtests scores are analysed.

### 38. SYNDROMA COWDEN – CASE REPORT

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Syndroma Cowden is rare autosomal dominant condition characterized with multiple hamartoma neoplasms of the skin, mucosa, bones, central nerve system, genitourinary tract, gastrointestinal tract and thyroid gland as well as skeletal abnormalities. Clinical features of this entity are explained by mutation of the PTEN tumor suppressor gene. Patognomonic sign of this syndrome is Lhermitte Duclos tumor that represents dysplastic gangliocytoma of cerebellum. The importance of this disease lies in increased risk to malignization of some lesions. We present a 57 year old female with history of different thyroid gland abnormalities including follicular tumor, adenoacanthoma of uterus, Lhermitte Duclos tumor, kyphoscoliosis and small jaw. These clinical features suggest presentation of Cowden's syndrome in our patient which is rare clinical entity with approximately 200 published cases.

### 39. STROKE IN CHILDREN

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Stroke occurs most often in older, although it is not rare in middle age, while in childhood it is extremely rare but still can occur.

We present the case of 1.5 year-old boy from the first normal pregnancy and with normal early psychomotor development, in which from the full health occurs febrile state, general weakness with appetite loss. Pediatrician examination verifies the acute inflammation of the throat, so antibiotic therapy is administered which after 2 days leads to decrease of body temperature, but the mother notices that the child draws the right leg, and by then it normally walked. General condition worsens with intense vomiting and adynamia and the child is hospitalized at the pediatric clinic.

Common laboratory findings are in normal limits. TCD - shows lack of representation of arteries in Willis circle on the left, and later CT of the brain confirmed the ischemic lesions in the thalamus projection on the left. After 7 days general condition of the patient is better, the child does not have a fever, but the weakness of his right arm and legs increases. Repeated CT of the brain showed ischemic lesion located in temporoparietal left region. Additional DSA showed occlusion of ACI and ACE on the left side in the intracranial part. After 21 days patient is discharged, with a discrete right sided hemiparesis.

### 40. THROMBOLYSIS FOR ACUTE ISCHEMIC STROKE – OUR EXPERIENCES AS A PART OF SITS-MOST

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Thrombolysis with intravenous recombinant tissue plasminogen activator (rt-PA) is the first evidence based treatment for acute ischemic stroke which aims to reduce the cerebrovascular lesion. In University Department of Neurology, Sestre milosrdnice University Hospital, Zagreb, thrombolytic therapy with intravenous rtPA (alteplase) in acute ischemic stroke was introduced in 2004. We intend to present our results as referred to demographic, time logistics and clinical outcome data as a part of SITS-MOST (Safe Implementation of Thrombolysis in Stroke - Monitoring Study) in order to compare our results with the results from other centers in Croatia and all other participating centers. Up to now in our center 56 patients (61% males and 39% females, average age 67 years) have been treated with intravenous rt-PA (0,9 mg/kg body weight, maximum 90 mg), with 10 % of the dose given as a bolus followed by a 60-minute infusion. Our experiences with thrombolytic therapy with intravenous rt-PA (alteplase) in acute ischemic stroke confirm the safety and the efficacy of the therapy.

#### 41. CLINICAL AND THERAPEUTICAL EVALUATION OF PATIENTS WITH IDIOPATHIC INTRACRANIAL HYPERTENSION

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**Background:** Idiopathic intracranial hypertension (IIH) is characterized by increased intracranial pressure and typical symptoms including headache, nausea, vomiting, decreased visual acuity or double vision.

**Methods:** We report six patients, 4 men and 2 women, mean age  $34 \pm 6$ , with IIH, diagnosed by typical clinical symptoms and confirmed by increased intracranial pressure.

**Results:** We evaluated the most common clinical symptoms, including typical predisposal factors as obesity, diabetes and other endocrinologic disorders, magnetic resonance imaging (MRI) of brain, pressure of cerebrospinal fluid (CSF) measured by lumbar puncture and tests of visual field. Headache was pres-

ent in 3 patients, nausea and vomiting in 2 of them and the most common symptom was decreased visual acuity which was present in all patients. One patient had recidive transient visual obscurations while in others visual disturbances were constantly present. Both female patients were obese, one had insulin dependent diabetes and one had struma of thyroid gland. MRI showed signs of empty sella in one patient, while in others was normal. All patients had increased CSF pressure, 40-60 cm H<sub>2</sub>O. Visual field testing showed pathologic findings in all patients as papilledema, visual loss in the periphery and optic atrophy in advanced stages. Four patients were treated conservatively with acetazolamide with relief of typical symptoms and improved visual function. Two of them failed to improve after initial medical treatment and lumbo-peritoneal shunt was done. In six months follow-up period one patient improved.

