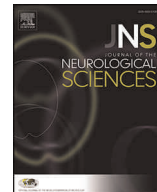




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Mixed Topics 1

A new method for focal middle cerebral artery occlusion in rats via transfemoral approach

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Background: Middle cerebral artery occlusion in rodent is one of the most practiced model of focal ischemia in a laboratory setting.

Objectives: This study aimed to develop a reliable and repeatable method of inducing focal middle cerebral artery occlusion (MCAo) in rats without ligation of the external carotid artery (ECA), while reducing subarachnoid hemorrhage risk.

Methods: We prototyped microwires with different diameters (0.0120", 0.0115", 0.0110"), materials, and construction methods (coil-on-core, extruded polymer jacket-on-core). Under fluoroscopic guidance and using femoral artery access, the microwires were navigated into the internal carotid artery (ICA) of male Wistar rats (N = 50, weight = 376 ± 64 g) to induce MCAo for 1 and 2 h. We performed neurological assessments at baseline, followed by 3, 24, 72, and 168 h after injury. MRI measurements were performed on a 9.4T scanner at 1 and 7 days post-injury.

Results: The 0.0115" microwire with polymer jacket-on-core provided the most successful outcome. At 1 and 7 days post-injury, we observed similar infarction volumes for 1 and 2 h MCAo in the MRI study. The infarcted lesion volumes in both MCAo groups were significantly reduced at 7 days as compared to 1 day post-injury. Both groups showed similar neurological deficits except at 3 h post-injury.

Conclusions: We have developed a reliable and repeatable MCAo method in rats allowing for precise occlusion of the MCA under direct fluoroscopic visualization without the alteration of cerebral hemodynamics associated with ECA ligation. The custom-designed microwire can be sized for targeted focal ischemia in larger animals as well.

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Mixed Topics 1

Biomarkers in skeletal muscle rehabilitation in myotonic dystrophy

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Background: Myotonic dystrophy (DM1) is missing useful circulating biomarkers. CK is in fact sometimes normal.

Objective: We aimed to identify microRNAs as biomarkers of DM1 during a rehabilitative protocol consisting of resistance training/functional electrical stimulation (FES) of about one month duration. MicroRNAs are short non-coding RNA molecules with single-stranded sequence involved in many biological processes.

Patients and methods: We investigated serum and muscle microRNAs during a training program to reverse distal muscle atrophy and weakness in a group of genetically defined DM1 patients.

Results: In muscle biopsies of 12 DM1 cases with various histopathological severity, the levels of miR-1 and miR-133a were significantly decreased while we found increased level of miR-206. In serum, we found increased expression of miR-133a before rehabilitation and reduced expression of all myo-miRNA (miR-1, miR-206, miR-133b, miR-133a) after rehabilitative treatment, which correlated to increased muscle strength and increased distance in the six minute walking test. A reversal of muscle atrophy was observed by muscle MRI.

Conclusion: Micro-RNAs seem to be good serum biomarkers of increased muscle mass and functional response to muscle rehabilitation. MicroRNA might bind to proteins connected with hypertrophy pathways, such as histone deacetylase-4, serum response factors or myo-D, that are linked to myofiber regeneration. We found reduced expression levels of all microRNAs tested after rehabilitation. Since myo-miRNAs have a function in regulation of muscle development and regulation of expression of muscle specific genes, their reduced activity might de-repress biological processes linked to myoblast differentiation, proliferation and myogenesis leading to increased muscle mass.

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Mixed Topics 1

Prevalence and associated factors of cognitive impairment among retired people living at Parakou in 2014

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Background: Neurodegenerative diseases remain an important public health problem because of their social and economic issues. The prevalence of the cognitive impairment increased with age. We aimed to determine the prevalence of cognitive impairment and its associated factors among retired people at Parakou in 2014.

