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Miscellaneous Topics 3

678
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Miscellaneous Topics 3
Association of cognitive abilities and handedness among primary school children in Kuwait

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Background: Many studies have explored the cognitive variation between left and right handed individuals. However, the differences, if any, remain poorly understood.
Objectives: To assess the association between handedness and cognitive abilities.
Methods: A total of 217 students aged between 6 and 10 from 12 randomly selected public schools were identified for the study. All left handed students were chosen and matched with right handed students by random selection. Handedness was assessed using traditional writing hand approach as well as the Wathand Box Test and the Grooved Pegboard Test, and cognition was measured using Cambridge University's CANTABeclipse cognitive battery.
Results: Right handed children had superior visuospatial abilities ($p = 0.011$, $r = 0.253$), visual memory ($p = 0.034$, $r = 0.205$) and they had better scores in reaction time tests which incorporated elements of visual memory ($p = 0.004$, $r = -0.271$). Left handed children proved to have better simple reaction times ($p = 0.036$, $r = 0.201$). In terms of confounders, playing videogames were significantly associated with better reaction time ($p = 0.016$, $r = -0.233$) and visual memory ($p = 0.045$, $r = 0.193$). However eating fast food was significantly associated with worse visual memory ($p = 0.011$, $r = 0.242$). Factors which were not significantly associated with cognition include gender and parental marital status and educational level.
Conclusion: Right handed children had superior visuospatial abilities and left handed children have better simple reaction times. Larger prospective studies are required to fully analyze the relationship between handedness and cognition which may help in prognostication and management of patients with neurological deficits.

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679
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Miscellaneous Topics 3
Diffusion MR imaging in status epilepticus: reversibility - a study in Southern India

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Background: In status Epilepticus there will be an increased Metabolism, Hyperperfusion, and excessive swelling in the brain cells as a result of ictal activity and it may produce reversible focal abnormalities in diffusion weighted images in MRI.
Objective: This study was done to find out the reversible abnormalities occurring due to continuous ictal activity by diffusion weighted imaging in patients presented with status epilepticus.
Method: This prospective study was done for one year from January 2014 at ABC Hospital, Trichy India in patients admitted with clinical criteria of status epilepticus. Patient without any structural lesions in the brain were taken up for the study. All the patients were investigated with MRI as soon as seizure was controlled and repeat MRI was done after 7 days from first MRI and the MRI findings were analyzed.
Results: About 21 (Male 13, Female 8) patients were studied. Among them 7(33.33%) patients MRI showed focal abnormalities in the diffusion weighted images of the MRI study, at cortex,thalamus and Hippocampus area of the brain. Only one patient showed bilateral abnormalities. All these changes had been reversed in the repeated MRI in all patients.
Conclusion: Reversible abnormalities in the MR DWI are reported in 33.33% of patients with status epilepticus. These changes are due to epileptogenic excessive excitation and spread of ictal discharges in the brain. There is no need for any specific treatment for these changes inMRI.

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680
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Miscellaneous Topics 3
Neurobehcet lesions mimicking encephalitis and tumour

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Background: The lesions mimicking herpes encephalitis or pseudotumoral lesions in Neuro-Behcet disease (NBD) has rarely been reported. We report two cases of NBD mimicking encephalitis and/or brain tumor.
Patients:
Case 1: A 40-year old female patient, with the diagnosis of Behcet's disease since 2003, was admitted with seizure and amnesia. MRI

0022-510X/$ – see front matter.

showed parenchymal, hyperintense lesions in the mesial temporal region and in the left parietal subcortical region. EEG showed periodic lateralized epileptiform discharges. Herpes PCR was negative in cerebrospinal fluid (CSF). The patient was admitted again with left hemiparesis when there was a failure of therapy due to side effects in 2013. MRI showed contrast-enhancing lesions with edema in the right frontal region, and a single lesion in the left frontal lobe. Control MRI after therapy showed marked regression in lesions.

Case 2: A 60-year old male patient, with the diagnosis of Behcet's disease for 5 years, was admitted to the hospital with a seizure. Neurological examination showed that the patient had tendency to sleep, left hemiparesis and truncal ataxia. CSF showed high lymphocyte cell count with elevated protein levels. MRI showed an extensive high signal intensity in the right mesial temporal hemisphere with a homogenously enhancing mass-like lesion. After therapy he had fully recovered in one month.

Conclusion: It should be kept in mind that patients with NBD may present with unusual lesions mimicking tumor and herpes encephalitis. In psudotumoral lesions the chance with steroid therapy before an invasive biopsy should be given to the patient.

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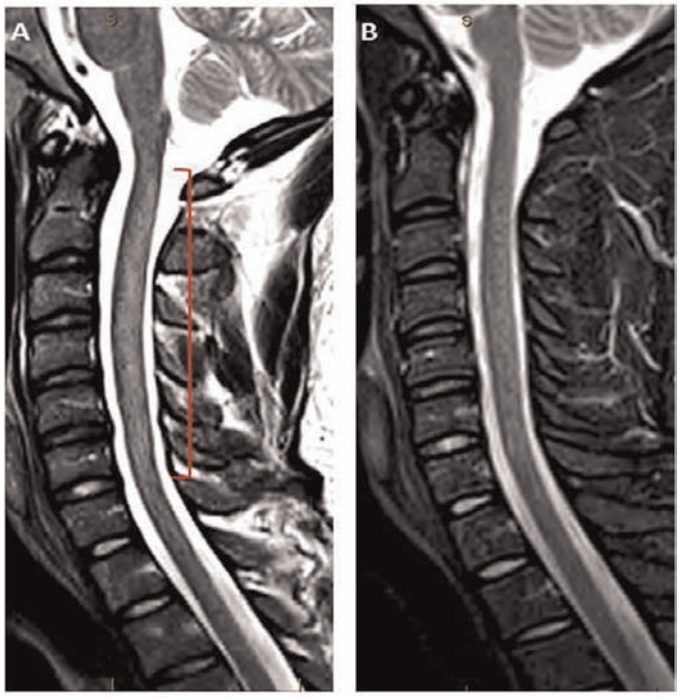

T2 cervical MRI. A increased T2 signal from C1- C6. **B:** Follow up MRI 9 weeks after symptoms onset and cyanocobalmine treatment.

681
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Miscellaneous Topics 3
Toxic myelopathy secondary to recreational nitrous oxide abuse

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Background: Nitrous oxide (N2O) is an anesthetic gas frequently used in medicine. It is postulated that acts at the level of opioids and/or GABA receptors. N2O can acutely deplete vitamin B12 levels potentially precipitating acute combined degeneration and/or peripheral neuropathy.

Objective: To report a case of myelopathy after N2O abuse.

Methods: Case report

Results: A 25 years old man with history of poly-substance abuse presented with acute progressive bilateral hands and lower extremity paresthesia, Lhermitte's phenomenon and sexual dysfunction after recreational use of N2O. He had normal strength; hyperreflexia in all extremities, absent vibration sense up to the hips, loss of joint position (JP) of toes and (+) Romberg's sign. Cervical spine MRI showed a non-enhancing increased T2 signal of the posterior column (figure A) Vitamin B12 was 1466 pg/ml [N 243- 894] (after 4 doses of cyanocobalamin), methylmalonic acid 1824 nmol/l [N 87-318], and homocysteine 37 umol/L [N 4 – 15]. MRI brain and thoracic spine were unremarkable. Studies for autoimmune, metabolic and infectious etiologies were unrevealing. Nine weeks after treatment with cyanocobalmine he reports almost resolution of his symptoms; examination shows recovery of JP, vibration sense, and (-) Romberg's sign. Follow up MRI demonstrates almost resolution of cervical lesion previously seen (figure B).

Conclusion: In predisposed patients with low or low-normal levels of vitamin B12, N2O can precipitate a toxic myelopathy and/or peripheral neuropathy. It would be prudent to check vitamin B12 levels prior to use of N2O for medical reasons.

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682
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Miscellaneous Topics 3
Evaluation of cerebellar gray matter damage in huntington's disease: a voxel based morphometry study

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Background: Huntington's disease (HD) is a neurodegenerative disease, autosomal dominant. Its main symptoms are manifestations motor, cognitive and psychiatric in nature. The diagnosis of HD is through molecular genetic confirmation when the CAG-repeats exceed 35 repetitions. It usually begins in the fourth decade of one's life.

Objective: evaluate the existing brain changes in Huntington's disease through the use of the tool "spatially unbiased infratentorial template atlas" (SUIT) for Voxel based morphometry (VBM) by magnetic resonance imaging (MRI).

Materials and methods: Twenty-six patients (26) with molecularly confirmed HD diagnosis were selected. Those individuals underwent neurological and psychiatric evaluations and MRI. We acquired T1 weighted scans at a 3 T scanner and compared the paired groups using VBM in SPM8. We used the SUIT tool for a specific and detailed evaluation of the cerebellar gray matter (GM). Statistics were done applying $p = 0.05$, FWEcorrected and extentthreshold ≥ 50 voxels.

Results: The SUIT analysis revealed an increase of the GM in the regions I-IV of both anterior cerebellar lobes of the evaluated patients.

Conclusion: The lobules I-IV are responsible mainly for the motor control of upper extremities, gait, speech, tongue and orofacial

movements, which are altered in HD. This can probably justify the fact that these are the areas most affected by chorea in these patients. We believe that these findings will contribute to a better understanding of the neuropathological process of this disease. The present work confirmed that there is more cerebellar involvement in the pathophysiology of Huntington's disease than we knew about it.

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683
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Miscellaneous Topics 3
Use of celullar phone and integrity of executive functions in the elderly: cognitive flexibility, selective skills and functional impact

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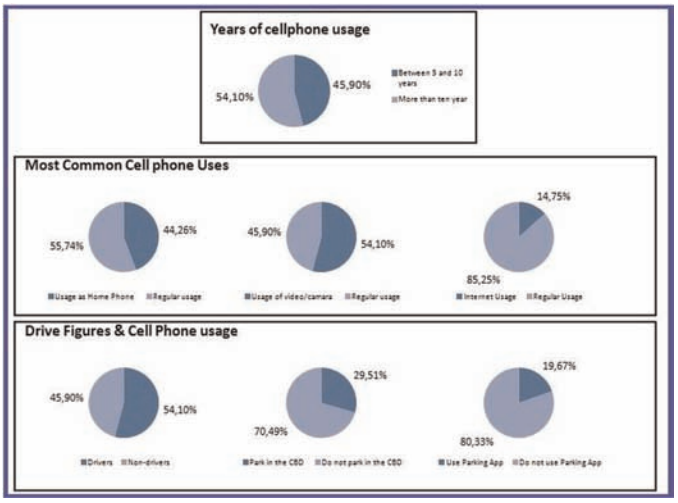
Introduction: The use of technology in the social communication and the instrumental activities of the daily life has grown rapidly in the last decade. The elderly people can live this “new” resource as a challenge. The proper use of the many mobile phone applications requires that the executive functions are well preserved.
Objetives: to evaluate executive functions in a sample of elderly healthy people (n = 122; Age: 72.6) who use mobile phone and determine the relationship between executive functioning better and increased use of mobile phone applications, or the inverse relationship.
Material and methods: 1) inclusion and exclusion criteria (no psychiatric or cognitive diseases, MMSE >26, used mobile phone five years). 2) a structured Survey about the use of various mobile phone applications (sending SMS, internet, etc.). 3) A battery of tests focusing executive functions: TMA, TMB, Weschler test, verbal fluency, INECO frontoScreening, cancellation test.
Results: Of all the tests administered only 22 had all the normal battery (18.0 %). 54 (44.26 %) use mobile just for making calls (no access to programs). Patients who do not use text messaging: 36 (29.5 %). Use function Photo/video: 54 (44.26 %) but Internet use only 14,75%. People use paid parking via cell phone: 24 (37%).
Conclusions: At least a sub group of older adults, may have restrictions on the use of multiple applications on the mobile. In our sample, this was associated with greater impairment in executive tests, and demonstrated that can impact the functional level in the "real world."



