VIII INTERNATIONAL SYMPOSIUM ON BRAIN DEATH AND DISORDERS OF CONSCIOUSNESS

ABSTRACTS

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Determination of death by neurological criteria support team (ddncs-t): ensuring system-wide standardization and timeliness of brain death testing.

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Abstract

Purpose: The determination of Brain Death (BD) demands expertise even in straightforward circumstances, and may be significantly delayed in complex scenarios. Timely and accurate brain death testing is vital to preserving the option of organ donation in patients who desire it, and avoids needless expenditure of precious personal, hospital, and societal resources. Most importantly, families deserve accurate clinical information and efficient resolution to the question of whether a loved one has died. In 2015, we created the DDNCS-T, a system-wide resource of expert physicians credentialed to perform BD testing to assist critical care teams to ensure timely and accurate declaration of death, identify common barriers to achieving these goals, and implement solutions.

Method: DDNCS-T is embedded in hospital policy to capture and optimize for testing using a pre-BDT checklist all patients for whom BD testing is being considered. All patients from 2 hospitals referred to our OPO from 2011-2016 were reviewed retrospectively. Time from when a patient first met criteria for BD testing to declaration of death was measured. "Timely" declaration was considered less than 12 hours. Pre and post DDNCS-T implementation data were compared.

Results: One year of intervention data from 6/2015-6/2016 (n=27) were compared to a random selection from the prior 4.5 years (n=38). 47% of pre-intervention declarations were considered untimely compared to 15% post intervention ($p \leq 0.01$). The average time to declaration was reduced from 14.3 hours (SD +/-8.9) to 9.8 hours (SD +-4.9) (p=0.2) respectively. The number of hours past the 12-hour mark in untimely declarations was dramatically reduced in the intervention group (3-12 hours, n=4) compared to pre-intervention (15-48 hours, n=17). During this time frame, number of organs donated increased from 3.2 to 4.2 per donor.

Conclusion: We have demonstrated that a policy-supported, system-wide resource team focused on facilitating timely BD testing significantly reduced the time from the patient meeting criteria for BDT to declaration of death, the number of untimely declarations, and increases the organs donated per donor.

Care System in Cuba: some elements for its update.

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Abstract

During their life cycle, every person requires of some sort of care, be it due to sickness, old age, or a result of the conditions associated to excess labor or stress. In many opportunities the necessities of individuals surpass the capacities of their families to respond to it. As a result, care policies are important components of any State social policies.

One of the main challenges worldwide is the increasing of the life expectancy and the elder population. Cuba is not unaware of this challenge and according to projections and the evident transformation of the composition of the Cuban population, aging will continue to increase for the coming years.

The care activity in Cuba today needs a reorientation for a better functioning given that the current system is not prepared to face the previews situation presented. Therefore, it is necessary to create a system under which the rules and regulations necessary for the proper functioning of the activity are established. With this, it will also be necessary to assign a new role to families as the main agent providing the service backed by the state support agency, whose function is the monitoring and control of the activity. Other forms of management of services should be taken into consideration, within which there are no limitations for accessing and taking advantage of them.

A Cuban Comprehensive Epilepsy Surgery Program

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Abstract

More than 50 million people worldwide suffer from epilepsy. Patients with drug-resistant epilepsy account for most of the burden of epilepsy in the population because of the substantial frequencies at which they experience comorbid illnesses, psychological dysfunction, social stigmatization, reduced quality of life and increased risk of mortality. Therefore, treatment efforts must aim for full seizure control, especially for generalized tonic–clonic seizures. Diagnostic procedures and medical and surgical treatments are not without their own risks. However, these risks are usually smaller than the risks of uncontrolled, progressive, or drug-resistant epilepsy.

The objective of this symposium is illustrates the protocol and results of comprehensive surgery program carried out in our country.

Epileptic patients with pharmacoresistant focal epilepsy are refer from different regions of the country. They are consecutively admitting to the surgery program and are evaluate by epileptologists before being operated by epilepsy surgeons.

Presurgical Evaluation

Each patient underwent noninvasive presurgical evaluation program including: (a) prolonged video-electroencephalography (VEEG) monitoring with scalp electrodes placed according to the international 10–20 system and additional electrodes; (b)Magnetic Resonance Imaging (MRI) scans with a 1.5 T or 3 T scanner which adequate epilepsy protocol, (c) A battery of neuropsychological tests (attention assessment, memory, higher verbal and visual functions); (d) Perimetric evaluation and quadrant visual evoked potential VEPs .

Voxel based morphometric MRI post processing comprising volumetric analysis and functional neuroimaging using interictal and ictal brain single photon emission computed tomography and Magnetic Resonance Spectroscopy (MRS) were carried out in patients when MRI was normal, and when there was discordance between VEEG and MRI.

We practice resective and disconnected surgery steered by Electrocorticography (ECoG). ECoG data acquisition was performed with aMedicid-5 digital EEG system (Neuronic SA, Cuba) made in Cuba, using AD-TECH subdural electrodes (grid and strips).

Cuban experience in the genetic diagnosis of Duchenne and Becker muscular dystrophies

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Abstract

Introduction: Duchenne and Becker muscular dystrophies (DMD and BMD respectively) are neuromuscular progressive diseases, with an X-linked recessive inheritance pattern, caused by mutations in the *DMD* gene coding for dystrophin. The information about carrier status in affected families is crucial, since this knowledge generates expectations and options facing genetic counseling. In Cuba, the genetic diagnosis for these dystrophies began in the 90s and it is part of the National Program for the Diagnosis, Management, and Prevention of Genetic Diseases and Congenital Malformations of the Ministry of Public Health. The aim of this study was to describe the Cuban experiences in the genetic diagnosis of Duchenne and Becker muscular dystrophies.

Methods: From 1995-2017, 363 affected males, 128 families that requested studies of carrier women and 225 amniotic fluids were studied. Genetic diagnosis followed the strategy: multiplex PCR for the direct study of deletions in the *DMD* gene; segregation studies by analysis of polymorphic markers STRs to identify carrier women (indirect studies) and prenatal studies by direct or indirect methods depending on the presence or absence of deletion in the index family case.

Results: This strategy allowed confirming the diagnosis in 40% of the patients and identifying 78,3% (452/577) of carrier women (obligated and probable). Affected male fetus were detected in 28,9% of the prenatal diagnoses (65/225).

Conclusions: Although the diagnostic strategy developed does not carry out all the recommendations of good practices internationally proposed, its results have accomplished important scientific and social impacts.

Keywords: Duchenne muscular Dystrophy; Becker muscular dystrophy; genetic diagnosis; carrier; prenatal diagnosis.

Blood borne brain specific biomarkers could be useful for the prediction of asymptomatic cerebral small vessel disease in hypertensive patients.

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Abstract

Background. Arterial hypertension and other vascular risk factors generate asymptomatic brain damage in the form of cerebral small vessel disease (CSVD) which is known to increase the occurrence of stroke, cognitive decline and dementia. Neuroimaging has demonstrated that subclinical brain damage in essential hypertension is more prevalent than cardiovascular or renal impairment; nevertheless, screening for nervous system involvement is difficult due to the low accessibility and high costs of these techniques.

Objective. In the present work we evaluate the possibility of employing blood borne brain specific biomarkers for the prediction of CSVD in asymptomatic hypertensive patients.

Results. Higher blood levels of neuron specific enolase (NSE), S100B protein and autoantibodies against the NR2 subunit of the NMDA receptor (NR2Ab) were observed in neurologically asymptomatic hypertensive patients. Nevertheless, only higher NSE and NR2Ab were associated with more severe white matter hyperintensities in brain MRI scans. Neuroimaging variables indicative of brain atrophy (cortical thickness and linear subaracnoid space measurements) revealed no association between overall and regional cortical thickness and serum levels of NR2Ab, but an inverse relationship was observed between frontal interhemispheric width and NR2Ab.