**Conclusion:** IIH is a chronic neurologic disorder which untreated leads to visual loss and blindness. In cases of unsuccessful medical treatment, surgical procedure should be considered as an alternative treatment option.

## POSTERS PSYCHIATRY

### 42. LATEST BREAKTHROUGHS IN THE TREATMENT OF SCHIZOPHRENIA

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**Introduction/Objectives:** Schizophrenia, a group of mental disorders characterized in its active phase by abnormal thoughts, moods and actions, faulty perception and attention, bizarre disturbances in motor activity, distorted sense of reality, thoughts not logically fitted together, is the most chronic and disabling of the severe mental disorders. Its prevalence of 1% in the general population, 8% for the non-twin siblings of the patients, 12% for patients with one parent suffering from schizophrenia and an alarming 40% for the patients with both parents affected represents a true medical challenge and a permanent subject under scientific debate related to its prevention and management. Our paper is centered on the short overview of the latest specific medical / non-medical interventions.

**Participants, Materials/Methods:** The outcomes of a wide bibliographic study regarding the most actual insights of epidemiologic and causal order, paralleled by the latest research trends in specific drugs design and non-drug interventions, including psycho-social and complementary therapies, are pointed out and completed by the understandings related to early detection and the preventive approaches. During the past decade there have been large debates concerning schizophrenia's etiological factors, screening and treatment. This paper presents the latest breakthroughs in the field of schizophrenia, revealing the most relevant insights in its early detection and the most recent news and trials in the treatment of this condition, including

psycho-social and complementary therapies and some potential therapies.

**Results:** Beside the genes involved (PRODH, DTNBP1, NRG1 and G72, a series of candidate genes are now under study: DISC1, CAPON, ZDHHC8, TAAR6, Epsin 4, GABRA, GABRB, GABRP, COMT, DAOA, etc. Certain evidences document a familial association between schizophrenia / anxiety and depression, and the future studies must investigate the relative weight of genetic and environmental contribution. The epigenetic paradigm is able to unify a wide variety of biological and psychological theories as well as the empirical findings that pertain to major psychosis. Drugs which target the epigenetic machinery can be able to restore normal gene activity. There are many new and improving psycho-social and cognitive therapies for schizophrenia, with significant success, and promising issues are rising from certain new and improving psycho-social and cognitive therapies for schizophrenia.

**Conclusions:** Together these new treatments hold significant promise of a better life in the future for people who suffer from schizophrenia. The early recognition and prediction instruments must be further developed in order to support the preventive strategies design.

### 43. INFLUENCE OF PREGNANCY ANXIETY IN ADOLESCENTS ON CHILDBEARING PERIOD AND BIRTH OUTCOME

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**Introduction/Objectives:** Pregnancy in adolescent women is a stressful life event, especially if there are

inevitable situations such as poor education, unemployment, lack of personal resources and social support. Very often pregnant teenagers suffer from low self esteem, anxiety, financial problems and social stigmatization when they are bagging for help. As a matter of fact there are special requirements in attendance and support of teenage mothers.

**Participants, Materials/Methods:** The aim of our work is to point out the differences between teenage and adult pregnancy. Therefore we initially defined pregnancy related anxiety in general. In addition we started literature research to explore the special needs of pregnant teenagers. To complete our findings we are planning to conduct some semi-structured expert-interviews which will be presented at the congress.

**Results:** Concerning Huizink et al there is a three factor model of pregnancy anxiety: fear of giving birth, fear of bearing a handicapped child and concern about one's appearance. According to the special problems of pregnant adolescents we want to present an overview of the pregnancy care facilities and helplines for teenage mothers in Austria.

**Conclusions:** Adolescents have variable needs and require different coping strategies to be prepared for pregnancy and parenthood. Still there is limited literature covering this topic so further research is needed. We are looking forward to presenting you the results of our expertises at the congress.

#### **44. PECULIARITIES IN STRATEGY OF PSYCHOCORRECTION IN PATIENTS WITH BIPOLAR AFFECTIVE DISORDERS IN ARAL SEA REGION OF THE REPUBLIC OF UZBEKISTAN**

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**Introduction/Objectives:** **Ground:** the developed critical ecologically adverse conditions in Aral Sea region and worsening indicators of health raise risk of development of bipolar affective disorders among the population.

**Aim:** the research is proved by necessity of a finding of new decisions for strategy of psychocorrection concerning patients with bipolar disorders.