Methods: It was a cross-sectional study carried out from 1st July 2014 to 8th August 2014 and included all people registered at

regional agency of CNSS (Centre National de Sécurité Sociale) and Public Treasury. The brief version of Community Screening Interview for Dementia (CSI'D) was used to screen people with cognitive impairment. We also used the Mini Mental state Examination and the clock test.

Results: This study involved 440 retired with 406 (92.27%) male. The average age of retired was 64.97 ± 6.03 years, ranging from 51 years to 89 years. Thirty-four retired had cognitive impairment with the overall prevalence of 7.73%. The main associated factors with cognitive impairment were the increasing of age, the education level, the rate of income, the past history of hypertension, the diabetes mellitus, physical inactivity, low consumption of fruits and vegetables, the living alone.

Conclusion: The cognitive impairment was more frequent among retired at Parakou and can be explained by the vascular risk factors and other socio-economic status.

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Neurology international residents videoconference and exchange (NIRVE)

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Background: A recent survey from the World Federation of Neurology showed great variability across neurology training programs in the world with many trainees interested in international clinical experiences but unaware of available opportunities.

Objective: To raise awareness of global health concepts in neurology and to enhance international and national collaboration among neurology residents.

Design: The Neurology International Residents Videoconference and Exchange (NIRVE) is a resident initiative from the University of Toronto that promotes Neurology and Global Health education using the advantages of a video-conferencing system and webcasting. NIRVE currently unites 6 international sites (Toronto, Grenoble, St Petersburg, São Paulo, Jos, and Natal). Each session consists of a main presentation on rotating topics on the practice of neurology or issues in global health, followed by a neuroradiology case.

Results: Since 2011, 60 neurology trainees and 8 academic neurologists across 6 different sites have attended NIRVE rounds. Main challenges for international sites joining ($n = 6$) to NIRVE were identified as scheduling conflicts ($n = 5$); lack of comfort with English ($n = 2$) and inability to obtain teleconferencing equipment ($n = 2$). Of 21 residents surveyed at the end of the 2012 academic year, 85% agreed that the rounds contributed to their neurology education and 95% thought the rounds were appropriate to their level of training.

Conclusions: NIRVE allows neurology residents to connect with peers internationally. It is a powerful tool for knowledge transfer that can influence future neurologists' practice by bridging distances across physical, political and socioeconomic borders.

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Mixed Topics 1

Feasibility and reliability of remote telemedical evaluation of athletes with suspected concussion: Addressing gaps in care with teleconcussion

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Background: Although most elite-level athletes have access to providers with concussion expertise, this level of care is uncommon in amateur youth sports. This is concerning as over 7.5 M children in the U.S. participate in high school sports – the majority without access to athletic trainers. As the volume of youth athletes exceeds the number of concussion experts, telemedical concussion evaluations (teleconcussion) may address gaps in care.

Objective: Assess teleconcussion feasibility and accuracy for concussion evaluations.

Methods: Eleven consecutive collegiate football players with suspected concussion were assessed using the Standardized Assessment of Concussion (SAC), King-Devick Test (KD), and modified Balance Error Scoring System (mBESS). A remote neurologist assessed subjects telemedically while another provider performed a simultaneous face-to-face assessment. A remove-from-play determination was then made. The remote and face-to-face providers were blinded to each other's exam findings and remove-from-play decision.

Results: The teleconcussion and face-to-face SAC were in agreement 100% of the time (6/6, 95% CI 54%-100%). Mean difference between remote and sideline KD times was 0.7s (SD 1.4). Remote and face-to-face KD times were within a 3s difference 100% of the time (11/11, 95% CI 72%-100%). Remote and face-to-face mBESS scores were within 3 points 100% of the time (6/6, 95% CI 54%-100%). Remove from play decisions were in agreement 100% of the time (11/11, 95% CI 72%-100%).

Conclusions: This is the first study investigating teleconcussion feasibility for concussion assessments. These data suggest high levels of agreement between remote and a face-to-face providers regarding exam findings and remove from play decisions.