Conclusions: Serum NSE and NR2Ab levels may reflect asymptomatic CSVD in HT subjects, especially in younger populations at risk, where age-related cortical atrophy has not yet been fully established.

Timing, synaptic tagging and restorative neurology

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Abstract

Late phases of Long-Term synaptic Potentation (L-LTP) are maintained by synaptic capture processes of plasticity related proteins (PRP) which is enunciated by Synaptic Tagging Hypothesis (STH). This hypothesis also predicts that the setting of synaptic tagging and the synthesis of PRP could be triggered by two independent inputs on the unique neuron population, which are activated into a time window. Consequently, is possible modulate plasticity processes triggered by learning task whether the animals are exposure to another task behavioral like novelty exploration. This phenomenon is named as Behavioral Tagging in analogy to synaptic tagging phenomenon. Again, this phenomenon is a time dependent process. Consider this early data, we are study if possible to improve the spatial memory recovery in two different conditions, a transient interferential of spatial memory consolidation in health animal; and on the other hand, in fimbria-fornix lesioned animals, which produce a permanent damage in spatial memory. Animals were trained in the Morris Water Maze, and the modulated agent used were a diversity of stimuli nature ranging from behavioral like novelty exploration; activation of brain structure like basolateral amygdale stimulation or molecular tools like Erythropoietin. In all the case we show a memory recovery when modulator treatment was applied in behavioral tagging time window.

Characterization of aphasic phenotypes in patients with Disorders of Consciousness

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Abstract

Objective: Language disturbances in the receptive domain have important consequences in the classification of disorders of consciousness (DOC) patients. 1)To evaluate gross anatomical and functional brain abnormalities, considered to impact the language processing, in DOC patients; 2) to explore the relationship between the observed anatomical/functional brain abnormalities and the level of communication (CRS-R auditory function scale).

Methods: In a group of 11 chronic patients with DOC, we investigated the integrity of the brainstem auditory pathways (BAEPs), of the left superior temporal gyrus (MRI), and of the left arcuate fasciculus (DTI), the level of the metabolism of each hemisphere (FDG-PET), and the degree of the neural activity using an auditory hierarchical language fMRI paradigm.

Results: We found interesting relationships between the CRS-R auditory scale scores and the identified structural/functional profiles. We demonstrated in minimally conscious state (MCS) patients that 1) patients in MCS- condition presenting only the 'auditory startle' showed or a sensory hearing dysfunction or a structural-based aphasic phenotype; 2) patients in MCS- presenting the 'localization to sound' showed a functional aphasic phenotype; 3) MCS+ patients presenting 'functional communication' showed a relative integrity of the investigated structures/functions.

Conclusions: The relationships between the CRS-R auditory scale scores and the identified profiles, point to the use the CRS-R auditory scale scores to make important clinical inferences regarding the integrity of the linguistic processes in DOC patients.

Keywords: Disorders of consciousness, language, neuroimaging, coma recovery scale.

Science and Christian Spirituality. A dialog around death.

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Abstract

Death is vital for human beings. There are those who affirm that it is the only and true problem of human race, since it is the only one that does not have any solution in spite of knowing that there is no way to solve it, neither any possibility for it. Humanity has not stopped searching, studying the problem deeply and also thinking about this disconcerting reality. It is obvious that such efforts are not aimed at breaking through such situation, but rather to achieve a familiarization, to provide elements and tools that allow the human beings to see Death as something natural and inherent to the human condition.

Of all the knowledge that raises the question of Death, in spite of not solving it, theology (spirituality) brings a valuable contribution, facing anguish and anxiety that Death provokes in a person. That is why nowadays, Theology and Spirituality cannot exist without the scientific contributions connectedto Death. For this reason,a dialog between spirituality and sciences is essential;to stop dreaming about reflection on reality in connection to Death and its disconcerting phenomenon.

Locked-in Syndrome: a case report

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Abstract

When a patient suffers a neurological injury such as hemorrhagic or ischemic stroke, assessment of their true neurological status is critical. The exams and rating scales, Glasgow Coma Scale (GCS) and NIH stroke scale (NIHSS), are standard measures for objectively quantifying a patient's neurological status.[1,2] However, the accuracy and validity of GCS and NIHSS has been questioned.[1] Inter-rater reliability of GCS scoring has been shown to be low, particularly in inexperienced examiners.[2] Inability to assess brainstem reflexes in the GCS assessment is an additional shortcoming of the exam which can lead to misdiagnosis of a patient.[3] The use of GCS, NIHSS and brain death assessments are key for patient care and correct diagnosis.

This case report presents a case where the use of NIHSS and GCS was used at a prestigious neurocritical care intensive care unit. The patient had suffered a hemorrhagic pontine stroke and had been transferred to the institute for a higher level of care. Upon arrival the patient was given a GCS score of 5T by two residents and a fellow and the family was told the patient had a very poor prognosis. During morning sign-out, the resident reported she had completed a preliminary breath death exam and stated the patient met the criteria for brain death. Providers met with family and provided options for withdrawal of care. Later in the day, a new attending followed up with a repeat exam and believed the patient had Locked in Syndrome rather than brain death. This information was based off of inconsistent eye movements and head movements. This prompted the attending to obtain a new MRI, EEG and SSEP. The MRI supported the attendings' suspicion of Locked in Syndrome. For 6 days the patient was given the diagnosis of "pontine ICH extending to midbrain and medulla, questionable locked in state and quadriparesis". EEG and SSEP confirmed the likelihood of locked in state. On day 6 post stroke, the family realized that the patient was able to track and answer questions inconsistently with head nods. The patient's diagnosis was changed to confirm Locked in Syndrome. This confirmed diagnosis changed the care the patient received. Speech and Language Pathology immediately became involved and completed a

formal assessment to determine how the patient best communicated with aids. A formal occupational and physical therapy assessment was obtained and both therapies began working with the patient daily. Upon discharge the patient was consistently communicating via head nods and she continued to make gains in her rehabilitation goals.
This case reports represents a problem with healthcare's assessment and treatment of patients based on objective rating scales that have limitations. As healthcare professionals, how can we ensure that we are using our rating scales appropriately. How can we be aware of their limitations? Lastly, how can we ensure we do not jump to assumptions about diagnoses before all appropriate testing is complete?

The role of an internist in the study of no motor complications in patients with Parkinson's Disease

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Abstract

Parkinson's disease (PD) is a neurodegenerative disease of progressive evolution, characterized by tremor of rest, rigidity and hypokinesia, but which is strongly associated with non-motor symptoms (NMS). Unfortunately, these have received very little attention for many years, and only recently have they begun to assess their involvement in the quality of life of patients with PD.

Objective: Review current knowledge and highlight the importance of NMS in PD.

Methods: A random sample was taken of 35 patients with a confirmed diagnosis of Parkinson's Disease, admitted to our clinic for a period of 3 years (2008-2010), who underwent a non-motor symptom (NMS) questionnaire, implemented by a multidisciplinary group of experts, consisting of 10 domains.

Results: The male sex predominated, while the average age was more frequent between 41 and 60 years. 40% had a time of evolution of the disease between 1 to 5 years.
In the patients, a high percentage of non-motor symptoms was found, predominantly those related to the cognitive affective and digestive spheres.
Other comorbidities such as HTA were determined

Conclusions: It is common the appearance of non-motor symptoms in Parkinson's disease, which can be previously diagnosed through the internist, being important the detection and control of them.

Methodology of Anesthetic Depth Measurement from the Quantitative Electroencephalography.