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684
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Miscellaneous Topics 3
Idiopathic spinal cord herniation

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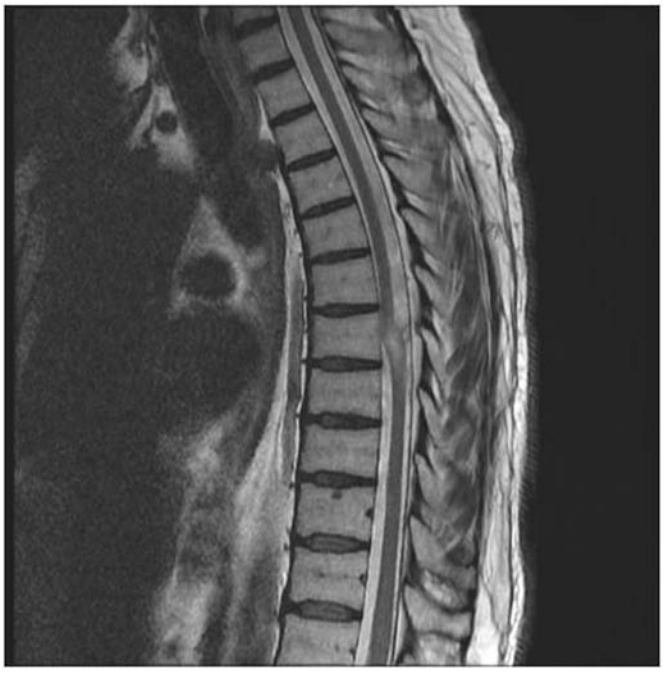
Dorsal herniation of the spinal cord through the dura is very an uncommon phenomenon that results in progressive myelopathy. Idiopathic spinal cord herniation is not usually recognized in neurology practice. Although it is a treatable condition, misdiagnosis and delayed diagnosis remain a major concern. We report two cases with idiopathic spinal cord herniation who had full recovery after the surgery.

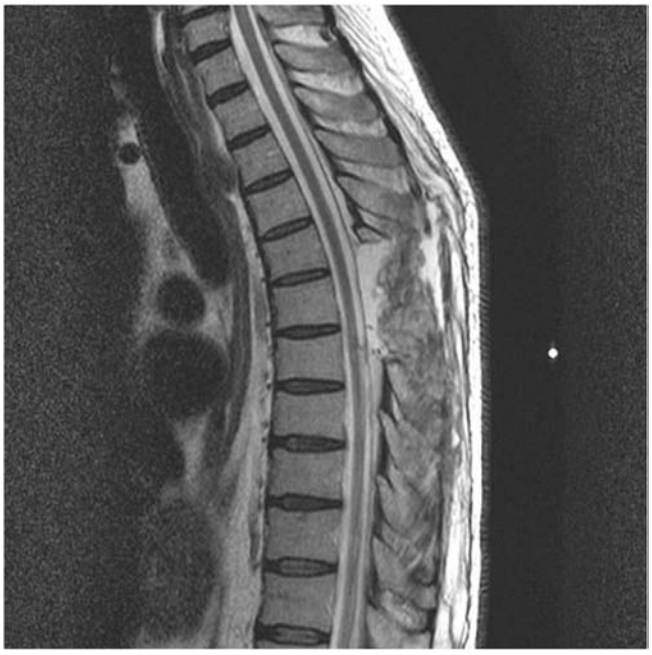
A 62-year-old previously well male presented with progressive spastic paraparesis that was exacerbated by walking for 5 years. He was diagnosed as having transverse myelitis and treated by corticosteroids at a different institution. His symptoms persisted.

A 58-year-old previously well male presented with a 3-year history of thoracic back pain and spastic progressive paraparesis.

Imaging revealed a dorsal dural defect with herniation of the spinal cord at T7 in both cases (Fig. 1). The patients underwent a T7-T8 laminoplasty to repair the dural defect Fig. 2). At 1-year follow-up, both patients noted a significant improvement in strength and back spasticity.

Misdiagnosis is reported in a number of spinal cord herniation case reports. MRI is the investigation of choice for the diagnosis of spinal cord herniation. Sagittal sections often demonstrate enlargement of the dorsal subarachnoid space, with ventral displacement of the thoracic spinal cord. On axial imaging, the cord herniation is attached to the anterior dura mater. Treatment consists of either conservative management or surgery, but owing to the unclear natural history of the condition. Surgery is generally recommended for patients with motor function deficit or progressive neurological symptoms.





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685
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Miscellaneous Topics 3
Moral brain

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Background: The demonstration of a moral brain may have important consequences in terms of individual freedoms and legal liability.

Our goal is to contribute to understanding neural structures and bimolecular mechanism involved in altruism, empathy and the defense of moral rules.

Methods: The authors conducted an analysis of major research contribution in cognitive neuroscience, neurobiochemistry and Neurogenetics, the purpose of which was to elucidate the links between the moral behavior of the human being and the activation of a complex set of neural structures.

They also studied the alterations that such a system can undergo under the effect of various exogenous manipulation neurobiochemical or neuro-biophysical

Results: The moral brain is a reality, even though its organic structures and functions are only partially demonstrated. Human brain has a great plasticity and is highly adaptable to a variety of environmental changes, including, cultural. Neuroscience by delimiting moral neural circuits would help to better understand some immoral behavior, neurophysiological dysfunctions involved and ways to treat them.

The excesses of such advance are possible: development of a "moral treatment", which would force the person to comply, without his knowledge, and by biochemical or physical means, with repressive rules and restrictions, wrongly considered "moral"; emergence of new standards of conduct with unknown consequences on the survival conditions of the human species.

Conclusion: The next discoveries are sure to cause disruptions in our current conceptions of moral values. Neuroscience should enable humanity a smooth transition without brutal cultural shock.

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686
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Miscellaneous Topics 3
Impairment of inhibitory motor control in cerebral cortical infarction

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Background and objective: Isolated weakness restricted to a particular group of fingers is infrequently caused by a small cortical stroke. The authors report a case of multiple small cerebral cortical infarcts with an impairment of inhibitory motor control of individual hand muscle.

Case report: A 63-year-old woman suddenly developed weakness of her left hand. On a neurological examination, she had mild weakness (MRC grade 4) of left third, fourth, and fifth fingers. There was no abnormality in praxis. Diffusion MRI showed acute multiple small infarcts on motor cortex, sensory cortex, middle frontal gyrus, and posterior parietal lobule of right hemisphere. Third day, despite of improving her weakness, she complained a difficulty of fine motor skill of left fingers. Examination revealed an impairment of inhibitory motor control of left fifth finger. Three weeks later, her symptom was recovered completely.

Conclusion: This case can support that an inhibitory motor control is related with a fronto- parietal network.

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687
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Miscellaneous Topics 3
Comprehensive ionic imaging and bio-energetic analysis of club drug-induced cognitive deficiency

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Background: Excessive exposure to club drug (GHB) would cause cognitive dysfunction in which impaired hippocampal Ca^{2+}-mediated neuroplasticity may correlate with this deficiency. However, the potential changes of *in vivo* Ca^{2+} together with molecular machinery engaged in GHB-induced cognitive dysfunction has never been reported.
Objective: This study aims to determine these changes in bio-energetic level through ionic imaging, spectrometric, biochemical, morphological, as well as behavioral approaches.
Materials and methods: Adolescent rats subjected to GHB were processed for TOF-SIMS, immunohistochemistry, biochemical assay, together with Morris water maze to detect the ionic, molecular, neurochemical, and behavioral changes of GHB-induced cognitive dysfunction, respectively. Extent of oxidative stress and bio-energetics were assessed by levels of lipid peroxidation, Na^{+}/K^{+} ATPase, cytochrome oxidase, and [^{14}C]-2-deoxyglucose activity.
Results: In GHB intoxicated rats, decreased Ca^{2+} imaging and reduced NMDAR1, nNOS, and p-CREB reactivities were detected in hippocampus. Depressed Ca^{2+}-mediated signaling corresponded well with intense oxidative stress, diminished Na^{+}/K^{+} ATPase, reduced COX, and decreased 2-DG activity, which all contributes to the development of cognitive deficiency.
Conclusion: As impaired Ca^{2+}-mediated signaling and oxidative stress significantly contribute to GHB-induced cognitive dysfunction, delivering agent(s) that improves hippocampal bio-energetics may thus serve as a promising strategy to counteract the club drug-induced cognitive dysfunction emerging in our society nowadays.

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688
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Miscellaneous Topics 3
Sensitivity and specificity of precentral/corticospinal tract flair-hyperintensity at 3 T in different Motor Neuron Diseases (MND)

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Background: Precentral/corticospinal tract FLAIR-hyperintensity (PCTFH) is a "classical" MRI finding in amyotrophic lateral sclerosis (ALS), but its sensitivity and specificity are unclear particularly at 3 T-MRI.
Objective: To investigate the clinical usefulness of PCTFH in the diagnosis/distinction of ALS and hereditary spastic paraplegia (SPG4)
Methods: 65 patients with ALS (44 men, mean age 56.1 ± 13.1), 23 SPG4 (15 men, mean age 40.91 ± 15.2) and 73 healthy controls (42 men, mean age 47.46 ± 13.9) underwent MRI on a 3 T scanner. FLAIR protocol: coronal and axial orientation, TE 140 ms, inversion time 2850 ms, TR 12000 ms, Flip angle 90°, gap 1 mm, voxels 0.44x0.44x5.00 mm^3, FOV = 220x206. Two blinded radiologists performed qualitative analysis on precentral gyri (PCG) and internal capsule (IC).
Results: FLAIR hyperintense sign at IC was found in 53.8% of ALS patients, 4% of SPG4 patients and 28.7% of controls. Regarding the PCG, FLAIR hyperintense sign was found in 46.8% of ALS patients, 21.7% of SPG4 patients and 22,6% of controls. The sensibility and specificity for FLAIR hyperintense sign at IC on ALS patients were 53% and 73% respectively, and for FLAIR hyperintense sign at PCG on ALS patients were 46% and 77% respectively.
Conclusions: PCTFH is useful in the diagnostic workup of ALS, but this finding lacks sensibility and specificity. It must be interpreted in conjunction with clinical signs.

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689
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Miscellaneous Topics 3
The topography of cortical microbleeds in frontotemporal lobar degeneration: a post-mortem 7.0-tesla magnetic resonance study

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Background: Cerebrovascular lesions are rare in frontotemporal lobar degeneration (FTLD), in contrast to other neurodegenerative diseases. Cortical microbleeds (CMBs) are frequent in Alzheimer's disease, in particular in those cases associated to cerebral amyloid angiopathy.
Objective: The present study investigates the gyral topographic distribution of CMBs in post-mortem FTLD brains with 7.0-tesla magnetic resonance imaging.
Patients and methods: A previous obtained informed consent of the patients or from the nearest family allowed an autopsy for diagnostic and scientific purposes. The brain tissue samples were acquired from the Lille Neuro-Bank of the Lille University, federated to the Centre des Resources Biologiques that acted as an institutional review board. The distribution of CMBs in 11 post-mortem FTLD brains, and in 12 control brains was compared on T2*-GRE MRI of six coronal sections of a cerebral hemisphere. The mean values of CMBs were determined in twenty-two different gyri. The findings were correlated to those separately observed on neuropathological examination.
Results: As a whole there was a trend of more CMBs in the prefrontal section of FTLD as well as of the control brains. CMBs were very significantly increased in the superior frontal gyrus and the insular cortex (p value ≤ 0.001), while also significantly increased in the inferior frontal gyrus and the superior temporal gyrus (p value ≤ 0.01).
Conclusions: CMBs in FTLD are only increased in the regions mainly affected by the neurodegenerative lesions. They do not reflect additional cerebrovascular disease.

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690
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Miscellaneous Topics 3
Post-traumatic stress disorder in adults victims of fire in Valparaiso, Chile, April 2014

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Background: Post Traumatic Stress Disorder (PTSD) is defined as a maladaptive response to stress before a traumatic event. It's characterized by intrusive symptoms, avoidance behaviors, negative alterations in cognition and increased reactivity; lasting longer than a month.
Objective: Evaluate the prevalence in PTSD and its association with personal and sociodemographic characteristics in the adult population affected by the fire that took place in Valparaíso, Chile during April 2014.