**Participants, Materials/Methods:** research includes 38 primary and 41 recurrent patients who have received stationary or out-patient treatment with regard to relapse of bipolar affective disorders. Average age of patients ranged 19 to 31 year. All participants of the research were representatives of a local nationality (Uzbek).

**Results:** the complex psychocorrectional measure considerably reduces a functional component and plays not only medical, but also a preventive role. In the course of therapy in 62 (78,5 %) patients the reduction of the basic signs of depression was marked. One of the important features of psychocorrection is characterized with the active condition of the patient during its carrying out. Application of these features improved quality of life in 57 (72,2 %) patients. Such symptoms as psychomotor retardation (31,4 %), decrease in interests, apathy (68,6 %) have undergone to considerable regress. Objectively depression level in dynamics defined by means of a questionnaire of Beka. In the results of testing before psychocorrection expressiveness of depression have shown on the average 41,2 points, at repeated testing after psychocorrection it have been 14,3 points.

**Conclusions:** Complex psychocorrection is well reproduced and convenient therapy promoting stabilization of the affective status, and reducing depressive disorder. Therefore applying of psychocorrection is pathogenically proved.

#### **45. ORGANIC DELUSIONAL DISORDER DUE TO FRONTAL MENINGIOMA AND ENDOCRINE DISTURBANCES**

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**Introduction/Objectives:** Meningiomas are likely to cause focal symptoms because they compress a lim-

ited region in the cortex. A tumour in the frontal lobe of the brain may cause gradual changes in mood and personality. Parathyroid insufficiency is a relatively common phenomenon, and occasionally may be accompanied by certain cerebral psychic symptoms of brief duration.

**Participants, Materials/Methods:** The female patient had initial psychological problems two years prior to being hospitalized for the first time in psychiatric clinic in January 2009. She suffered from gradual changes in mood and personality: anxiety, aggression, fear of environment, paranoid interpretations of reality, unpredictable behavior with inadequate affect, loss of appetite, functional problems, sleep disturbance (the thyroidectomy in 2004, euthyreoid, in 2006 bizarre hands movements were the first signs when neurologist's put the diagnosis of syndroma extrapyramidale). The diagnostic procedure of choice CT has found a 4x2 cm calcified right frontal-parietal lobe meningioma. At the morning being hospitalized in psychiatry, she was very violent to her husband with attend to burn the house. She was transported to the psychiatric clinic-intensive care unit, in an ambulance vehicle, escorted by police. First examination as urgent laboratory tests: - hypernatraemia (Na 146 mmol/l), hypokalemia (K 3,4 mmol/l), hypocalcemia (Ca 1,54 mmol/l), hyperglycemia (blood sugar 6,8 mmol/l) and high values of transaminasis (AST 70, ALT 61, CK 3857, LD 1186) Other tests were within a normal range. - internist's findings: nonfebrile, eupnoeic, sinus tachycardia, blood pressure 170/110 mm Hg, ECG showed sinus rhythm, block dextrocruralis, frequency 150/min, read-out without presence of pathological alterations. Bronchitis ch.obs., Hypertensio art gr I, Hypothyreosis - neurologist's finding: neurology test completely normal - brain CT: couldn't be done because of very violent behavior.

**Results:** This case is remarkable in several respects: the length of time after thyroidectomy before the symptoms appeared, the persistent character of the disturbance, the general mental and physical deterioration of the patient. Organic delusional disorder with psychotic symptoms and cognitive impairment due frontal meningioma and endocrine disturbances led to polymorphic-somatic problems, which might have serious complications and could led to patient's death.

**Conclusions:** Brain tumors are important causes of psychiatric symptoms and patients with these diseases can present with virtually any symptom. A complete clinical history is essential in diagnosing condition. However, up to 50% of patients with brain tumors reportedly have manifestations of a psychiatric nature. Despite the regular checkups and prescribed therapy, the patient had a worsening psychological status followed by intensive psychotic perceptions due the metabolic disturbance. This case report was to point the attention of a doctor-psychiatrist to unpredictability of a clinical course of organic process.

#### 46. OROFACIAL PAIN AND AUTOGENOUS TRAINING

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**Introduction/Objectives:** Orofacial pain is characterized not only by pain, but by the variety of its locations and by its multi-etiology. Differential diagnosis indicating both organogenesis and psychogenesis of orofacial pain is particularly intriguing for a diagnostician. However, regardless the etiological background of this disorder, psychological help is an inevitable factor in the treatment of orofacial pain. Experiences of numerous authors have so far proven that orofacial pain can be successfully treated by means of hypnosis, relaxation (R. Abrahamsen, R., Baad Hansen, L., and Svenson, P.) and other psychotherapeutic techniques (Jerolimov, V), as well as by means of antidepressants (Pettergil, C.A., Reicher Keller, L).