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Abstract

Introduction: The estimation methods of deep anesthesia level under hypnotic agents from quantitative electroencephalogram analysis are not complete efficient and are needing to be refine and optimized in order to could be applied in clinical practice.
Objective: To evaluate the effect of deep anesthesia level and the recording site (derivation) in the quantitative electroencephalogram parameters, in order to optimize the parameters selection for classification algorithms.
Methods: 27 adults under elective endoscopic abdominal surgery with general anesthesia, Electroencephalogram were recorded across all induction and sustain anesthesia steps by 19 surfaces electrodes positioned according 10/20 international system. Deep anesthesia level was clinical evaluated in eight level scale and quantitative electroencephalogram parameters were calculated out of line by quantitative analysis module of Medicid 5 (Neuronic).

Results: Deep anesthesia level has a significant statistics effect in Quantitative Electroencephalogram parameters in both broad band and short spectral models. Absolute delta and theta power, Relative theta and Alpha power, Theta and total Median frequency parameters, obtained more relevant signification in deep anesthesia levels classification at all recoding sites. Meanwhile short band spectral parameters reached significant effect at all derivations and also show interaction between the deep anesthesia level and recording sites.
Conclusions: Quantitative Electroencephalogram parameters can be used effectively in the prediction of Anesthetic Depth Level from the selection of a reduced number of EEG-Q parameters that allow the detection of three levels of Anesthetic Depth: Light, Moderate and Deep, applying a new computational method of classification that has shown to be effective in the discrimination of sedation states, giving rise to a proposal of a prototype anesthetic depth monitor.
Keywords: Deep Anesthesia Level, Quantitative Electroencephalogram, Anesthesia Monitor.

Event related potential in early detection and classification of Alzheimer type neurocognitive disorder.

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Abstract
Introduction: The role of cognitive event related potentials (ERP) in diagnosis of dementia are still unclear, despite the initial studies suggested it could be used as good predictor of disease development. Recent studies suggest the specific **neuropsychological** test combined with ERP could predict and characterize the cognitive deficit at initial stages opening the options for early and effective interventions.
Methods: 39 patients classified according DSM-5 criteria as possible Alzheimer type neurocognitive disorders (NCD) (mild and major) . Age ranged 50-85 years and 53 control normal cognitive functions group. Multiple domains of cognitive functions were evaluated (complex attention, memory and learning, executive functions, language, motor and perceptual functions) to define the clinical diagnosis criteria. Also detailed executive functions were evaluated applying specific neuropsychological standardized tests and ERP: Auditory Oddball P300 and Contingent Negative Variation (CNV) were recorded with standard protocols.
.Results and conclusions: The neuropsychological profile of mild NCD is characterized by cognitive deficits focus in executive functions with severe decline from mild to major NCD in evaluated executive functions with exception of mental flexibility and automatisms inhibitions which are equal affected in both levels. Mean value and confidence intervals of P300 latency are significant different between normal and NCD groups but not discriminate between mild and severe NCD. Meanwhile logarithmic transformed P300 amplitude showed confidence intervals that clear discriminate normal, mild and severe NCD groups. Type C CNV Morphology predominated in major NCD. Integrated diagnostic algorithm based on neuropsychological profile and ERP Biomarkers has been proposed to objective and early classification of NCD.

Brain and Autonomic Reactivity to Cross-Modal Stimulation in DOC patients. Some Experimental Evidences.

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Abstract
Objective: Patients in Vegetative State (VS) could benefit from sensory stimulation protocols for responsiveness and neural reorganization and plasticity. We explored psychophysiological response to sensory stimuli addressed by patients to get covert responses under lack of behavioural evidences of stimuli awareness (audition, olfaction and touch).
Methods: A set of multi-sensory stimuli was presented to a sample of 23 VS. Auditory stimuli were represented as patients' name (target stimulus) versus others names. Tactile stimuli were a close to the wrist and ice application; olfactory stimuli were vanilla

and cinnamon fragrances. During stimuli presentation, cortical activity (EEG) and autonomic physiological response were recorded.

Results: Data show an increasing of skin conductance level and heart rate in response to auditory target stimulus, as well as in response to vanilla and ice respectively for olfactory and tactile stimuli. A higher Theta band activity was also present in left frontal cortex for vanilla and at right for cinnamon.

Conclusions: Differences in physiological activation should be probably due to familiar auditory stimuli exposure and due to pleasantness for vanilla. Responses to ice, instead, maybe due to alertness; it's possible more impaired patients relieve ice as dangerous stimulus and not only as distress. In addition, the lateralization of Theta band activation for olfactory stimuli could reflect the pleasantness (left) and unpleasentness (right) of them. Therefore, whereas explicit stimuli interpretation was probably prevented by cortico-talamic disconnections, sensorial deprivation can be bypassed considering covert responses as shown by both EEG and autonomic markers. Important implications could be considered for rehabilitative programs.

Keywords: Vegetative state, sensory stimulation, EEG, autonomic measures

Brain Death Support by pEEG

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Abstract

Ž. M. 33-year-old woman suffered a life-threatening bleeding in the post-operative period after the Caesarian section on August 2, 2018. They found her in gasping and with 140 heart rate without any reflex and psychomotor reactions. The brain stem functions were revitalized and on August 8 till August 10, 2018 we performed processed EEG (power - pEEG) at the time of recurring functions of the brain stem - photoreaction, corneal reflex, masseter reflex, eye opening, renewal tendon jerk reflexes. Power spectral analysis and coloured 3D brain mapping (BM - pEEG) showed zero power spectrum gamma frequency, alpha and theta frequencies, as well as betta-low and betta-high frequencies. Only the delta attenuation frequency had a defective power over the parasagittal in occipital, parietal, and central-motor-prefrontal regions of the both hemispheres which, after administration of amantadine sulphate 200 mg i.v. and so did the " delta attenuation effect", which had no effect on the alpha, beta, theta and gamma frequencies, and on the basis of this pEEG finding, we found brain death in multi-organs failure, despite the frightening recovery of the brain stem. She died on August 28, 2018 for heart arrest and autopsy showed devastating damage to neocortical, allocortical structures, the white matter of hemispheres and basal ganglia but also of the brain stem structures. We consider BM as a suitable method for cadaverous and transplant programs in the future.

Neurosciences and Psychiatry in Cuba

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Summary

Like background we can quote the work that came true in the Mental Hospital of Havana, with the publication of a trimestrial magazine which all the works that were done got into print in.

There are 2 fundamental figures of this stage: The Professor Jose Ángel Bustamante that he directed in Brain Research Iinstitute and the Professor Rafael Larragoití who was considered the father of the biological investigation in Psychiatry in Cuba.

In the decade of 90 the Cuban College of Neuropsycopharmacology directed by the Professor Julio Cesar Peñalver that groups this area to all investigators interested in research: The investigation in Neuropsychopharmacology is potentiated and in Biologic Psychiatry.

The Polo Científico's institutions always have maintained narrow relations with Psychiatry stimulating investigation and the publication of works. Which created a Department of Biologic Psychiatry in the Cuba Neurosciences Center. They developed an investigating work with big results. Besides a Mention in Neuropsychiatry in the Neurosciences Mastery that developed the Psychiatrists' formation.

In this moment there is a collaboration and narrow communication between Psychiatry and Neurosciences, which reflects in the united works that are developing.

Dermatome Mapping of the biologically active points Electroacupuncture for rural medical diagnosis

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Abstract
The ramifications of the nervous system allow no cell of the body to escape the effects of innervation. What began as the electrical investigation of the skin's dermatomes of the founders, Head and Mackenzie, lead Dr. Reinhold Voll and colleagues to use the acupuncture points as a template for investigation. For nearly a century, we know the internal body projects upon the skin neurological zones that can confer extraordinary information for the general and neurological practitioner.