Material and method: A transversal ecologic study was done on population over 18 years old affected by the fire. Through a convenience selection a sample of 312 participants was obtained. All participants filled a sociodemographic and the Short Posttraumatic Stress Disorder Rating Interview (SPRINT-E) questionnaire. The data collected underwent a descriptive and correlation analysis between the evaluated variables.
Results: The prevalence of PTSD with SPRINT-E considering 7 intense answers was 20,2% (IC95%: 15,7 to 24,7), which is within range of expected prevalence in PTSD in natural disasters (20-30%). A significant association was found between the diagnostic of PTSD and the existence of psychiatric comorbidity, physical impairment at the moment of the fire and marital status of the individual. It was found that from the people suffering with PTSD 15,9% has suicide risk.
Conclusion: The population that presents one of the three associated characteristics (psychiatric comorbidity, physical impairment or are divorced) have a higher rate to develop PTSD. Patients with PTSD have a high suicide risk; therefore, these patients should receive support after a natural disaster.

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691
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Miscellaneous Topics 3
Silent stiffness: an unusual presentation of Huntington's Disease (HD)

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Background: Catatonia as a presenting form of HD is atypical. A 22year-old man was brought to the Ramos Mejía Hospital (Buenos Aires, Argentina) for neurological assessment as he had not eaten or drunk for at least 4 days and suffered from stiffness in both upper and lower extremities.
Objective: Sharing and alerting the scientific/medical community about clinical and ethical dilemmas posed by opposing views between current Argentinian law, which *de facto* forbids electroconvulsive therapy (ECT), and Evidence-Based Medicine (EBM) in dealing with HD with catatonia.
Material and methods: A systematic search (PubMed, EMBASE and Medline) was carried out to ascertain the best available evidence for treating HD with catatonia. APA and RCPsych ECT guidelines were also used, as well as WHO recommendations. Another search comparing Argentinian Mental Health Law with other countries was performed.
Results: The refusal by the Argentinian Judge to accept ECT as a treatment of choice for this patient left him with serious sequelae, even though ECT was the best treatment option for him. The sequence of events and communications between doctors and the Court is also provided.
Conclusion: Doctors must base their decisions on best available evidence yet, in Argentina, a catatonic patient subsequently diagnosed as suffering from HD, was not allowed to get the best possible treatment for his condition. Clinical and ethical dilemmas of this case, in a context of far-reaching interdisciplinary work, are also discussed. Sub-optimal medical treatment is now mandatory in Argentina.

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692
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Miscellaneous Topics 3
Ultrasonography (US) findings in Idiopathic Intracranial Hypertension (IIH)

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Background: IIH is an infrequent disease affecting primary young overweight women. Its diagnosis is based in modified Dandy criteria: clinical intracranial hypertension symptoms, demonstration of elevated intracranial pressure in lumbar puncture (LP) and exclusion of other possible etiologies. Typical US findings has been described and this technique is proposed as a non invasive method for this disease.
Objective: To describe the cases of 3 patients with diagnosis of IIH presenting thypical findings in transcranial dupplex and optic neve (ON) sonography.
Methods: All patients fulfilled Dandy modified criteria. We insonated both middle cerebral arteries (MCA) with a 2,5 mhz transducer in all patients and both ON with a 7,5 mhz transducer in two patients before and after LP.
Results: The Doppler wave morphology of all insonated MCA showed an early diastolic notch. The pulsatility index (PI) was elevated (>1,1) in all the insonated arteries. This 2 findings normalized immediately after the LP in 2 patients. The ON diameter was enlarged (>5 mm) in all patients, and in one of them there was an hypoecogenic halo within the sheath ,surrounding the nerve, revealing local increase of cerebrospinal fluid as seen in MRI.
Conclusion: The US findings described suggested intracranial hypertension (wave morphology and elevated PI) and its repercussion to ON, and were confirmed by the gold standard (LP and ophthalmological examination). We propose this technique to help in diagnosis and follow up of this patients as a non-invasive, repeatable, cheap method that can be used at the bedside of the patient.

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693
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Miscellaneous Topics 3
Mood disturbances after aneurysmal subarachnoid hemorrhage: predictors, clinical course and outcome

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Background: Neuropsychiatric symptoms after Aneuryrsmal Subarachnoid Haemorrhage are less described and underestimated in clinical practice. Neuropsychiatry after SAH comprising emotional, behavioural and cognitive disorders and having an adverse impact on the recovery and quality of life should be well-diagnosed for optimization of treatment, rehabilitation, and outcome after SAH
Objectives: The aim of this study was the assessment of prevalence, predictors, clinical variables and outcome of neuropsychiatric symptoms after SAH.
Patients / methods: Forty–two patients (mean age 49, male/female ratio 13/29) with SAH in good Hunt-Hess Scale's level were examined after aneurismal clipping and 3 months later using Hamilton Depression Rating Scale, Hamilton Anxiety Rating Scale, Catastrophic Reaction Scale, Activity of Daily Living Scale.

Risk-factors, clinical and radiological variables had been statistically processed to find independent correlation of neuropsychiatry after SAH

Result: In acute stage of SAH anxiety was found in 15(35,7%)cases, depression in 7(16,6%) cases, comorbidity of depression-anxiety disorders in 4(9,5%) cases, affective disorders- in 3(7,1%) cases.

In follow up the prevalence of depression 12(28,5%) was higher than anxiety- 8(19,04%), comorbidity of depression-anxiety- in 5(11,9%), pathological affect in 2(4,7%) cases.

Anterior communicative arterial aneurysm, deficit severity and hypertension has significant effect on the development of neuropsychiatric symptoms.

Conclusion: We found the high prevalence of neuropsychiatric disorders among patients with SAH, therefore medical staff must be alert to this sequela to improve overall functional outcomes.

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694
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Miscellaneous Topics 3
Functional brain responses when performing different musical styles: an FMRI study

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The interpretation of different musical styles requires different performance techniques. The tools and skills used by professional musicians are generally learned for solving and executing traditional musical styles, but currently much repertoire of contemporary music requires the development of new skills for interpretation. Can the interpretation of two musical styles such as Baroque and Contemporary produce different activation in cerebral networks? This study is aimed to answer this question through an fMRI study. To this end a group of 6 cello experts (by using a MRI compatible prepared cello) randomly playing two extracts of both styles of 26 " long were submitted to fMRI in a 3 Tesla scanner. The Baroque or traditional extract correspond to the Zarabande of the II Suite for solo cello by JS Bach and the contemporary extract was an altered version of it. The altered version maintains the structure of musical cells, modifying them in tessitura and texture through tools of contemporary music. The results show that the contemporary music performance (contrasted to traditional) gave rise to activations of the left prefrontal cortex (superior and middle frontal gyrus, BA 10). On the contrary, baroque music performance (contrasted to contemporary) resulted in more medial activations on the Anterior Cingulate cortex (BA 32). These results suggest that contemporary performance is more related with executive functions while traditional music is more related with emotional processes.

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695
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Miscellaneous Topics 3
MR diffusion and perfusion characteristics of 10 patients with MELAS

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Background & objective: The MRI of acute stroke-like episodes of MELAS(mitochondrial encephalomyopathy, lactic acidosis and stroke-like episodes) classically shows signal change in both grey and white matter, predominantly in the occipital and parietal lobes, which mimic infarction. However, their distribution dose not follow vascular territories, and their pathophysiology is still controversial. We analyzed the diffusion and perfusion characteristics of acute lesions in ten patients with MELAS.

Method: Ten patients with MELAS were studied serial diffusion-weighted imaging(DWI) and perfusion imaging at or after acute stroke-like episodes, and the apparent diffusion coefficient(ADC) was measured in a stroke-like lesion.

Result: In acute and subacute stages, the affected sites showed high signal on DWI and its ADC was low signal intensity. Most of these lesions revealed hyperperfusion in perfusion imaging.

Conclusion: Stroke-like episodes of MELAS have been described as recurrent neurologic deficits that resemble stroke: commonly presented with hemiparesis, hemianopsia or cortical blindness. Various hypotheses have been proposed: ischemic vascular mechanism, generalized cytopathic mechanism and non-ischemic neurovascular cellular mechanism. According to our result, we suggest that acute stroke-like episodes in MELAS may cause cytotoxic edema and these may overlap with hyperperfusion and vasogenic edema.

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696
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Miscellaneous Topics 3
Autopsy-proven coexistence of amyotrophic lateral sclerosis with parkinson's disease

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Background: Amyotrophic lateral sclerosis (ALS) is characterized by TAR DNA-binding protein 43 kD (TDP-43) proteinopathy, and Parkinson's disease (PD) by α-synucleinopathy. However, coexistence of the two proteinopathies has been rarely demonstrated.

Objective: We investigated the incidence of ALS complicated by parkinsonism, and described the clinicopathological characteristics of the patients with coexistence of the two diseases.

Patients and methods: Among 200 patients with ALS registered from July 2007 to January 2014, three patients (1.5%) presented with parkinsonism before developing ALS-related symptoms. All the patients underwent a thorough neurological examination as well as brain MRI and SPECT. This study was approved by the Ethics Committee of the Tokushima University Hospital, and all participants provided written informed consent.

Results: All three patients were women without family history of neurodegenerative disorders. The average ages at the onset of parkinsonism and ALS were 65 and 68 years, respectively. The average period to death or respiratory support was 11.3 months after the onset of ALS. The pathological hallmarks of PD and ALS were demonstrated in two patients who underwent autopsy. Thus, Lewy bodies and phosphorylated α-synuclein immunopositive structures were abundant in both the peripheral and central nervous systems, and phosphorylated TDP-43-positive neuronal and glial cytoplasmic inclusions were revealed throughout the central nervous system, accompanying the presence of Bunina bodies and the loss of motor neurons. The presence of α-synucleinopathy in biopsied skin was also proven in the living patient.

Conclusion: Our study demonstrated clinically and pathologically the coexistence of the distinctive proteinopathies.

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697
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Miscellaneous Topics 3
A case of polyneuropathy associated with methyl bromide intoxication

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Background: Methyl bromide is a colourless, odorless gas used as a fumigant to disinfect soil, grains, and warehouses. Dependent on dose and duration of exposure, methyl bromide can cause acute central nervous system symptoms and chronic peripheral neuropathy. We present the case of a patient who developed a peripheral neuropathy due to exposure of methyl bromide.
Case: A 26 year old man presented with a 2-week history of a feeling of tightness and bilateral lower extremity weakness. He had a 2-month history of working in a warehouse of imported vegetables, fumigated with methyl bromide. Neurologic examination showed symmetrical and mild bilateral lower extremity weakness, decreased pain and vibratory sense on both feet, and loss of ankle jerk. The initial serum concentration of bromide was 1.8 mg/dL. Magnetic resonance imaging of the brain and spinal cord were normal. Nerve conduction studies showed a mild motor-dominant neuropathy of axonal type confined to the legs. Needle electromyography showed no denervation potentials. Sensory evoked potentials showed central conduction defect at thoracic cord level. A sural nerve biopsy showed axonal neuropathy. The patient underwent two hemodialysis treatment. No bromide was detected in the blood tested subsequent to dialysis. Six months later, the patient still had mild weakness of the bilateral lower extremities.
Conclusion: This case suggests that subacute intoxication of methyl bromide can cause peripheral neuropathy with central sensory conduction abnormalities. Regular measuring of bromide concentration and education to workers are important to prevent the risk of methyl bromide intoxication.

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698
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Miscellaneous Topics 3
Isolated unilateral mamillary body involvement on MRI in Wernicke's encephalopathy

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Background: Wernicke's encephalopathy is a acute neuropsychiatric disorder due to thiamine (vitamin B1) deficiency, characterized by a clinical triad of confusion, ocular abnormalities, and ataxia. Thiamine deficiency can result in selective brain lesions, notably those that invade the medial thalamus and periventrivular gray matter of the 3rd ventricule, and typically occur within 2 to 3 weeks. In all of these regions, MRI typically reveals bilaterally symmetrical signal changes.
Patient: A 50-year-old woman was admitted with progressive gait instability, paresthesia and weakness of legs along with blurred vision and hearing loss. She was suffering from diarrhea for the last three months. She had been an excessive alcohol consumer for 40 years. She was alert, partially oriented and cooperated and neurologic examination revealed normal ocular movements. She had normal strenght, but diminished reflexes along with a stocking-pattern loss of all sensations in the lower extremities. There was no incoordination or dysmetria in her arms or legs but her gait was ataxic.
Results: Serum thiamine and folate levels were found to be low. ENG revealed sensoriomotor polyneuropathy. MRI revealed conspicuous, unilateral T2/FLAIR-hyperintensities and contrast enhencement of the right mamillary body. MRI of the spine, cerebrospinal fluid analysis, and other laboratory studies were unremarkable. She was treated with ıv replacement of thiamine and folate.
Conclusion: Although our patient did not present with a classic triad of Wernicke's encephalopathy, replacement of thiamine probably prevented worsening of her deficits.As the patient recovered gradually, we suggest the symptoms were due to a very early phase of Wernicke's encephalopathy.