**Participants, Materials/Methods:** Our research is based on the follow-up of the results of the treatment of 119 patients suffering from orofacial pain which was claimed to have been present for at least 3 years. The group consisted of 62 women and 57 men, at the age of 37,5 years in average (ranging from 21 to 68). The treatment lasted 6 months. The intensity of the pain was measured at the beginning and at the end of the treatment by means of VAS scale, ranging from 1 to 10. Psychological testing (Beck's depression test and STAI anxiety test) showed that anxiety was present with 89% of the patients and depression with

97%. The treatment technique applied was a classical Schultz's autogenous training, comprising basic exercises consisting of 6 elements. During a three-month period, the patients were gradually acquiring the technique of autogenous training (every two weeks a new element was introduced). The results of the treatment were statistically processed (a multivariate discriminatory analysis).

**Results:** According to our results, the majority of patients who had been treated for six months by means of autogenous training, experienced a significant decrease in the pain intensity (according to VAS scale, the average of 7.8 dropped to the average of 2.7).

**Conclusions:** In the conclusion we claim that autogenous training has proven to be a successful treatment technique as far as orofacial pain is concerned, which suggests the significance of psychological factors in the occurrence of this illness, while the results we obtained indicate the usefulness of psychotherapy in the treatment of this symptomatology.

#### 47. INTENSITY OF POSTTRAUMATIC STRESS DISORDER SYMPTOMS IN RELATION TO ALCOHOL USE IN WAR VETERANS

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The aim of this research was to determine the connection between alcohol consumption levels with the intensity of posttraumatic stress disorder (PTSD) symptoms. We analyzed a group of 200 war veterans, of whom half were clinically diagnosed with posttraumatic stress disorder, and the other half were without clinically diagnosed posttraumatic stress disorder. We used the medical documentation from the department of Psychiatry in Tuzla for research, Harvard trauma questionnaire – Bosnia-Herzegovina version, STAXI self-assessment scale to assess aggression, semi-structured diagnostic interview for alcohol abuse and dependence, and a socio-demographic questionnaire designed for this study. Significantly higher number of war veterans with clinically diagnosed PTSD

consumed alcoholic drinks ( $P < 0.001$ ). We found a significant correlation between alcohol consumption and stress levels, and alcohol consumption and PTSD symptoms intensity ( $P < 0.001$ ), while we found no significant correlation between the number of traumatic events and consumption of alcoholic drinks ( $P > 0.05$ ). Results of this research point that high levels of stress and higher severity of PTSD symptoms can be predictors for alcohol consumption in war veterans.

#### 48. INFLUENCE OF THE CENTRAL AUDITORY DISORDERS ON BEHAVIOR IN CHILDREN WITH HEARING LOSS CONNECTED TO OTITIS MEDIA WITH EFFUSION

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**Introduction/Objectives:** Normal hearing is closely related to normal development of the language and speech as one of the most sophisticated functions of the human brain. Verbal expression includes emotions as well, as non-verbal form of communication. Behavior disturbance associated with hearing loss are often found. To examine whether otitis media with effusion and associated hearing loss are related to the language development, academic achievement and behavior.

**Participants, Materials/Methods:** Cohort study included 23 male (59%, median age 8.5) and 16 female (41%, median age 6.4) outpatients who came for hearing test because of repetitively hearing loss and learning failure, hyperkinesias, lower rate of social adaptation and speech and language disorders. Tonal audiometry, tympanometry and speech audiometry (discrimination of speech) were performed repetitively every 7 days during the 3 weeks. Non-audiologic evaluation included psychological testing and speech-language screening tests.

**Results:** Bilateral conductive hearing loss and tympanograms of B type were present in all tested children. Speech audiometry showed pathologic level of speech discrimination for free sound field in all of tested children. At age up to 7y equal number of (11)



female and (11) male have speech disorders (mostly articulation) and lack of concentration to the sound in general, speech and events around. At age of 8y or higher were much more male (12) than female (5) dominated cognition disorders, behavior problems, learning disabilities and low rate and problems with social adaptation. Tested children in general have more readiness skills in literacy (verbal problems) and math, and lower scoring in recognizing of incomplete words at school age from 8 to older ages. Male children have more learning and behavior disabilities at school age than females.

**Conclusions:** Speech and language development are compromised in children with hearing loss associated with otitis media with effusion. Consequences of hearing loss are related during to 1 up to 7 years more to delay in language particularly articulation development with no differences between males and females. From 8 year up to older ages hearing loss is more related with cognition disabilities, behavior disturbance and consecutively with social adaptation in high risk at male than female children.