The Neurotransmitter Points for Epilepsy (GABA), Parkinson (Dopamine), and Clinical Depression (Serotonin, Norepinephrine)

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Abstract
Neurotransmitters are endogenous chemicals that enable neurotransmission. Neurotransmitters play a major role in shaping everyday life and functions. Of significance for the primary care physician is the rapid evaluation of epilepsy, Parkinson's, Alzheimer's and clinical depression when signs and symptoms agree. Many brain imbalances elude laboratory and radiological confirmation; therefore, a transdermal test is of great utility to decide a course of treatment. The author has spent more than twenty years investigating these dynamics.

Brain activity during remembering near-death experiences memories with hypnosis

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Abstract

Objectives: Resuscitated people sometimes report phenomenological experiences (e.g., out-of-body experiences, encountering deceased relatives) they had during clinical death (e.g., cardiac arrest). These perceptual experiences -intriguing by their extra-ordinary aspect- are commonly referred to as the phenomenon of "near-death experience" (NDE). The resulting memories appear paradoxical, considering the reported richness of the memory and the fact that these experiences occur during a moment of brain dysfunction. In this study, we used an integrated approach involving a hypnosis-based protocol to improve recall together with EEG recording in order to investigate both the 'original' NDE memory and another autobiographical memory and their neural correlates.

Methods: We included 5 volunteers who previously had a NDE (as defined by the NDE scale). We added control conditions requiring volunteers to recall both memories using mental imagery. After each recall session, the subjective phenomenology was assessed by standardized tools (SHSS scores, VAS scales). We measured brain changes using high-density EEG.

Results: At a phenomenological level, we succeeded in recreating some NDEs features in all participants without any adverse effects. Absorption, dissociation and similarity (with their previous 'genuine' experiences) levels were higher during all hypnosis conditions as compared to mental imagery conditions. At a neural level, NDE conditions significantly increased the alpha power in

both frontal and posterior regions and SHSS scores were predictors of power in the alpha band.

Conclusions: A better scientific comprehension of NDE memories following clinical death will help to reduce the confusion (sometimes existing among the general public) between "death" and "clinical" death.

Keywords: Near-death experience, hypnosis, EEG, clinical death

The opioid crisis in America: implications for brain death testing and organ transplantation

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Abstract

In the past two decades, the United States has seen a dramatic increase in the number of prescription opioids dispensed. This is thought to be responsible for a corresponding Public Health Crisis on the Non-Medical Use of Prescription Opioids and related rise in overdose deaths, specifically from opioids and synthetic related drugs, both prescription and illicit. As a result, medical providers are required to perform brain death testing for an increasing number of patients where overdose is the cause of devastating neurologic injury. This presents a dilemma when clinical exam findings suggest brain death, but strict brain death testing cannot be performed because the half-life of the drug in question is unknown as in the case of many novel synthetic drugs, or length of half-life (e.g. methadone, up to 60 hrs) prohibits declaration of brain death in a timely manner. In these cases, we suggest the use of ancillary testing, the gold standard radionuclide cerebral blood flow study to provide timely and conclusive answers for patients and families and alleviate the concern that the intoxicant, rather than the neurologic injury is contributing to the cause of the coma. Furthermore, as a direct result of the rising number of overdose deaths paired with timely brain death testing, we present data on the impact of this health crisis on organ transplantation rates and patient outcomes. We also present a case where despite clinical exam findings consistent with brain death, no cause for coma could be identified. In this case, ancillary testing disproved brain death, an intoxicant was identified, and the patient recovered after prolonged supportive care.

Neuropsychological and structural brain study of two cases diagnosed with Dementia: Posterior cortical atrophy.

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Abstract

In the present study we describe the behavioral, neurocognitive and structural structural alterations in two siblings diagnosed with Dementia, with a fast and insidious establishment at the age of 54 years. Comorbidity inherited from the mother, at the same age.

The symptomatology in both cases had an evident outcrop from a sustained stressful work event managed with a deficit coping style that led to depression. State that although it was handled with psychotropic drugs, did not mask the appearance of characteristic symptoms of posterior cortical atrophy. Both referents led to a longitudinal study. In which the behavioral, affective, cerebral structural symptomatology and the functioning by area of all of the neurocognitive domains and its consequent evolution one year after the first evaluation are described.

The tests performed were: Clinical interview, Montreal Cognitive Assessment (MOCA), Neuropsychology test battery for hospitalized adult patients (ENE-A), Trail Making Test (Form A and B), Boston vocabulary test (abbreviated form) and Test of semantic and phonological Verbal Fluency and MRI.

Conclusions: Neurocognitive alterations are evidenced in all areas - reading, writing, calculation, memory, attention, executive function-, which together with the MRI confirm the neurofunctional compromise of associative areas of the left parietal cortex, temporo-parieto-occipital tertiary left, with bilateral atrophy-damage of the upper region of both occipital hemispheres, with greater proportion on the left side. Likewise, there are alterations in the functioning of the left medial temporal lobe and its interconnection with the prefrontal lobe and the bilateral frontal motor and premotor area. To this is added ventricular dilation.

Key words: Neuropsychological alteration, Dementia, MRI

Brain death associated to 1-serotype of dengue virus. Presentation of two pediatric cases epidemiological related

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Abstract

The Guillain-Barré syndrome, encephalitis and acute disseminated encephalomyelitis are the most frequently neurological manifestations associated to dengue virus (2- and 3-serotypes). The risk of this neurological complications increase when the patient has been infected previously with other serotype.

Objective: To present two pediatric cases with brain death associate to 1-serotype of dengue virus epidemiological and relative related.

Methods: two pediatric patients from Mexico were studied. Cerebrospinal fluid was obtained by lumbar puncture and serum from blood was taken by venipuncture in emergency room

Results: These two patients have symptoms of dengue fever (rash, fever, myalgia, arthralgia, headache resistant to medications and retroocular pain). The neurological complications symptoms were disorders of consciousness (lethargy, cephalgia) and tonic-clonic seizure of 30 minutes that progress to a coma estate. These patients have cerebral edema and herniation. The ELISA and PCR were positive for 1-serotype of dengue virus in serum and CSF. The diagnoses were a fulminate encephalitis by 1-serotype of dengue virus. These patients had brain death two days later.

Conclusions: It is possible associated 1-serotype of dengue virus with neurological manifestations the serious evolutions.

Keywords: dengue virus, brain death, 1-serotype of dengue virus, neurological manifestations of dengue virus

Evaluation of disability and quality of life in people with Multiple Sclerosis treated with Interferon Beta 1 A. Evolutionary follow-up

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Abstract

Background: Multiple sclerosis (MS) is a disease caused by a demyelinating, inflammatory and neurodegenerative process in the Central Nervous System (CNS) that is accompanied by progressive loss of axons, oligodendrocytes and astroglial scarring in small regions that make up "plaques" from 1 to 2 cm. It occurs mostly at early ages of life. That is why MS is the main cause of neurological disability in young adults.

Objective: To evaluate the possible relationship between the scale of disability (EDSS) and the quality of life of people with Multiple Sclerosis before and after administering interferon beta 1 a.

Methods: 216 people with Multiple Sclerosis were selected in the Remission Outbreak form attended in the CIREN. The Kurtzke disability scale (EDSS) and the MSQL-54 quality of life scale were applied before and 6 months after interferon beta was administered. 1 a or Rebif 44 mcg. Tabulation of the results of the scale using the Scoring Forms for Multiple Sclerosis Quality of Life (MSQOL) -54.

Results: Quality of Life: There is a statistically significant increase in the score in terms of physical health (pretreatment 67.5 post treatment 90.4 ±) and mental (pre 61.1, post 90.5) (test t paired samples, p = 0.00) Disability: A statistically significant difference was found in the Kurtzke disability scale, with an improvement after treatment (paired t tests, p = 0.00).