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699
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Miscellaneous Topics 3
Clinical data base of amyotophic lateral sclerosis/ parkinsonism-dementia complex of Kii, Japan

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Background: Amyotophic lateral sclerosis/parkinsonism-dementia complex is an endemic and a peculiar multiple proteinopathy in the Kii peninsula, Japan (Kii ALS/PDC) and Guam.
Objective: To establish a clinical database and reveal the present actual situation, we collected clinical data of the patients with Kii ALS/PDC.
Patients and methods: We analyzed the date of 76 patients with Kii ALS/PDC (12 ALS, 64 PDC, including 17 autopsy cases) during 2000 to 2014 and compared them to the dataset during 1996-1999. I have obtained patients and Institutional Review Board (IRB) approval.
Results: 1) Sex ratio was female predominant. 2) The ratio of positive family history was not changed: 1/3 of ALS and 80% of PDC. 3) The average age of the onset was delayed one year in ALS and did not change in PDC, 67 years old. 4) Generation of the birth was shifted from 1920s to 1930s and 1940s. 5) ALS has occurred sporadic and PDC has continued. 6) The average duration of the illness was extended from 6.78 years to 7.44 years. Especially, in ALS, it was extended from 3 years to 5.7 years. 7) The average age of the death was delayed 8 years from 63 years old to 71 years old in ALS. In PDC, it was almost same from 74.0 years old to 74.6 years old. 8) Major cause of the death was diseases of respiratory system.
Conclusion: We will use these data for a clinical trial in the near future.

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700
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Miscellaneous Topics 3
Detection of the extraspinal sensory pathways from the urinary bladder in patients with a complete spinal cord injury – FMRI study

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Background: It is known that patients with complete spinal cord injury (SCI) may maintain some perception of urinary bladder fullness. Evidence of bladder re-inervation via extraspinal pathways was recently presented in an animal model.
Objective: The aim of this study was to evaluate the presence of extraspinal afferent pathways to the lower urinary tract in patients following SCI.
Patients and methods: Fourteen patients with SCI (ASIA A) at level C7 to Th5 were enrolled in the study. I have obtained patient and/or Institutional Review Board (IRB) approval, as necessary. Using urodynamics, repeated bladder fillings were performed until uninhibited detrusor contractions occurred. All fMRI measurements were performed on Siemens Trio 3 T scanner using GRE- EPI sequence. We excluded results from 2 patients due to strong vegetative response.
Results: Four of twelve patients reported some degree of bladder sensations during filling. In 8 of 12 patients significant, brain activity was observed during bladder filling. We found activation clusters at nucleus of the solitary tract (NTS) (3/8), parabrachial nucleus (PBN) (4/8), hypothalamus (4/8), thalamus (6/8), amygdala (7/8), insular lobe (5/8), anterior cingulate gyrus (4/8) and prefrontal cortex (8/8). The activations found in the NTS and PBN correlated well with reported bladder sensations.
Conclusion: This study shows that extraspinal sensory pathways are involved in the neural control of the urinary bladder in SCI patients. The data suggest that activity clusters in the brain might by associated with vagal nerve afferents.

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701
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Miscellaneous Topics 3
Resting State Functional Magnetic Resonance study (RS-FMRI) during natural filling of the urinary bladder

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Background: Rs-fMRI is used to identify various brain networks including the default mode network (DMN). Decrease of connectivity in the DMN is often associated with psychiatric disorders. The effect of bladder sensations on the DMN is poorly understood.
Objective: The aim of this study was to evaluate the effect of a strong desire to void on the DMN.
Patients and methods: Fourteen healthy men were enrolled. We have obtained patient and Institutional Review Board (IRB) approval, as necessary. The subjects were advised to drink one liter of water 30 minutes before starting the measurement and to empty their bladder immediately prior to entering the scanner. Subjects were subsequently scanned using fMRI continuously during natural bladder filling until a strong desire to void occurred. All fMRI measurements were performed on Siemens Trio 3 T scanner using GRE- EPI sentence. Independent component analysis (GIFT) was used to identify DMN from 5 minute rs-fMRI data under two conditions: with empty bladder and once a strong desire to void developed.
Results: Using individual analysis in 9 subjects, we found increased connectivity in the frontal part of the DMN, when subjects experienced strong a desire to void. Group statistics showed a trend toward increased regional homogeneity, causing expansion in the frontal part of the DMN.
Conclusion: This study detected changes in the DMN in response to bladder sensations. This fact should be taken into account in neurophysiological studies of the DMN.

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702
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Miscellaneous Topics 3
Acute and reversible parkinsonism with phorate

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Aim: To describe acute and reversible parkinsonism following organophosphate pesticide (phorate) exposure.
Introduction: Phorate is a widely used organophosphorus pesticide, whose environmental degradation products are more toxic and stable than the parent chemical. It get absorbed by skin, by inhalation of spray. It produces cholinergic toxicity.
Material & methods: A 45 years old farmer has admitted with acute parkinsonism, ataxia, tremor, lacrimation, nasal discharge, salivation with altered sensorium. On examination, he has rigidity of all limbs with normal reflexes, neck was rigid, redness of eye, lacrimation and nasal discharges. No history of fever preceding the illness, but patient become febrile after the illness. No family history of similar or major illness. No history of use of antipsychotic, antiemetic and toxin exposure was found. CSF examination was normal. All routine blood tests were normal. Magnetic resonance imaging (MRI) was done on 4th day with T1, T2 weighted and proton density (PD) images, showed symmetrical hyper intensities in Putamen and Caudate nucleus on PD and T2W. History of toxin exposure was again probed after MRI findings. History of spray of pesticide in field without wearing safety measures was found and patient has developed irritation of eye and nose during spray of pesticide and parkinsonism symptoms has appear after several hours. The packet of pesticide shows name of Thimet 10 G containing Phorate 10%. Patient treated with atropine and other supportive measures and improve over 15 days.
Conclusion: To highlight the phorate as causative agent for acute and reversible parkinsonism. Our observations has also strengthen epidemiologic studies implicating organophosphorus pesticides in the etiology of PD. Also suspect toxin exposure as cause of acute parkinsonism when patient has additional features like redness of eye and discharge from nasal mucosa.

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703
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Miscellaneous Topics 3
Clinicopathological study of familial ALS/Parkinsonism-Dementia Complex (ALS/PDC) cases in the Kii Peninsula

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Background: The incidence of ALS/PDC of Guam and Kii peninsula has dramatically declined during the last 40 years while the pathogenesis has still been veiled. Investigation on familial cases could provide us with important findings to clarify the pathogenesis caused by interactions between gene and environment.
Objectives: To investigate clinical, neuropathologic and molecular biological features in autopsy brains and spinal cords of Kii ALS-PDC of a single family from H village.
Patients and methods: Brains and spinal cords of 5 patients were submitted for neuropathologic, immunohistochemical (tau, TDP-43, α-synuclein, A ß) and molecular biological study. The findings were analyzed and compared with each other in relation to their clinical features.
Results: Based on neurological assessment of their clinical records, 2 cases were diagnosed as PDC, 2 cases, as ALS-dementia, and one case, as PDC later overlapped by ALS. Neuropathologic and immunohistochemical studies showed a variety of changes, but characteristic features common to all were severe tauopathy affecting nerve cells, astrocytes and oligodendrocytes, and TDP-43 proteinopathy with motor system degeneration. An excess of Lewy bodies and amyloid ß plaques were found in a few of them. Western blotting of tau protein showed predominance of 4-repeat tau over 3-repeat tau.
Conclusion: Familial ALS/PDC is a combined tauopathy and TDP-43 proteinopathy pathologically, which clinically presents with dementia, parkinsonism and ALS, isolated or overlapped. Gene-environment interactions on pathogenesis still remain to be clarified.

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704
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Miscellaneous Topics 3
18F-FDG pet studies correlate with the MOCA test in parkinson's disease in a Han Chinese Cohort

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Background: Parkinson's disease(PD) with or without dementia become a popular topic, the changing of this cognitive function have detected by using 18 F-fluorodeoxyglucose(FDG) and Positron Emission Tomography(PET). In addition, different ethnic groups should be reported about this.The objective of this study was to detect the metabolic changes of different Montreal Cognitive Assessment (MOCA) state by using in PD in a Han Chinese cohort.
Methods: Fifty PD patients and twenty healthy controls were invited to participate in this study. All people underwent MOCA test and 18 F-FDG PET, then use SPM8 to analyze the characteristics of the metabolism in different cognitive state in PD patients.
Results: The PD-MCI patients showed hypometabolism in temporal, parietal lobe and occipital lobe and a less extent in the frontal and limbic lobes compared with control, and to a lesser extent in frontal, temporal and parietal lobes compared with PD-NC. The PDD patients exhibited an extensive bilateral hypometabolism in most cortical compared with control, and a lower metabolism mainly in frontal, temporal and occipital lobes with PD-MCI, however, widespread hypometabolism was seen in cortical and subcorticle compared with PD-NC.
Conclusions: In a Han Chinese cohort, PD patients with MCI showed decreased metabolism mainly in post-cortical regions(temporaparietal-occipital lobes) compared with control, and with the dementia happened, the hypometabolism region become larger and higher. The metabolism changing in post-cortical regions may become a biomarker for progression of PD cognitive impairment in Han Chinese cohorts.

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705
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Miscellaneous Topics 3
Neurological changes in dissociative amnesia

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Background: Pharmacological treatment of psychiatric diseases implies that psychiatric illness has a correlate in the brain. For depressive and schizophrenic disorders volume shrinkages and further structural deviations of certain brain structures were established. It is nevertheless controversial, whether psychiatric illnesses such as dissociative amnesia, which occur suddenly and which usually are not treated pharmacologically, affect the nervous system in a measurable way.
Objective: In order to investigate possible brain correlates of dissociative amnesia we studied patients with this diagnosis with structural and functional brain imaging techniques.
Patients and methods: 18 patients with the diagnosis of dissociative amnesia were investigated with an extensive interview, neuropsychological tests, structural and functional magnetic resonance imaging (MRI, fMRI), diffusion tensor imaging (DTI), and either glucose- or water positron emission tomography (^{18}FDG-PET; ^{15}O-PET).
Results: All patients were chronically retrogradely amnesic in the autobiographical domain. For nearly all of the patients significant brain changes were observed. These were most clearly seen with ^{18}FDG-PET and resulted in the patients' brains (compared to controls) in significant glucose reductions, especially in right-hemispheric fronto-temporal regions (and sometimes in the thalamus). Investigation with DTI showed changes in tracts connecting thalamo-occipital regions, and investigations with ^{15}O-PET resulted in more left- compared to right-hemispheric activations in fronto-temporal regions in patients with dissociative amnesia.
Conclusion: It is concluded that the results of various brain imaging methods demonstrate significant deviations in the activation of distinct neural structures in patients with dissociative amnesia, indicating that this psychiatric disease has a major impact on the functioning of the brain.