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Mixed Topics 1

Neurological disorders in Northern Tanzania; a retrospective hospital based cross-sectional study 2007-13

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During a 6 year period from April 2007 to March 2013 a record was kept of a series of adult neurology patients presenting to the medical department at KCMC. All patients were seen and examined by one neurologist (WPH). An adult in this study is defined as patients aged 13 yrs and above. All patients had age, sex and a neurological diagnosis recorded. Investigations were carried out as medically indicated and subject to availability. The diagnosis was amended depending on follow up neurological assessments and the results of investigations. In the majority of patients a distinct or final neurological diagnosis was possible, but where a diagnosis was not possible a category labeled others was created. Records for a total of 2040 patients are reviewed. The results are presented in diagram and table format under the following headings, 1) Neurological Disorder; 8 categories, 2) Neurological disease; 20 categories, 3) Neurological

disease: subgroup; >50 categories. Conclusion: Neurological disorders are common in Northern Tanzania and represent with a wide range of neurological diseases.



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Cervical myelopathy associated with deep neck muscle rhabdomyolysis after buprenorphine and pregabalin abuse

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Buprenorphine is widely abused in association with pregabalin particularly in Scandinavia. Here we describe six patients who developed cervical myelopathy and rhabdomyolysis after using buprenorphine together with pregabalin and/or other GABAergic drugs. All the patients were young males (age 16–21 years) with a history of substance abuse of several drugs. One to two days before hospital admission they had administered buprenorphine in combination with pregabalin and/or benzodiazepines. The buprenorphine was administered intravenously in five cases and intranasally in one. All patients reported passing out after taking the drugs. After waking up they noticed difficulties in moving their extremities and sought for medical care. In the emergency department, a varying degree of tetraparesis was seen without any signs or anamnesis

of trauma. Cerebrospinal analysis showed elevated protein levels and cell count. Serum creatine kinase levels were elevated. MRI-scan of the spinal cord revealed a longitudinally extensive myelopathic lesion of C1–Th3 level associated with rhabdomyolysis in the adjacent, paravertebral deep neck muscles. Myelopathy associated with intoxication and rhabdomyolysis of the deep neck muscles are rare phenomena not usually associated with each other. As the MRI findings in the spinal cord and neck muscles were adjacent to each other, we suggest that a compartment syndrome of the deep neck muscles resulted in venous congestion of the cervical spinal cord causing the myelopathy.

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Anterograde amnesia after mild traumatic brain injury: Organic or functional?

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Background: Most psychogenic or functional amnesias are described to be of retrograde nature and involve a preponderant or selective impairment in the episodic autobiographical domain. In contrast, organic amnesias are viewed as inability to consciously acquire new information for long term storage (anterograde amnesia). Herein we challenge the lore that functional anterograde amnesias are “extremely rare” by presenting data from case series.

Patients and methods: Review of literature and data from own patients investigated medically and with neuropsychological and neuroimaging methods.

Results: Functional anterograde amnesia in the absence of significant retrograde memory impairments was found in three patients studied by our group and other three patients were described in the literature in the last 10 years. Most patients with functional amnesia presented with retrograde memory impairments involving the episodic memory domain. Variable degrees of anterograde amnesia (detected by standard anterograde memory tests) however often accompanied retrograde forms of functional amnesia. In patients with dense functional retrograde amnesia but no anterograde memory impairments on standard memory tests, the consciously acquired new memories for long term storage were qualitatively different with respect to emotional colouring in comparison to memories of normal, matched participants.

Conclusion: Our findings suggest that anterograde functional amnesia in the absence of significant retrograde memory impairments or out of proportion in comparison to the retrograde memory impairments may not be so unique and alert to the importance of including this condition in the process of differential diagnosis.

We have obtained patient and/or Institutional Review Board (IRB) approval, as necessary.

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