Conclusions: The administration of Interferon beta 1 a produces an improvement in the quality of life in people with EM-BR, both in the aspects related to physical and mental health, as well as in the degree of disability

Timing, synaptic tagging and restorative neurology

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Cuba

Abstract

Physical Performance tests have proven to be an effective tool for the identification of elderly people susceptible to disability. To characterize the longitudinal variations of the performance variables, a prospective cohort analytical study was conducted for 9 years to active older adults of the Plaza Municipality. The Measurements made were: Gait Speed , Amplitude stride, Cadence, Strength of grip and Balance. The period evaluated included the years 2007-2010, and in 2015 the outcome was evaluated in: Independent, dependent and deceased. The relationship between the performance variables and the final outcome was evaluated. The relationship between the physical performance disorders and the brain alterations identified by the electroencephalogram (EEG) was characterized. Cerebral Electrical Tomography (TEC) was used to estimate the sources of brain activity.

The results show that the amplitude of the step is the variable that earliest predicts the adverse outcomes, and candidate to investigate older adults and stratify the risk. The deterioration of gait velocity is related to the abnormal increase in the slow activity of the focal theta band in the adults studied, and its generating sources focused on prefrontal and supplementary areas. Finally, a stratified research system for older adults at risk of disability is proposed.

Multi-modality protocol with a novel nutraceutical/pharmaceutical regimen improves patient outcomes in unconscious wakeful state: an open label phase i/ii study

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Abstract

Background and Purpose: Traumatic brain injury alone reportedly accounts for 150,000 Americans with severe disorders of consciousness (SDOC) per year. The Multi-Society Task Force on Persistent Vegetative State defined a trauma-induced vegetative state beyond 12 months as permanent, with an eventual mortality of 34% and a late recovery of only 14%. Because of the poor prognosis associated with this population, an innovative protocol needed to be developed that focused on a principal concept: Given that the physiologic disarray of severe disorders of consciousness is multifactorial, the treatment of SDOC should likewise involve a multifactorial process. The purpose of this Phase I/II study was to prospectively assess the safety utilizing polypharmaceutical, nutraceutical, and electrical stimulation. Secondary outcomes were focused on determining efficacy of this protocol in patients with prolonged SDOC.

Methods: A total of 20 patients were randomized in a 1:2 fashion with Standard Protocol on 6 patients and the IBRF ACP/MCP on 14 patients. This 12-week protocol included weekly clinical assessments and electro-physiologic evaluation every two weeks.

Results: No long-term morbidity or mortality was identified in either group of patients. Minor, transient complications were noted 33% of Standard Care Protocol patients and 43% of ACP/MCP patients. Interestingly, electro-physiologic assessments and clinical assessments demonstrated statistically significant results, with 85% of ACP/MCP patients emerging from unconscious wakeful state. In addition to improvements in Delta/Alpha ratios, which serve as an objective assessment of wakefulness and interaction, patients demonstrated an improvement in scores on the Glasgow Coma Scale-Revised (GCS-R)(Mann-Whitney U value of 8 with z-score p value of 0.006) and Coma Recovery Scale-Revised (CSR-R) (Mann Whitney U value of 10 with z-score p value of 0.009).

Conclusions: Taken together this data suggest that the IBRF ACP/MCP is safe with no evidence of mortality or severe, permanent morbidity. Furthermore, the data suggest a significant improvement in patients' level of consciousness and emergence from SDOC states as based on objective analyses and is validated through multiple outcomes scales assessments. The efficacy rate found in this study corroborates the aforementioned IBRF study conducted at Kessler (2005- 2010). Further studies are necessary to better understand the full efficacy of this protocol.

Brain Death Support by pEEG

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Abstract
Ž. M. 33-year-old woman suffered a life-threatening bleeding in the post-operative period after the Caesarian section on August 2, 2018. They found her in gasping and with 140 heart rate without any reflex and psychomotor reactions. The brain stem functions were revitalized and on August 8 till August 10, 2018 we performed processed EEG (power - pEEG) at the time of recurring functions of the brain stem - photoreaction, corneal reflex, masseter reflex, eye opening, renewal tendon jerk reflexes. Power spectral analysis and coloured 3D brain mapping (BM - pEEG) showed zero power spectrum gamma frequency, alpha and theta frequencies, as well as betta-low and betta-high frequencies. Only the delta attenuation frequency had a defective power over the parasagittal in occipital, parietal, and central-motor-prefrontal regions of the both hemispheres which, after administration of amantadine sulphate 200 mg i.v. and so did the " delta attenuation effect", which had no effect on the alpha, beta, theta and gamma frequencies, and on the basis of this pEEG finding, we found brain death in multi-organs failure, despite the frightening recovery of the brain stem. She died on August 28, 2018 for heart arrest and autopsy showed devastating damage to neocortical, allocortical structures, the white matter of hemispheres and basal ganglia but also of the brain stem structures. We consider BM as a suitable method for cadaverous and transplant programs in the future.

Challenges of qEEG analysis in patients with disorders of consciousness. Coma: autonomic biomarkers in the prediction of mortality.

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Abstract
Aim: Identify the main methodological challenges of EEG signal processing with alternative methods.
Methods: The nonlinear, non-Gaussian, and non-stationary properties of the brain processes generating the EEG in healthy subjects are a truly controversial topic. For patients with disorders of consciousness these condition cannot obviously be ruled out. For this reason the use of traditional methods for the EEG analysis using frequency domain methods based in the fast Fourier transform (FFT) are specially limited when applied to the study in these patients.
Results: The Hilbert-Huang method has been applied to analyze the EEG signal in the frequency domain. This method has a first step named Empirical Mode Decomposition and a second final step which imply the calculation of different spectral indices using the Hilbert Transform. Preliminary reference values have been calculated and used for the evaluation of the EEG of patients clinically diagnosed with brain death.
Conclusion: The Hilbert-Huang Method may be a useful tool for the quantitative analysis of the EEG signal in patients diagnosed with brain death.
Key Words: brain death, Hilbert-Huang method, empirical mode decomposition, electroencephalography, qEEG

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Conclusion: The Hilbert-Huang Method may be a useful tool for the quantitative analysis of the EEG signal in patients diagnosed with brain death.

Key Words: brain death, Hilbert-Huang method, empirical mode decomposition, electroencephalography, qEEG

Development of magnetic stimulation bio-reactor for nerve network regeneration

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Abstract

Recently, the electromagnetic stimulation method to enhance a nerve axonal extension has been attracting a great attention in the nerve regeneration. In this study, we design and fabricate a new 3D bio-reactor, which can implement uniform AC magnetic field (ACMF) stimulation on PC12 cells. We observe the morphology of nerve cells (PC12) by using the multi photon microscope and evaluate effectiveness of uniform ACMF stimulation on the nerve axonal extension and the neural network generation. Firstly, a uniform ACMF stimulation bio-reactor was designed by using the pole piece structure. We searched an optimum structure using the magnetic field finite element analyses to obtain a uniform magnetic flux density in the culture region. Secondly, a chamber for 3D culture of PC12 cells was fabricated. PC12 cells were disseminated into a collagen gel which poured in the chamber. We evaluated the effects of uniform ACMF stimulation to enhance the nerve axonal extension. In our bio-reactor, an increase in axonal extension length and number of dendrites was observed under ACMF stimulation after 7 days culture. Finally, it was concluded that our uniform ACMF stimulation bio-reactor is an effective tool for the nerve axonal extension and the neural network regeneration.

Sleep disorders in cerebrovascular disease

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Abstract

Summary

It is currently recognized that respiratory disorders, especially sleep apnea, are frequent in patients with stroke and that their presence reduces the neurological recovery potential of these patients. However, little is known about the fact that other sleep disorders that also occur as a result of a stroke such as daytime sleepiness, insomnia and movement disorders are also capable of producing or increasing the disability associated with stroke.