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706
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Miscellaneous Topics 3
Neurological conditions coursing with personality changes

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Background: Diagnosis of most psychiatric disorders is syndromic and cannot be confirmed by laboratory, pathologic examinations. However, neurological conditions require anatomical and physiological precise location of the lesions, through imaging exams, clinical examination, followed by histopathology. When neurological and psychiatric approaches are mutually exclusive, diagnosis and treatment may be compromised. Personality changes are etiologically

nonspecific symptoms, common to neurological and psychiatric diseases.
Objective: Evaluate neurological causes of personality changes.
Materials and methods: A search was performed in Pubmed using "neurology AND psychiatry". Only the free full texts published in the last 5 years were considered. There were 127 results, of which only 7 approached the subject of interest. A book of neurology was also considered.
Results: When patients present with subacute onset personality disorder, neurological lesions should be investigated in bilateral fronto-medial regions, basal ganglia, thalamus, which are the most frequent locations in these conditions. The commonest etiologies are vascular, cranioencephalic trauma (CET), HIV encephalitis, vitamin B12 deficiency. Orbitofrontal and caudate nucleus lesions cause uninhibited behavior, observed in degenerative, vascular diseases, tumors, CET. Irritability, explosive behavior is associated with orbitofrontal bilateral lesions, as in Huntington's disease, stroke, CET. Indifference, stillness, judgment and self-criticism disturbances are common in Pick frontotemporal dementia, and may also occur in advanced Alzheimer's disease. Brain tumors rarely manifest firstly as cognitive or behavioral disorders.
Conclusion: The increasing knowledge of brain-mind interaction reinforces the relevance of considering organic diseases when dealing with psychological symptoms, and, therefore, mood/personality disturbances might hide a neurologic condition.

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707
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Miscellaneous Topics 3
Magnetic Resonance Imaging (MRI) for diagnosing opportunistic infections of the Central Nervous System (CNS)

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Background: The incidence of infectious diseases in the central nervous system (CNS) increased considerably after the AIDS, and Magnetic Resonance Imaging (MRI) has been instrumental in defining the size, lesion topography and its relations with neighboring structures.
Objectives: Define standards of MRI in the main opportunistic diseases of the CNS HIV positive patients.
Patients and methods: A prospective study of 291 patients diagnosed with AIDS, CD4 less than 250 followed in a service specializing in contagious Infectious Diseases. Patients with clinical central nervous system infection were subjected to the same confirmation by laboratory testing and MRI. The study period was 2004 to 2014. The findings were classified into 3 groups: granulomas (G), meningitis (M) or other injuries (I), including pseudo-tumors, empyema or spaces of Virchow-Robin (EVR).
Results: 41 patients with infection of the CNS in the period, 80% of those diagnosed with toxoplasmosis (16G) (4 M) (4I), 12% by cryptococcosis (2G) (9 M) (1I), tuberculosis in 4% (3G) (5 M) (2I) and 4% with neurosyphilis conjunction with cryptococcosis and toxoplasmosis (7G) (5 M) (4I). In toxoplasmosis, granulomas presented distributed throughout the parenchyma, mainly in the subcortical region and the basal ganglia. In tuberculosis, meningeal involvement prevailed at the base. In cryptococcosis, dilated VRS predominated in the basal ganglia.
Discussion: Although the images of the inflammatory lesions by MRI are nonspecific can draw a pattern suggestive of the etiologic agent, serving to aid the clinician in the treatment of initiative and the pathologist in diagnosis.

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708
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Miscellaneous Topics 3
Gangliogliomas: a retrospective study about magnetic resonance imaging in a serie of cases with histopathological confirmation

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Introduction: Gangliogliomas are the most common glioneuronal tumors of the CNS, comprising about 1% of all brain tumors, affecting mainly children and young adults. They usually are classified as low-grade, slow-growing tumors, with good prognosis after complete resection of the lesion. However, some may develop anaplastic features.
Materials and methods: We analyzed 2 T MRIs of 24 patients with confirmed ganglioglioma, with T1 and T2 acquisitions, including gadolinium-enhanced T1-weighted images.
Results: The sample consisted of 8 men and 16 women with mean age of 21.8. Cortical location was observed in 19 cases and the temporal lobe was the most affected lobe (14 cases). Other locations included thalamus, midbrain and lateral ventricle. Cystic component was present in 16 cases. Contrast enhancement was observed in 14 cases. Follow-up showed recurrence of tumor in 4 cases and contrast enhancement was present in all of these cases.
Discussion: Four cases have drawn attention for their rarity: two had intraventricular location; another, in addition to atypical location (thalamic-capsular) had intratumoral hemorrhage. Finally, one presented in the corpus callosum, with bi-hemispheric extension.
Conclusion: This study points to the higher frequency of temporal lesions, as previously described in the literature, and contrast enhancement in most cases. However, some cases had atypical location, such as the thalamic-capsular and intraventricular region. Contrast enhancement was observed in all of 4 cases of recurrence. However, it would be interesting to correlate with perfusion data (assessment of the microcirculation not obtained in this retrospective study).

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709
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Miscellaneous Topics 3
Importance of a future philosophical neurology

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Introduction: Philosophy is unique *science* considering all *sciences* (*Immanuel Kant*) reflected by epistemology-ethics-aesthetics. Central position of neurology in medicine needs creation of **philosophical neurology** (independently from medical-philosophy) including not only ethics, but also scientific-theoretical & aesthetical fundamentals. This could be related to an *International Academy for Neurology (IAN)* (similar to Eur.Acad.Neurol. (EAN-2015-Berlin, 1st Congress).

Conception-discussion:

A. Epistemology. An **integrative neurology** needs enlarged *fundamentals* in normal & pathological neurophysiology/-morphology/-genetics, psycho-neurology (e.g. psycho-neuro-immunomodulation), also in internal medicine. *Integrative neuro-therapy* incl. Chinese-Indian & other traditional-medicine in education & treatment has to be discussed. Reconsideration of neurological-*notions* acc. to *axiology-logic-semantic* is recommendable.

B. Moral philosophy. Independently from various modern ethical-*theories* (deontology, utilitarism, etc.) has to be considered *Kant's human obligations to himself*-patients (a), other *humans*-medical personnel (b), *sub-human,* e.g. reduction of animal-experiments (c) *suprahuman beings:* moral limits about & applications of theological-practices of great-religions (Brahmanism-Buddhism/Christianism-Mosaism/Confucianism-Taoism/Mohammedanism) for therapy.

C. Aesthetics. In relation to A-B interdisciplinary consideration is necessary to destine volume of *paradigm-changes* in neurology by non-&surgical-therapies, e.g. radiochemotherapy, leading to patho-physiological & psychopathological effects (*primum non nocere*).

Conclusion: Establishment of *regular common congress-sessions* of *World Federation of Neurology* (WFN) with philosophical (FISP-ISB-EACME,etc.)/psychological (IUPsyS,etc.)/physiological (IUPS,etc.)/medical societies (ISIM-ICC-FIGO-SIU-**IAN**) could open new scientific & political dimension in medicine, leading to humanization, higher efficacy & internationalization of science-medicine-ecology in context of **UNO-Agenda21** for better health-education-etc. on global level.

Ref. (see Neu et-al. incl. ref. WCN-2015).

DEDICATION: to moral support 2015-1980: **Austria:** E.Busek, K.Lorenz*, **France:** J.Dausset*, J.-M.Lehn*, **Germany:** O.Hug, H.Müller-Mohnssen, J.H.Schröder, R.Wittenzellner/GSF-Muenchen, M.Eigen*, H.Michel*, **Japan:** K.Fukui*, Y.Ikemi, T.Sugahara, **Spain:** S.Ochoa*, **UK:** B.Josephson*, Lord A.Todd*, **USA-India:** H.G.Khorana*, D.Hubel* (Nobel-Laureates*).

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710
WFN15-1117
Miscellaneous Topics 3

Reproducibility of mean flow velocity and pulsatility index assessment by transcranial doppler in middle cerebral artery of healthy volunteers

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Background: Transcranial Doppler (TCD) is widely used for non-invasive real-time assessment of intracranial hemodynamics for clinical and research purposes. A paucity of TCD measurements reproducibility studies exists.

Aim: To study intra and inter-rater agreement of mean flow velocity (MFV) and pulsatility index (PI) in middle cerebral artery (MCA) assessed by TCD in a Neurosonology Department.

Methods: Seven blinded neurosonologists performed bilateral TCD measurements in healthy adult volunteers in the lying supine position. Four sessions for each couple accounted for a total of 84 sessions. Triplicate bilateral ultrasound assessment of MFV and PI in both MCAs was performed. The Bland and Altman method for concordance of continuous variables was used to test reproducibility. The Institutional Review Board approved this study and the study participants provided consent.

Results: The MFV intra-rater concordance correlation coefficient (CCC) was 100.4% (95% CI 98.4-102.5). No influence of the MCA side, gender or age was found. The PI intra-rater CCC was 96% (95% CI 94.3-98.6%), with a significant higher PI value in the second measurement in the right side ($P = 0.025$). The MFV inter-rater CCC was 82.1% (95%CI 78.6-85.6). Mean MFV difference was 1.9 cm/sec (SD 8.9). The PI inter-rater CCC was 75.0% (95%CI 70.2-79.7). Mean PI difference was 0.002 (SD 0.106). Significant difference with examined volunteer's age was detected ($P = 0.005$). No significant difference between observers was detected.

Conclusions: There is good intra and inter-rater reliability of MFV and PI measurement with TCD performed by neurosonologist of our laboratory. These results remain to be confirmed in patients.

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711
WFN15-1600
Miscellaneous Topics 3

Facial Onset Sensory and Motor Neuronopathy (FOSMN Syndrome) with abnormal brainstem neuroimaging: a case report

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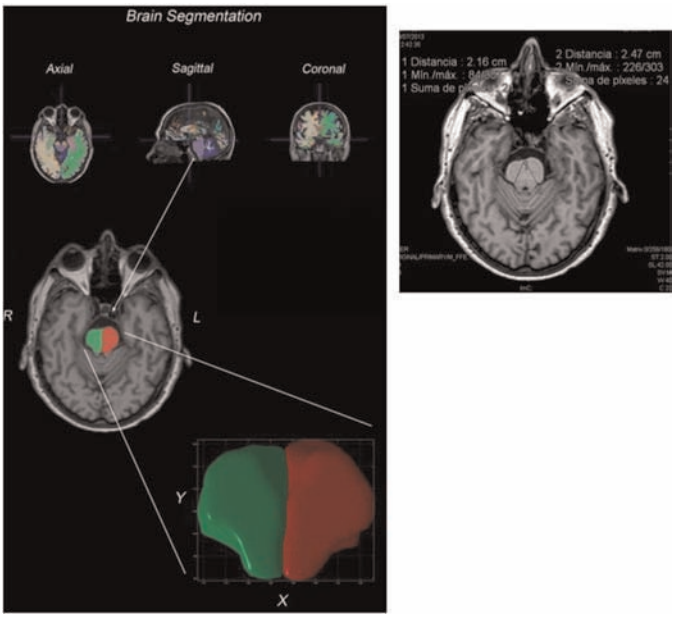
Background: FOSMN syndrome is a rare and slowly progressive neurological disorder with sensory symptoms (trigeminal nerve) and lower motor neuron deficits (facial nerve). A neurodegenerative mechanism have been proposed. Brain MRI was normal in all published patients.

Objective: Report the first Spanish patient with FOSMN and his Brain_MRI abnormalities in the brainstem, congruent with his clinical presentation and evolution.

Patients and methods: 64–year–old man, no family history, progressive four–year history of right side cheekbone paraesthesia and numbness, crocodile tears and facial weakness; absent corneal reflexes bilaterally, slurred speech, chewing difficulty, sialorrhea, dysphagia (nutrition by endoscopic gastrostomy), atrophy and fasciculations of tongue, chin and intrinsic hand muscles. No upper motor neuron signs or symptoms were detected. Normal analytical and genetic values. Electrophysiological studies revealed denervation and fasciculations, normal sensori-motor conduction velocities, absent (R) or prolonged (L) blink reflexes; threshold tracking TMS disclosed normal cortical excitability. Brain_MRI presented with volumetric parenchymal asymmetry (right < left) in protuberance.

We used FreeSurfer (http://surfer.nmr.mgh.harvard.edu/fswiki) to segment the brain anatomy from *T1* scanning sequences, calculating the volume and global area of both regions.

Results: The clinical syndrome began and has remained more severe in the territory of the right craneal nerves. Volumetric calculation and global area of the protuberance, confirmed the brain_MRI images: Volume, Left 7230 mm^3, Right 6591 mm^3 (<639 mm^3, 8,8%). Area, Left 22,55 mm^2, Right 21,51 mm^2, (<1,04 mm^2, 4,6%).
Conclusions: The presence of progressive and asymetric brainstem atrophy, in the clinical presenting side, could support a neurodegenerative mechanism in this FOSMN syndrome patient.



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712
WFN15-0865
Miscellaneous Topics 3
Aberrant brain activity in mild cognitive impairment patients with lacunar infarction: a resting-state functional MRI study

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Lacunar infarctions (LI) are associated with cognitive decline and increased risk of dementia but effects of LI on brain activity in patients with mild cognitive impairment (MCI) remain unclear. We assessed differences in brain activity in MCI with LI versus those without LI using resting-state functional MRI (rs-fMRI). Patients fulfilling Petersen criteria for amnestic MCI and cognitively normal subjects (CN) were recruited and underwent 3 T rs-fMRI. Presence of LI was ascertained using FLAIR images and University of Edinburgh Neuroimaging Stroke Scale by two independent raters. 22 MCI patients with LI (MCI-LI), 26 MCI patients without LI (MCI-no LI) and 28 CN without LI were included. rs-fMRI was processed using regional homogeneity (ReHo) and amplitude of low-frequency fluctuation (ALFF) methods. Between group voxel-wise comparisons were conducted controlling for age, sex, education and grey matter atrophy at $p < 0.05$, corrected. Compared with CN, MCI-LI patients had lower ReHo and ALFF in precuneus/cuneus (PCC), insula and medial frontal gyrus (MFG). Compared to MCI-no LI, MCI-LI had lower ALFF in superior-medial frontal gyrus (SFG), MFG, anterior cingulate cortex (ACC) and lower ReHo in PCC and insula. MCI-no LI had greater ReHo and ALFF in the hippocampi and parahippocampal gyri, SFG, MFG, ACC, and greater ALFF in left caudate. MoCA correlated with ALFF in MFG ($r = 0.43$, $p = 0.045$) in MCI-LI. MCI-LI patients are characterised by specific lower regional brain activity pattern which differentiates them from MCI patients without LI. A combination of ReHo and ALFF methods represent a comprehensive pathophysiological framework to study LI in MCI.

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713
WFN15-1270
Miscellaneous Topics 3
Support of Uno-Agenda 21 by neurology: on political fundamentals

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Introduction: Neurogenic & humoral regulation are essential for all organisms, i.e. *neurology* is *a-priori* central bio-medical discipline with moral & scientific responsibility to support better health counteracting disastrous health-situation of humanity.
Conception: In context of humanization, higher-effectiveness (without stress) of health-medicine are to be discussed **a.** *Integration* of ethics/scientific-theory in neurological education & research. **b.** Foundation of elementary *units* for *philosophical neurology* to *neurological clinics*. **c.** Foundation of *national-continental-international clinics via network* of selected countries related to *international universities* proposed by British Nobel-Laureate B.Russell & G.Mensching as paradigm for better science. **d.** Implication of *neurological topics to intern. congresses* for philosophy-FISP/psychology-IUPsyS/physiology-IUPS/biophysics-IUPAB/chemistry-IUPAC, also clinical-medicine: IUPHAR/FIGO/ISIM/SIU/etc. **e.** Foundation of *International Academy for Neurology (IAN)* (**see Michailov et-al. WCN-2015**). Fundamentals for a-e could be **1.** *International educational/research programmes.* **2.** Common elementary *administration & laboratories.* **3.** Recognition of participants as *intern./continental professors/doctors, etc. (UNO-employees?).* **4.** Possibility for *regular work* to institutes/branches in Africa-America-Asia-Australia-Europe. **5.** *Regular successive financial-support* for participants/projects by nat.-ministries/industry/Eur. Union/UNESCO,etc. **6.** *Possibility for whole-life-work* after 60 years as senior-scientists incl. *honorary*-professors, institute-directors,etc.
Conclusion: Implication of **a-e&1-6** in neurology will help *UNO-Agenda21* for better health & education in all countries. Support of neurology-WFN conc. proposals by governments-foundations-UNESCO-WHO/-EU is necessary.
Dedication to moral-support 2015-1980 of project Integrative Medicine

by Nobel-Laureates/Honorary-ICSD-members: **Africa**/W.SOYINKA, Bishop TUTU. **America**/M.BISHOP, L.PAULING/***USA***, C.POLANYI/***Canada.*** Asia/H.G.KHORANA/***India-USA***, Y.T.LEE/***China.*** Australia/Sir J.ECCLES. **Europe**/J.DAUSSET, J.-M.LEHN/***France***, M.EIGEN, E.NEHER, W.STÜHMER/***Germany***, B.JOSEPHSON, F.SANGER, Lord A.TODD/***GB***, S.OCHOA/***Spain***, S.BERGSTRÖM, B.SAMUELSON/***Sweden***.

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Psychology: IUPsyS-2012**-Cape-Town** Psychol.Press/IntJPsychol 47/407; 2008-**Berlin** IntJPsychol 43:154/248/615/799. **Physiology:** IUPS-2009-**Kyoto** (IntUnPhysiolSci) J.Physiol.Sci. 168,241,249,447,448. **Pharmacology:** IUPHAR-2010-**Copenhagen** Basic&Clin.Pharm.&Tox. 17/1, 320,454-5,488-9,592-3,654.

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714
WFN15-0168
Miscellaneous Topics 3
Functional connectivity between hippocampal subdivision and extra-hippocampal regions in the mesial temporal lobe epilepsy

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Background: Hippocampus is one of the most important regions causing mesial temporal lobe epilepsy (MTLE). However, other cortical and subcortical areas are also affected in MTLE. Using functional connectivity MRI, we aimed to investigate connections of each hippocampal subdivision to other brain regions in MTLE.
Patients and methods: Diagnosis of MTLE was based on typical semiology and corresponding electroencephalogram results. As a seed region for the hippocampus, twelve hippocampal ROIs were manually drawn and the correlation coefficient of the hippocampus and each voxel was calculated in two groups of participants: MTLE ($n = 6$) and healthy controls ($n = 6$). Hippocampal seed areas for ROIs were selected along the longitudinal axis of the hippocampus in the anterior, middle and posterior parts. Then, the result of each patient was compared with whole control group data. For correlation map, total ninety regions were selected from automatic anatomical labeling (AAL) template. This study had obtained patient and/or Institutional Review Board (IRB) approval, as necessary.
Results: Hippocampal atrophy was observed in two and the others were normal in the structural MRI. Compared with healthy control, MTLE was associated with decreased hippocampal connectivity involving areas of the middle and inferior frontal lobe, along with increased connectivity involving areas of the cingulum, lingual gyrus, and occipital lobe.
Conclusion: MTLE patients showed altered functional connectivity in hippocampus with other regions. The regions altered the functional connectivity might indicate the dysfunctional network involve widespread brain. Further study will be required for the concrete conclusion, but functional connectivity approach combined with structural MRI may help in identifying the lesions for the diagnosis of MTLE.

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715
WFN15-1507
Miscellaneous Topics 3
Cortical thickness, anxiety and depressive symptoms in normal cognitive aging: the Mayo Clinic Study of Aging

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Background: The prevalence of sub-syndromal symptoms of anxiety and depression is high and they often co-occur. Therefore symptoms of anxiety and depression may have a similar underlying etiologic mechanism.
Objective: To examine the association between cortical thickness as measured by brain MRI and symptoms of anxiety and depression among community-dwelling cognitively normal subjects.
Material and methods: We conducted a cross-sectional study derived from the population-based Mayo Clinic Study of Aging, involving cognitively normal subjects ($N = 1509$) aged ≥ 70 years (median [inter-quartile range, IQR] = 77 [74, 82] years, 51 % males) that underwent 3 T brain MRI. IRB approval and informed consent for participation was obtained. Anxiety and depression were measured by the BAI and BDI and treated as continuous variables. Cortical thickness was measured using Freesurfer software. We calculated Spearman rank-order correlations of cortical thickness with BAI and BDI after adjusting for age, sex and education.
Results: Higher depressive symptoms were associated with reduced global ($r = -0.10$; $p < 0.01$), frontal ($r = -0.10$; $p < 0.01$), temporal ($r = -0.12$; $p < 0.01$) and parietal ($r = -0.06$; $p = 0.02$) cortical thickness. Similarly, anxiety was associated with reduced global ($r = -0.08$ ($p < 0.01$), frontal ($r = -0.08$; $p < 0.01$), and temporal ($r = -0.09$; $p < 0.01$) cortical thickness. The association between parietal cortical thickness and anxiety was not significant.
Conclusion: Even though the correlation coefficients were small, both anxiety and depressive symptoms were associated with cortical thinning of the same ROI (i.e. global, frontal and temporal). This finding may have implications for the neurobiological underpinnings of subsyndromal anxiety and depressive symptoms.

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716
WFN15-0753
Miscellaneous Topics 3
Collapsing response mediator protein 2 phosphorylation in neuronal cells is increased in response to proteins released by HTLV-1 infected lymphocytes

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Background: Human retrovirus HTLV-1 infects mainly $CD4^+$-lymphocytes triggering HTLV-1 Associated Myelopathy (HAM), characterized by axonal degeneration without evidence of neuronal infection. Viral secretable protein Tax associates to pathogenesis.

Higher release of soluble semaphorin-4D (sSEMA-4D) from HTLV-1-infected cells is reported. SEMA4D/Plexin-B1 functions as negative regulator for axon elongation activating GSK-3β. Collapsing response mediator protein (CRMP-2) is a key protein involved in growth cone collapse and is regulated by phosphorylations at pT^{555} and pS^{522} by GSK-3β and Cdk5 respectively.

Objective: To determine Tax/sSEMA-4D interaction and the phosphorylation state of CRMP-2 in neuronal cells and lymphocytes in response to proteins released from HTLV-1-infected lymphocytes.

Patients and methods: Institutional Review Board approval was obtained. Patient PBMCs were separated by Ficoll-Hypaque gradient from peripheral blood. Tax and sSEMA-4D interaction was studied in secreted medium of PBMCs using co-immunoprecipitation. Culture medium of HTLV-I-infected MT-2 cells was added during NGF-differentiation of PC12 cells to study its effect on neurite outgrowth. CRMP-2 phosphorylations were followed by Western-blot.

Results: We found Tax/sSEMA-4D interaction and increase of pS^{522}CRMP-2, but not of pT^{555}CRMP-2 in both lymphocytes and differentiated PC12 cells. Tax/sSEMA-4D are responsible of PC12 cell neurite length reduction, and probably also of the increase in pS^{522}CRMP-2 in these cells. Lymphocytes from HAM/TSP patients showed higher migration towards sSEMA-4D stimulus.

Conclusion: These results suggest a leading role of Tax-sSEMA-4D on neurite length reduction, involving Cdk5 activity (not GSK-3β) deduced from S^{522}CRMP-2 phosphorylation in HAM/TSP pathogenesis. CRPM-2 phosphorylation could be associated to migratory stimulus of SEMA-4D towards CNS. Financed FONDECYT 1080396.

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717
WFN15-1324
Miscellaneous Topics 3
Pres: case report and review literature

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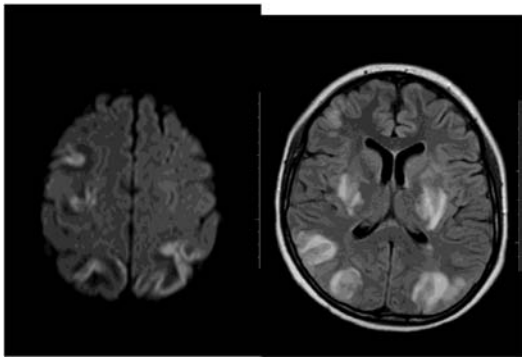
Introduction: the syndrome of posterior reversible encephalopathy (PRES) is a condition characterized by encephalopathy, seizures and visual alterations. Conditions associated with PRES are: hypertension, immunosuppression and autoimmune diseases such as systemic lupus erythematosus. **Goal:** Report the case of 20 year-old woman, lupus, in immunosuppressive therapy who developed PRES.