In order to show the alterations of the macrostructure of sleep in patients with stroke, the results obtained by means of polysomnographic studies in a population of 12 neurological patients with stroke are shown, comparing them with a control group.

The observed results show that obstructive sleep apnea and insomnia syndrome are the predominant condition in the group of patients in 41% of the cases and, to a lesser extent, the syndrome of periodic movements of the extremities and narcolepsy. 8.3%.

The comparison with a control group shows statistically significant differences in the macrostructure of sleep.

The polysomnographic studies show multiple alterations in the sleep architecture of patients with a history of having suffered a stroke, all of which are potentially treatable, positively influencing the recovery of these patients.

The utility of Transcranial Doppler in Brain Death

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Abstract

Introduction: Brain death occurs due to the irreversible cessation of the integrated functions of the brain. In the child older than 2 months and less than one year, at least 2 clinical neurological evaluations and instrumental tests with a 24-hour interval are required according to the particularities and using the same criteria as in adults.
Case presentation: Infant 2 months, previously healthy than in the course of dramatic acute abdomen surgical Meckel Divertulo, volvulus and perforated with fecaloid peritonitis. Surgical procedure complicated by hemodynamic instability, tissue perfusion disorder and cardiorespiratory arrest, severe hypoxic-ischemic encephalopathy and limb ischemia. In 24 hours', irreversible coma clinical condition and evaluation of brain death, corroborated in the shortest time possible to demonstrate the absence of cerebral blood flow in ultrasonography by transcranial Doppler unequivocal for the diagnosis.
Conclusions: Brain death in children under one year requires established clinical and instrumental criteria, which depend on the etiology. The utility of transcranial Doppler helps to certify the diagnosis as the only instrumental criterion in the shortest time possible.

Keywords: Brain death, transcranial Doppler.

Dysmorfology, current challenges

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Summary
The diagnostic process encloses three fundamental tools: anamnesis, physical examination and application of the technology; in Dysmorphology - study of morphogenetic alterations – it has its peculiarities. To analyze the current challenges in the identification of dysmorphological diseases, according to diagnostic tools, a systematic review was carried out. Cumed, Lilacs and PubMed / Medline databases were revised, diagnosis and genetics were the main descriptors which were used; papers in English or Spanish languages, with full text access, published between 2008 and July 2018 were selected. It was found that current challenges for dysmorphic diagnosis include the presence of: reduced penetrance, variable expressivity, genetic heterogeneity; as well as the lack of consensus on the application of terms to designate clinical signs; the application of technology has been important and decisive for the diagnosis; especially when it is done based on clinical integration. It is concluded that the dysmorphological diagnosis is a human activity whose responsible in developing it is the doctor, who must integrate all results of the application of the data obtained in anamnesis, physical examination as well as technology.

The world-wide project to standardize brain death

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Abstract
Summary: For generations, cardiorespiratory death was the sole clinical definition of death, though frequently without any standard criteria and often tainted by misdiagnoses. And as resuscitation techniques and mechanical ventilation developed, a new definition of death was needed.

The idea of brain death or death by neurologic criteria (BD/DNC) was first recognized in publication as "coma depassé" in 1959, and subsequently described as "brain death" with the first published clinical definition, commonly known as the Harvard Brain Death Criteria. Since then, there have been many other guidelines and protocols published, adopted and revised throughout the world with general acceptance of the concept of brain death among medical groups, major religions and governments.

However, there continues to be confusion and dilemmas that arise regarding BD/DNC. Inconsistencies in concept, criteria, practice and documentation exist internationally and within countries. Difficulties in conducting randomized clinical trials and large-scale studies result in a lack of robust data from which to develop evidence-based recommendations. Legal challenges on the validity of BD/DNC continue to promote controversy. While there have been previous attempts at developing standardization in BD/DNC determination, for a variety of reasons, these efforts have been found wanting.

We have begun yet another effort to bring conformity to the determination of BD/DNC. Through review and application of the best evidence available, we hope to improve the rigour of brain death determination and minimize diagnostic error based on these expert consensus recommendations. By decreasing variations and inconsistencies in practice, we expect improved patient and family care, and increased public and health care community confidence in the BD/DNC declaration process.

Some of the developments of this project will be presented.

tDCS targeting the motor cortex in patients with disorders of consciousness

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Abstract

Introduction: Patients with disorders of consciousness (DOC) are highly exposed to the risk of misdiagnosis leading to relevant clinical and ethical issues. The gold standard behavioral assessment is the Coma Recovery Scale – Revised (CRS-R) and relies on a significant number of motor behaviors. Some patients may be unable to show the expected responses due to motor impairment after the brain injury. The aim of this study is to improve the motor function by the means of transcranial direct current stimulation (tDCS) to enhance the behavioral responses as measured by the CRS-R.

Methods: In this randomized double-blind sham-controlled crossover study, patients with DOC received, in a randomized order, anodal and sham tDCS (2 x 2 mA during 20 minutes) over the motor cortex of the most affected side. The level of conscious awareness was assessed using the CRS-R before and after each stimulation.

Results: 10 DOC patients were included in this study (49±22 years; 6 MCS, 4 UWS, 5 TBI, 5 nTBI, 7±13 months since injury). At the group level, no significant treatment effect was identified for the CRS-R total score (p=0.55) and for the motor subscale (p=0.75). At the single subject-level, one patient showed visual pursuit only after active stimulation and improved his diagnosis.

Conclusions: At the group level, tDCS applied on the motor cortex of patients with DOC does not improve their behavioral responses. Other brain regions appear to be better targets to stimulate the recovery of signs of consciousness in DOC patients (e.g., the left prefrontal cortex).

Keywords: transcranial direct current stimulation (tDCS), disorders of consciousness, brain injury, motor cortex, coma recovery-scale revised

How to manage spasticity in disorders of consciousness?

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Abstract

Introduction: Spasticity is a major issue encountered by patients with chronic disorders of consciousness (DOC). This motor disorder appears indeed frequently after a lesion involving the central nervous system. While the prevalence of spasticity in DOC patients is reported from ranging from 59% to 89%, treatment options are still poorly studied. One of these options is the application of soft splints on the upper limb extremity. The aim of this ongoing trial is to investigate the tolerance and long-term effects of these splints.

Methods: In this randomized simple-blind placebo-controlled study, patients with DOC presenting spasticity wear an active or a placebo soft splint on the spastic hand(s) for three hours a day, 5 times a week during three weeks. Primary outcome measures are the tolerance of the splint and the severity of spasticity (as measured by the modified Ashworth scale and the modified Tardieu scale). Secondary outcomes include pain and hand opening.

Results: So far, 5 patients have been included and 4 are enrolled. The preliminary results show good tolerance and significant improvement in hand opening during the intervention but not at 3-weeks follow-up. A decrease in the spasticity scores is also observed in the experimental group and not in the placebo group but the difference is non-significant ($p>0.05$).

Conclusions: This ongoing trial show that soft splints might present a short-term benefit to improve the spasticity in patients with DOC but more patient need to be included. Further studies should investigate treatment options specific to these non-communicative and bedridden patients.

Keywords: disorders of consciousness, spasticity, soft splint, modified Ashworth scale, hand opening.

"I" and "Thou": The Development of Individuation in the Context of Consciousness

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Abstract

From birth, babies are exposed to information that teaches them who they are by touching, and kicking and grabbing. It is not until children approach their second birthday that they start to develop a sense of self and reflect on themselves from the perspective of somebody else. With a mark on a child's forehead they can see it in a mirror, if the child sees itself as another would, the mark will be touched when viewed in a mirror. Toddlers demonstrate self-awareness by using self-referential language such as *I*, *me*, *you* and *my* and begin to claim something as their own property, with an ability to think about themselves from the perspective of a second person – "self-concept". Regardless of how children feel about themselves, adding an "idea of me" to their cognitive architecture changes the way they process information. For example, as adults, we remember very few childhood events. One intuitive explanation for "childhood amnesia" is that until memories can be related self, they are very difficult to store and retrieve.