Patient and methods: A.B.M.F., 20 years old, LES for 3 years, previously treated with azathioprine and mycophenolate. Currently in use of cyclophosphamide. Presented hypertensive peak, decreased level of consciousness and generalized tonic-clonic seizures. At the time, the cerebrospinal fluid and brain CT were normal. After 15 days, the patient developed headache board, central scotoma, blurred vision, diplopia, high blood pressure (systolic 200 mmHg), mental confusion and tonic-clonic seizures. The Brain RNM showed hyperintensive alterations in brainstem and occipital lobes in fluid-attenuated inversion recovery and on diffusion imaging.

Result: After 3 days in use of sodium nitroprusside and oral antihypertensive, hypertension, visual complaints, seizures and encephalopathy were controled.

Conclusion: The early diagnosis and institution of aggressive antihypertensive therapy were crucial for reducing the encephalopathy and recovery of visual deficit presented by the patient, which confirms the central role of blood pressure control in PRES



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718
WFN15-0557
Miscellaneous Topics 3
Comparative phenotypical differences of Amyotrophic Lateral Sclerosis (ALS) in Germany and China

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Background: Etiology of amyotrophic lateral sclerosis (ALS) is still unknown.

Epidemiological features seem to vary widely in Caucasian and Asian countries.

Objective: To compare the phenotypical differences of ALS in Germany and China with review of the literature.

Methods: A registry-based study of ALS was conducted on data from south Germany from Oct 1st, 2010 to December 2014, and 10 Chinese ALS Association clinics from March 1, 2009 to December 31, 2011. The demographical and clinical features of 680 Chinese patients and 1163 German patients with ALS were collected.

Results: Mean age at onset of ALS (first paresis) was 66.7 ± 11.2 years in Germany and 51.1 ± 12.4 years in China.

Age distribution peaked in 70-74 years in German and 51-60 years in Chinese ALS patients.

Male to female ratio was 1.3:1 in Germany and 1.7:1 in China.

We found bulbar onset in 19.5% of the Chinese and in 34% of the German patients.

Major ALS-related genes differ greatly, *SOD1* and *FUS* mutations being the most frequent mutation in China and C9orf72 being the most common mutation in Germany.

Conclusions: The age at onset of ALS is significantly lower in China compared to Germany. More male patients and less bulbar onset ALS was found in China compared to the Germany registry. There are significant differences in phenotype and genetic background in German and Chinese ALS patients. Further epidemiological studies on environmental and genetic risk factors as well as demographic influences may help to elucidate pathogenesis.

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719
WFN15-1458
Miscellaneous Topics 3
Validation and diagnostic utility of the everyday Cognition (ECOG) in Argentina-ADNI

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Introduction: The detection and characterization of functional impairments in patients with cognitive impairment is an important clinical and research issue. The Everyday Cognition (ECog) scale is a relatively new informant-rated measure of everyday function.
Objective: The objective of this study was to determine the indices of validity and internal consistency of the ECog in the Argentina-Alzheimer´s Disease Neuroimaging Initiative (Arg-ADNI) sample.
Methods: We assessed 15 clinically normal elderly (CN), 28 mild cognitive impairment (MCI), and 13 mild Alzheimer´s Disease (AD) dementia subjects from Arg-ADNI. External, convergent and divergent validity and internal consistency were examined.
Results: The average total score on the ECog scale was significantly different across the three diagnostic syndromes ($p < 0.5$). The area under the curve (AUC) for the ECog was .97 (95% CI = .93-.99). The ECog scale was more sensitive than FAQ in discriminating between those with any cognitive impairment (either dementia or MCI) and CN. The ECog scale showed a moderate to strong correlation with other measures of daily function, including the Clinical Dementia Rating (CDR) and the FAQ scales and moderate correlations with neuropsychological tests. Cronbach´s alpha was .98. Co-varying for age or education had no effect on these results.
Conclusions: The ECog scale is an efficient instrument for the differentiation of individuals with mild dementia or MCI from normal older adults, with good accuracy and good correlation with other tests measuring daily and cognitive functions.

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720
WFN15-1461
Miscellaneous Topics 3
The association between neuropsychological functioning and driving performance in older people with mild dementia

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Introduction: As life expectancy, there is a growth in proportion of elderly people who want to continue driving. On the other hand, age is a risk factor for the development of dementia. While it has been established that patients with mild dementia are higher-risk drivers, it is also true that a large proportion of them can drive safely.
Objective: To measure the association of cognition and driving safety in healthy older drivers and in patients with mild dementia.
Methods: A group of 28 patients with mild dementia by Clinical Dementia Rating (CDR < 1) was evaluated with a group of 28 age and education-matched controls. All participants underwent a cognitive assessment and a driving assessment battery (driving simulator and on-road test).
Results: Drivers with dementia made more mistakes in the on-road test and had slower responses in the subtests of brake reaction and signal recognition of the simulator. TMT B, semantic fluency and AD8 interview were the cognitive measures that best predicted driving performance. Other set of tests that correlated with the on-road test, but only with brake reaction or traffic signal detection subtests of the simulator were MMSE, Logical Memory, TMT A, Digit Symbol Test, Boston Naming Test, Verbal and Visual Learning test (Rey), Frontal Assessment Battery, Neuropsychiatric Inventory and the functional assessment questionnaire.
Conclusion: The strong correlation between driving performance and specific cognitive tests supports the importance of cognitive assessment as a useful tool for deciding whether patients with dementia can safely operate a motor vehicle.

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721
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Miscellaneous Topics 3
Diagnostic accuracy of the phototest for cognitive impairment and dementia in Chile

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Introduction: Phototest is a simple, easy and very brief test with theoretical advantages over available dementia screening tests in Spain and Argentina.
Objective: The objective of this study was to estimate the diagnostic accuracy of the Phototest for cognitive impairment and dementia and to compare it with that of the MMSE in a Chilean population.
Methods: A phase I cross-sectional study of diagnostic tests evaluation was performed in a sample of 58 controls, 11 with amnestic mild cognitive impairment (a-MCI), and 29 with mild Alzheimer type dementia (DAT). The diagnostic accuracy (DA) was assessed in relation to the clinical diagnosis by calculating the area under the ROC curve (UAC), Sensitivity (Sn), and Specificity (Sp).
Results: The DA of the Phototest for a-MCI and DAT (0.90 and 0.99 [UAC]) was higher than that of the MMSE. The cut-off points of 25/26 for DAT (Sn = 98.3, Sp = 89.7) and 26/27 for a-MCI (Sn = 96.6, Sp = 81.8) maximized the sum of Sn and Sp. Phototest correlates significantly with MMSE ($r = .801$). Phototest results were not influenced by the level of schooling or literacy.
Conclusions: The Phototest is an efficient instrument for the detection of mild dementia or MCI, with good accuracy and good correlation with tests measuring overall cognitive impairment and its results are not influenced by sociodemographic variables.

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722
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Miscellaneous Topics 3
Sensory processing abnormalities in children with severe autism – Do they correlate with FDG-PET findings?

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Background: Systemic studies of Sensory Processing Abnormalities (SPAs) and FDG-PET in children with autism are lacking.
Objective: To study SPAs in children with severe autism and their correlation with FDG-PET findings.

Material and methods: We studied 100 children, aged 3-12 years, diagnosed as Autistic Spectrum Disorder (DSM-V) and 100 age and sex matched controls. SPAs were detected using Short Sensory Profile questionnaire. Children with progressive neurological diseases, active epilepsy and structural brain abnormalities were excluded. On CARS, 34 children had severe and 66 had mild-moderate autism. SPAs were compared between cases and controls and in severe and mild-moderate autism. FDG –PET scan was done in 28 children with severe autism and correlated with SPAs.
Results: The mean age of children with autism was 4.96 ± 2.1 years and of controls was 4.66 ± 4.2 years. SPAs were detected in 68% of children with autism but in none of the controls. All children with severe autism had SPAs as compared to only 40% children with mild-moderate autism.

Under-responsiveness/seeking sensation was affected in 100% children with severe versus 33% in mild-moderate autism. Movement sensitivity, auditory filtering abnormalities and tactile sensitivity were seen in 84%, 63% and 54% children with severe autism as compared to 33%, 46% and 25% respectively in children with mild-moderate autism.

FDG-PET was abnormal in 17% cases. Diffuse cerebral/ temporal lobe hypometabolism, increased bilateral frontal lobe uptake and moderate reduction in parietal lobe (Lt > Rt) was observed.
Conclusion: All patients with severe autism had SPAs. However, they did not correlate with FDG-PET findings.

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723
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Miscellaneous Topics 3
Evaluation of symptomatic vertebral occlusions using CT angiography and color duplex sonography

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Background and objective: Vertebral artery (VA) occlusions may be caused by thromboembolic events, progression of atherosclerotic stenoses or other rare mechanisms. Their clinical significance depends on anatomic and hemodynamic conditions and time of occurrence. We evaluated symptomatic vertebral occlusions using CT angiography (CTA) and Color Duplex sonography (CDS) with the aim to differentiate between acute and chronic lesions.
Subjects and methods: 83 patients, 57 males, aged 70,64 + - 8,74 (52 – 92) years, suffering from recent vertebrobasilar stroke (53%) or TIA (47%), with one VA occlusion detected, were examined by CTA and CDS. All extracranial vessels were insonated, with the assessment of both VA diameters in the V1 segment (including t- test and Pearson´ correlation) and hemodynamics. Evaluation included scoring of echogenicity and pulsations of the lumen, Doppler spectral waveform and collaterals on CDS and CTA images.
Results: The diameter of the occluded VA (2,85 + - 0,52 mm) was significantly smaller than contralateral VA (3,58 + - 0,59 mm, $p < 0{,}01$), with Pearson´ correlation $r = -0{,}18$ (n.s.), suggesting minority of primarily hypoplastic occluded VA in our group. We classified 9 occlusions (11%) as clearly acute, 22 (26%) as possibly acute and 52 (63%) as chronic.
Conclusion: CDS and CTA are suitable methods for the detection and evaluation of VA occlusions, with the potential to support differentiation between acute and chronic lesions. This information can contribute to correct therapeutic decision in patients with recent vertebrobasilar stroke, including intravenous or intraarterial thrombolysis or mechanic recanalization.

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724
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Miscellaneous Topics 3
The role of androgen receptor gene variants on SBMA phenotype

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Background: Spinal and bulbar muscular atrophy (SBMA), also known as Kennedy's disease (KD), is a lower motor neuron disorder, caused by expansion over 36 of a polymorphic CAG repeat sequence encoding a polyglutamine tract (polyQ), in the androgen steroid hormone receptor (*AR*) gene on chromosome X. PolyQ tract length negatively correlates with age at onset, without affecting disease progression.
Objective: To assess the role of *AR* variants on disease phenotype.
Patients and methods: A cohort of 159 SBMA patients were genotyped for *AR* variants and a genotype-phenotype correlation study was performed.
Results: Besides the pathogenetic polyQ tract, the only *AR* variant to result polymorphic (minor allele frequency > 5%) was a polyglycine tract (polyG) encoded by GGN spanning amino-acids 451–473. We confirmed an inverse correlation between the polyQ length and the age at onset of muscle weakness ($r = -0.49$; $p < 0.0001$, Fig. 1). No correlation between GGN length and milestones of disease progression was found. The number of CAG repeats could explain approximately 25% variance of age at onset of muscle weakness and GGN length was not significantly correlated ($p = 0.28$) in a multiple regression analysis.
Conclusions: *AR* polyG tract is not a genetic modifier of SBMA phenotype.

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725
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Miscellaneous Topics 3
Social information processing after mild traumatic brain injury

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Background: Social information processing (social perception, cognition and regulation) was studied extensively in patients with moderate and severe traumatic brain injury (TBI). Presently minor and major neurocognitive disorders due to TBI in DSM-5 encompass cognitive disorders after TBI. Cognitive changes after mild TBI are frequent. Although DSM-5 identifies social cognition as a potentially impaired domain in neurocognitive disorders, traditional neuropsychological examinations fail to explore the gamut of its changes after mild TBI.
Objective: We review research data on social information processing in mild TBI and advance a possible bio-psycho-social framework for its underpinnings.
Patients and methods / material and methods: Review of data collected via Medline literature and search of empirical studies and original reviews.