Once a sense of self is established, information is more easily retained if it relates to the child ("self-reference effect" on memory). From three-years-old, children are more likely to remember objects linked with themselves than those linked with others. Children between four and six-years-old when asked to sort pictures of shopping items into their own basket or a basket of another, accurately remember more of the items that they "owned". The self-reference effect occurs because items linked with the self-attract additional attention and memory support within the brain. We have long debated whether self-knowledge is unique in its functional anatomic representation. Knowledge about the self is typically remembered better than other types of semantic information.

The presentation integrates cognitive, socio-emotional, and neurological correlates on self-development by examining autobiographical memory, self-appraisals, and social exclusion developmentally. Medial prefrontal and posterior parietal cortices are consistently identified in neuroimaging studies when considering personal identity from a cognitive perspective ("who am I?"), additional regions are implicated when considering personal/social identity ("what do others think about me, where do I fit in?"). The involvement of these additional regions (e.g. tempo–parietal junction and posterior superior temporal sulcus, temporal poles, anterior insula, ventral striatum, anterior cingulate cortex, middle cingulate cortex, and ventrolateral prefrontal cortex) suggests mentalizing, emotion regulation is central to self-development. These regions function atypically in autism and depression, showing patterns of hypoactivation and hyperactivation.

The claim has been made that humans' representation of the self is "special," emerging from systems that are physically and functionally distinct from those used for more general-purpose cognitive processing. We conclude that claims for the special status of self-related processing are premature. The literature does not support the existence of a unitary, common system, despite individuals' subjective experience of a unified self, but relates more to effective functional connectivities between numerous brain regions.

A neurological perspective of the concept of "I" in the context of consciousness informs a comprehensive understanding of its clinical impairment.

Keywords: Cognition, Self, Self-reference effect, Functional connectivity, Brain, Development, Consciousness

Bioethics on Medical, Ethical, and Religio-Cultural Considerations in End-of-Life

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Abstract
In America, there is a history that makes "dying while black" a particularly contentious issue, one fraught with fear of mistreatment and maligned intention.
Historically, there has been "bad blood" between some African Americans and the U.S. health care system. In many cases, that tension can be directly linked to documented cases of exploitation and deceit.
The role of race – both in how the medical personnel deals with the family and how the family interpreted their interactions with the medical establishment has impacted decisions by families and physicians.
African Americans and other minorities underuse palliative and hospice care, even when they have access to this care. Statistics from the National Hospice and Palliative Care Organization indicate that African Americans represent 8% of patients who participate in hospice care, as compared with 83% whites.
Studies have shown that non-white patients are less likely than white patients to agree to DNR orders, less likely to withhold or withdraw care, and less likely to have advance care directives. Additionally, African-American physicians and patients are more likely than Caucasians to request artificial feeding, mechanical ventilation, or cardiopulmonary resuscitation if the patient is in a persistent vegetative state or is terminally ill.
This presentation will look at the data and research on Bioethical concerns around cultural, religious, and economic influences on the acceptance of brain death in end-of-life care for African Americans in the United States.

Outcome of patients with amyotrophic lateral sclerosis attending in a multidisciplinary care unit. Cuban experience

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Abstract
Background: Amyotrophic lateral sclerosis (ALS) is a progressive neurodegenerative disease involving both upper motor neurons (UMN) and lower motor neurons (LMN)
The mean age of onset is 56 years in individuals with no known family history and 46 years in individuals with more than one affected family member (FALS). Average disease duration is about three years, but it can vary significantly. Death usually results from compromise of the respiratory muscles.
The diagnosis of ALS is based on clinical features, electrodiagnostic testing, and exclusion of other health conditions with related symptoms. Molecular genetic testing plays a prominent role in diagnosis of the genetic subtype and genetic counseling.
Treatment is palliative. Individuals with ALS may benefit from care by a multidisciplinary team that includes a neurologist, nurse, speech therapist, physical therapist, nutritionist, psychologist, social worker, and genetics professional.
The aim of this panel is to show the experience of multidisciplinary team 2005-2018, in the institute of Neurology and Neurosurgery (INN) in Havana.
Methodology: The multidisciplinary group in INN was organized in 2005, involving several specialties. We show here the data collected in the last 13 years.
Results: ALs was confirmed in 235 patients. Proportion mail:female was 1.1:1, white color of skin was self-reported in 66%. Mean age of onset was 54 and mean age of death 59. Age of onset was significantly younger in male. There were several mimics ALS among all patients in the clinic. Molecular results showed absent of SOD1 mutation, most results in this study is too different to studies in north of Europe.
Multidisciplinary attention these years has been a model of follow up, not only for management and therapy, patients and caregivers have received palliative care, and support.

The Coming Revolution in Myasthenia Gravis Therapeutics

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Abstract

Myasthenia gravis (MG) is an antibody-mediated disorder dependent on autoreactive B cells which require T cell support. Although great advances have been made in understanding of disease pathogenesis and in therapy, more than a third of patients' experience MG exacerbations, which require hospitalization, and disease- and treatment-related morbidity remains high. Non-immunosuppressive treatments often do not completely relieve symptoms, and immune system targeted treatments have poor side effect profiles with variable benefit. Although mortality of MG patients has improved over the decades, MG remains a disease with high morbidity and at times, mortality. To further complicate tailoring of treatment to the individual is the growing appreciation of clinical subtypes based on age, gender, thymic pathology, autoantibody profile, clinical presentation and other poorly defined factors, such as genetics.

Because of the great unmet need, definition of the autoimmune pathology, and financial advantages for therapeutic development for rare disease, there has been an expansion of therapeutic development in that last decade. Academic investigators, small biotech companies, and large pharmaceutical companies have development programs to treat MG. The targets range from enhancement of muscle contraction to cytokine modulation to B cell elimination and inhibition of the final effector mechanisms. The presentation will provide a broad overview of therapeutic development for MG.

Searching Neurophysiologic Markers for Amyotrophic Lateral Sclerosis (ALS) Diagnosis.

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Abstract

Amyotrophic Lateral Sclerosis (ALS) is an uncommon illness, it is caused by moto neuron degeneration, upper, lower and bulbar muscles are affected. Some research also report degeneration in no motor structures of the brain. We proposed to evaluate Electrophysiological and Image techniques like markers in ALS diagnosis and correlate these results. During January 2015 to January 2017, twenty patients with ALS diagnosis and twenty health subjects were evaluated. Sensory and by motor nerve conduction studies, Electromyography, Somato-Sensory Evoked Potentials were done to the patients. 3T MRI image were obtained from the patients and from the health subjects. Post processing MRI techniques like voxel based morphometric, diffusion techniques and corticospinal tract and corpus callosum tractography were applied at different levels of the brain structures. Nerve conduction study was positive in 90% of the patients, SSEP were positive in 60% and EMG abnormalities were observed in 100% of patients. Anatomic MRI was positive in 50% of the patients. Fractional Anisotropy was reduced in ALS group in comparison with health group, more significant at cortex, internal capsule and corpus callosum.
Fibers number of cortico-spinal tract and corpus callosum were diminished in ALS group in relation to health group. Also grey and white matter were reduce in ALS group, in areas such as: cingulate gyrus, anterior portion of occipital lobe, left caudate and putamen nucleus, right claustrum nucleus, lower and medium temporal gyrus bilateral, left precentral and post-central gyrus, corpus callosum, corticospinal tract, bilateral internal capsule, bilateral optical radiation, bilateral lower longitudinal fascicle, bilateral hippocampal fimbriae, bilateral radiated corona and pontocerebellar fibers. Electrophysiological studies confirmed ALS diagnosis in 100% of cases. MRI methods show abnormalities in motor and not motor structures of brain in ALS patients. They could be markers in early ALS diagnostic.