Results: Experimental data on changes in empathy, theory of mind and moral judgment after mild TBI are surprisingly sparse. The exploration of face and speech perception in mild TBI was usually restricted to patients with comorbid psychiatric conditions. Several studies looked at risk behavior and decision making under risk and uncertainty using Iowa Gambling Task (IGT) in patients with TBI of various severity and one study looked at IGT in patients with mild TBI. The investigation of alexithymia after mild TBI relied exclusively on self-questionnaires.
Conclusion: Changes in social information processing after mild TBI might be related to mild TBI-causally bound pathophysiological mechanisms leading to perturbations in networks for social cognition, pre-injury personality traits, litigation, psychological, emotional and environmental factors. Further research needs to unravel variables that independently predict changes in social information processing domain.

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726
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Miscellaneous Topics 3
Modulation of cortical activity in patients with chronic spinal cord injury after intrathecal baclofen

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Background: Intrathecal baclofen (ITB) is commonly used for severe spasticity due to chronic spinal cord injury (SCI). Clinical effect of ITB on reduction of spasticity is well known; however, mechanism of long-term administration of ITB on the motor system is not fully elucidated.
Objective: To determine which cortical processes are activated during ITB therapy using functional magnetic resonance imaging (fMRI).
Patients and methods: Seven subjects (5 males, aged 20-69 yrs) with chronic SCI (3 with cervical lesions, 4 with thoracic lesions) with no voluntary movement on lower limbs were studied by 1.5 T fMRI with mental movement simulating of foot flexion on the dominant side (one left-handed subject was flipped in x axis). Tasks were performed before and 12 weeks after ITB pump implantation. FMRI data processing was carried out using FEAT (FMRI Expert Analysis Tool) Version 6.00, part of FSL. Second-level analysis was carried out using FLAME stage 1 and 2. Spasticity was assessed by Modified Ashworth scale (MAS). The study obtained Institutional Review Board approval.
Results: ITB treatment profoundly decreased limb spasticity in all subjects (group MAS knee spasticity dropped from 2.7 to 0.44). Second-level analysis ($Z = 2$, cluster significance threshold $p = 0.05$) revealed increase of activation of primary sensorimotor cortex of the foot (Fig. 1).
Conclusions: Continuous ITB administration relieving spasticity in SCI patients was associated with increase of activation of sensorimotor cortex of plegic legs, which may reflect distant functional reorganization of sensorimotor network at cortical level due to positive neuroplastic changes.

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727
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Miscellaneous Topics 3
Factual investigation for solitary patients with subacute myelo-optico-neuropathy in Japan

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Background: Subacute myelo-optico-neuropathy (SMON) is caused by clioquinol intoxication. In Japan, many SMON patients are still afflicted, despite no addition of new patients after 1971. Silvering has been pointed out in medical treatment for SMON patients, and solitary issue is also concerned.
Objective: The aim of this study was to investigate the characteristic features in SMON patients who lived alone.
Patients and methods: We analyzed data from 730 SMON patients that was obtained at medical check-ups carried out by Japanese SMON Research Committee from 2010 to 2012. Neurological and general symptoms classified by severity, activities of daily living (ADL), and care giving condition were surveyed.
Results: Solitary patients tended to increase, from 23.9% in 2010 to 27.8% in 2012. Women occupied over 80%, and the mean age was above 75 years. Regarding the severity of neurological and general symptoms, severely disabled patients were 28% in 2010 and 34% in 2012. For Barthel index, patients whose score was under 60 were 30% in 2010 and 45% in 2012. For ADL, going out was less frequent in solitary patients, and solitary patients tended to feel life dissatisfaction. Twenty-seven percent of patients in solitude did not need care giving, 67% could have care giving when needed, and 5% had no caregiver despite of necessity.
Conclusions: In Japan, not a few number of SMON patients lived by themselves, subsequently for a long period after the exposure to toxicity. Particular application of treatment considered individual care environment should be required for SMON patients who live alone.

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728
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Miscellaneous Topics 3
Effects of vitamin B12 and folic acid deficiencies on cogniton: experience from a tertiary center in Turkey

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Vitamin B12 and folate deficiency is an important public health problem in the developing countries. Vitamin B12 and folate deficiency have negative effects on cognitive functions and are associated with increased risk for dementia. This situation not only affects the hematological system but also the neurological system.

The purpose of this study was to investigate the effects of these vitamins on hematological parameters and cognitive performance.

Between 2011-2015, 300 patients admitted to out-patient clinic with forgetfulness were included in the study. Hemoglobin, mean corpusculer volüme (MCV), thrombocyte levels, mini mental state test scores, Beck Depression Scale and Geriatric Depression Scale results of the patients were retrospectively investigated. There was

no statistical relation between low blood vitamin B12 and folic acid levels and cognitive performance. In the older patients, however, folic acid deficiency was more common when compared with younger patients and this was statistically significant ($p = 0{,}044$).

There are conflicting data about the effects of vitamin B12 and folic acid deficiencies on cognition. These deficiencies haven been shown especially in the elderly people in the literatüre. In line with this, folic acid deficiency was more common in the elderly in our patients.

It is also widely known that permanent neurological deficits secondary to this deficiency could be easily prevented by vitamin replacement. We would like to draw attention to this simple fact and we would like to remind our colleagues to think about these deficiencies which may be easily tested and treated before leading to permanent damage in the nervous system.

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729
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Miscellaneous Topics 3
Ratio between carotid artery stiffness and cerebral blood flow - a new ultrasound index for ischemic leukoaraiosis

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Background: So far the diagnosis of ischemic leukoaraiosis (ILA) is based on MRI and exclusion of other causes of white matter lesions (WML). The pathopysiology of ILA is not known but ultrasound studies have shown increased large artery stiffness, increased resistance of the small cerebral arteries and lower cerebral blood flow in ILA patients.
Objective: We aimed to prove that a ratio between carotid stiffness parameters and cerebral blood flow velocity could be a useful diagnostic index of ILA.
Patients and methods: We compared ILA indices (ILAi) in 53 ILA patients to 40 gender and risk factor matched controls with normal MRI of the head. The ILA diagnosis was based on head MRI and the exclusion of other causes of WML. ILA was further categorised according to the Fazekas scale. We introduced new ILAi that are ration of carotid stiffness parameters ((pulse wave velocity beta (PWVb, m/s), pressure-strain elasticity modulus (Ep, kPa) and β index)) and middle cerebral artery (MCA) mean blood flow velocity. The associations between ILAi and ILA and diagnostic significance of ILAi for the prediction of ILA were analysed by SPSS 20.0. We have obtained patient and Institutional Review Board (IRB) approval, as necessary.
Results: All ILAi significantly differed between the groups ($p < 0.05$), were significantly associated with ILA ($p < 0.01$.) and were sensitive and specific for predicting ILA ($p < 0.05$). All ILAi also showed increasing trend with higher Fazekas score ($p < 0.05$).
Conclusion: New ILA indices are significant predictors of ILA and they have potentially diagnostic value in ILA patients.

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730
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Miscellaneous Topics 3
Study on presynaptic action potential waveform in hippocampal neuronal culture models of episodic ataxia type 1 using scanning ion conductance microscopy

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Background: Episodic ataxia type 1 (EA1) is an autosomal dominant disorder characterized by paroxysmal cerebellar incoordination and interictal myokymia (Rajakulendran et al., 2007). It is caused by dominant negative mutations of KCNA1, which encodes the presynaptic and axonal potassium channel subunit Kv1.1. EA1 mutations increase neuronal excitability and neurotransmitter release in neuronal cultures (Heeroma et al., 2009). Although this could be explained by impaired action potential repolarization leading to an increase in presynaptic calcium influx, the action potential duration measured at the cell body is unaffected.
Objective: Does EA1 prolong the action potential repolarization phase at presynaptic terminals thus causing increased neurotransmitter release?
Method: We used Scanning Ion Conductance Microscopy to acquire super-resolution images of very small synaptic boutons (approximately 1 micrometer diameter) in mouse hippocampal neuronal cultures and gain direct electrophysiological recording from these boutons (Novak et al, 2013). We compared wild type, $KCNA1a^{-/-}$ knock-out and $KCNA1a^{(V408A/+)}$ knock-in mice (Herson et al., 2003). Action potentials were either elicited by injecting depolarizing current at the bouton or via a second pipette at the soma.
Results: Presynaptic action potential half width was larger in $KCNA1a^{-/-}$ and $KCNA1a^{(V408A/+)}$ compared to their wild type litter mates, both when directly elicited at the bouton and when elicited by depolarising the cell body. A prolonged presynaptic action potential in EA1 may be responsible for increased neurotransmitter release. Because Kv1.1 is abundantly expressed in cerebellar basket cells, this may lead to excessive inhibition of cerebellar Purkinje cells and ataxia.

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731
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Miscellaneous Topics 3
Establishment and validation of Japanese version of the ALS-FTD-Questionnaire

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Background: Patients with amyotrophic lateral sclerosis (ALS) often have features of fronto-temporal dementia (FTD), and may present behavioral and character changes. These non-motor changes may negatively influence disease course of ALS, adherence to therapeutic interventions, or relations with caregivers or others. An easy screening procedure may contribute significantly to comprehending these conditions.
Objective: The aim is to establish an easy screening procedure for psychiatric symptoms in Japanese patients with ALS and with behavioral variant FTD (bvFTD). We translated the ALS-FTD-Questionnaire (ALS-FTD-Q) (Neurology 79, 1377-83, 2012) into Japanese (ALS-FTD-Q-J), and are currently evaluating consistency between the English and Japanese versions.
Patients and methods: The multi-center study is now in progress at 15 neurology or psychiatry institutions. Patients with ALS with or without bvFTD are being evaluated using the Frontal Behavioral Inventory (FBI), Hospital Anxiety and Depression Scale (HAD), ALS Functional Rating Scale-Revised (ALSFRS-R), Frontal Assessment Battery (FAB), Montreal Cognitive Assessment (MoCA), and word fluency test. Clinical information were also collected. Patients with bvFTD but no ALS (positive controls) and healthy subjects (negative controls) are also undergoing the screening.
Results and conclusion: So far, data from about 95 subjects have been collected, which include ALS patients (59), bvFTD with (5)/

without (3) ALS patients and healthy controls (28). Same as the original report, the ALS-FTD-Q-J correlated highly with FBI ($r = 0.73$), moderately with measures of FAB ($r = 0.23$) and MoCA ($r = 0.19$). The ALS-FTD-Q discriminated between ALS (9.1 ± 9.1, mean $\pm$ SD) and FTD with/without FTD (43.1 ± 17.3) ($p < 0.001$); and between ALS and controls (3.8 ± 4.0) ($p < 0.05$).These results suggest that the ALS-FTD-Q-J can be a useful tool for screening behavioral disturbances in ALS/FTD patients.

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732
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Miscellaneous Topics 3
The role of Broca's area in speech production: evidence from focal lesion studies

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Background: Debates on speech functions of Broca's area goes back to Paul Broca (1861) when he introduced the third left frontal convolution as the seat of speech articulation. Currently we know that the historic patients had brain lesions which were extended beyond Broca's area (Dronkers et al., 2007).

Objective: The aim of this paper is to discuss the effects of restricted lesions of Broca's area on the speech production.
Material and methods: There are rare examples of reported isolated lesions of Broca's area. However, Yadegari et al. (2014) reported a patient with a focal infarct of Broca's area. The small lesion had resulted in noticeable speech articulation problem keeping the auditory comprehension intact. The authors considered the disorder as a frame without content pattern due to syllabification impairment. Also Davis et al. (2008) reported an aphasic man whose magnetic resonance imaging (MRI) showed a tiny infarct, with selective hypoperfusion in Broca's area. Among the other language disorders, he revealed deficits of motor planning of speech articulation. Functional MRI studies have associated the left posterior inferior frontal gyrus (LIFG) to phonetic encoding as well (e.g. Papoutsi et al., 2009).
Results: It seems from restricted Broca's area injuries that phonetic representations i.e. a pre-articulatory stage regarding phonetic encoding might be severely impaired.
Conclusion: Broca's area seems to be a part of neural circuits of relatively late stages of motor speech planning. This seems to be consistent with attribution of a post-lexical syllabification job to LIFG by Indefry and levelt (2000).

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