Communication of bad news: an important skill in neurological practice

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Abstract

Introduction: When a patient with a neurological disease and his family receive a bad new in relation with his diagnosis and/or prognosis, they face a major crisis that causes intense emotional reactions. The basic skill to facilitate an appropriate response to the multiple needs of patients in this situation is communication.
Aim: In Cuba there are few references to studies that describe this skill in our physicians, for this reason we set the objective of this work to identify the communication skills of residents and specialists of neurology and neurosurgery that assist of these patients.
Methods: This study involved residents and specialists of neurology and neurosurgery from Institute of Neurology and Neurosurgery who were underwent a validated questionnaire. For the processing of numerical data statistical techniques were used such as frequency analysis and relative percent. SPSS 11.5 on Windows was employed as statistical system.
Results: This research reaffirms that the model of doctor-patient relationship that is manifest in our residents is an active-passive with a paternalistic approach. We identified deficiencies in the communication process such as a preference not to communicate bad news or diagnosis to the patient, much less report the truth; ignorance or nonverbal assessment component of the communication; lack of empathy and mutual trust in the communication process; lack of exploration of what the patient knows and wants to know and is concerned, among others. Conclusions: This study revealed that many of the physicians surveyed did not have sufficiently developed communication skills.
Keywords: Bad news, communication skills, neurological diseases, physician-patient relationship.

Interhemispheric coherence In Alzheimer´S disease

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Abstract
Introduction: Brain coherence is one of the cross-measures that includes the quantitative EEG, representing a non-invasive method that allows us to study brain connectivity between specific brain regions.
Objective: To characterize the interhemispheric coherence in patients with Alzheimer's disease.
Methods: The present descriptive and transversal study was carried out. The universe coincided with the sample consisted of 40 patients attended in the neurodegenerative diseases specialized consultation in the Carlos Manuel de Céspedes General Hospital in Bayamo.
Results: It was demonstrated that in the fronto-parietal regions there were statistically significant differences ($p < 0.05$) in the value of coherence with respect to other cortical regions.

Lessons learned from the Charlie Gard case

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Abstract
The California case of Jahi McMath sets out a problem that continues to challenge doctors, hospitals, courts, and society. Who determines medical treatment? The physician?Patients?Families? Courts?Society? In the Jahi McMath case, a California superior court ruled that the 13 year old patient met the statutory criteria for brain death. She was legally "dead." Her mother rejected that finding. She declared, "She is not dead. She [just] needs time to get better."
The mother went even further when she stated, "In this country, a parent has the right to make decisions concerning the existence of their child."
Precinding from the public health implications of having millions of individuals determine who is or is not dead, the mother's position solidifies the idea that parents, or proxies, have the right to determine what medical treatment is to be provided to a patient.

The issue dominated the headlines in the British case of Charlie Gard in which the parents of a newborn suffering from a rare mitochondrial disorder for which there is no known treatment, against the advice of the treating physicians, demanded access to an experimental treatment being offered by a New York physician.

The public response to a British High Court ruling that denied the parents the right to take their unconscious infant to New York for the treatment was "outrage."
This paper will explore the implications of that case from the British and American legal and medical perspectives.

Uric acid as a forecast factor of neurological disability and/or mortality in the cerebrovascular ischemic aterotrombotic disease

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Abstract
Objectives: Determinar la relación entre el nivel de ácido úrico al ingreso, la discapacidad neurológica y/o la mortalidad en pacientes con diagnóstico de accidente cerebrovascular isquémico aterotrombótico.
Methods: Se realizó un estudio observacional analítico prospectivo de casos y controles en pacientes con diagnóstico de accidente cerebrovascular isquémico aterotrombótico que fueron hospitalizados por urgencia en el hospital "Mártires del 9 de abril" durante el período de enero del 2016 a marzo del 2018. Se formaron 2 grupos: grupo caso con pacientes fallecidos (n=40) y grupo control con pacientes no fallecidos (n=60).

Results: El análisis multivariado de regresión logística binaria identificó como factor pronóstico de mortalidad a la variable: ácido úrico al ingreso elevado (p: 0.015; OR: 1.01; IC: 1.01-1.02) y la escala de NIHSS con sus estados de déficit importante (p: 0.049; OR: 6.0; IC: 1.76 -2.36) y déficit grave (p: 0.031; OR: 2.0; IC: 1.39-2.86). (p<0.05).

Conclusions: La relación entre el nivel de ácido úrico se basa en la predicción de discapacidad neurológica y/o de mortalidad en la fase aguda de un accidente cerebrovascular isquémico aterotrombótico, asociado a la escala de NIHSS. La dependencia de los pacientes cambia cuando se presentan los niveles de ácido úrico elevado al ingreso, con respecto al índice de Barthel. Los AVAD establecen un perfil bajo de sobrevida, de acuerdo al estado del paciente en la fase aguda.

Keywords: cerebrovascular ischemic aterotrombotic disease, uric acid, Barthel score

Neuroprotective effect of NeuroEPO in Preclinical of Neurodegenerative Disease

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Summary
Neuroprotective effects of EPO in preclinical studies have been widely reported for a variety of neurodegenerative disease, including stroke, Alzheimer´s disease, Parkinson´s disease and amyotrophic lateral sclerosis. Although each has a different origin, they all share excitotoxicity as one of the main mechanisms that leads to the death of neurons (Dong et al., 2009). Neuro-EPO is a recombinant human glycoprotein produced in Chinese hamster ovary (CHO) cells supplied by the Centre of Molecular Immunology (CIM, from its Spanish initials) (Havana, Cuba). It is characterized by its low sialic acid content, which means that Neuro-EPO lacks of erythropoietic activity while exhibits neuroprotective properties (Garcia & Sosa, 2009). Due to its low sialic acid content, NeuroEPO is rapidly degraded in the liver. To avoid this last, NeuroEPO could be applied by intranasal route (García& Sosa, 2009). The molecule reaches the brain rapidly, does not stimulate erythropoiesis after acute treatments, and shows efficacy in no transgenic and transgenic rodent models of AD (Maurice et al., 2013, Rodriguez et al., 2017). Neuro-EPO has been shown to exert neuroprotective effects such as improving viability and cognitive functions in animal models of stroke (Rodriguez et al., 2010) and Alzheimer Diseases (Maurice T et al 2013 and Y Rodríguez Y et al, 2017). Finally, the results obtained and the impacts they will have on the treatment of Neurodegenerative diseases in the XXI Century are discussed.

A methodology based on connectivity and biophysic models to evaluate structure-function relationship applied to epilepsy

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Abstract

Introduction: The current methodologies to study brain function or underlying anatomic structure, separately, do not explain directly how alterations in the anatomical network determine the exchange of information between different brain regions and how these changes relate to development of certain pathologies. The epilepsy is an example of neurological disorder related with both anatomical and functional network damage.

Objective: To propose a methodology to integrate neuroimaging and biophysic models to predict neuronal dynamics and to infer brain functioning.

Methods: The methodology is applied to six subjects, three patients with temporal epilepsy and three patients with extra-temporal epilepsy. Individuals models for each subjects are built using anatomical connectivity matrix derived from diffusion magnetic resonance imaging. Network properties are used to characterize the clinical hypothesis of epileptogenic zone (EZ).

Results: The simulation using individual structural connectivity matrix enabled to describe network dynamics, spatial topology of the network and neurophysiological mechanisms that determine network behavior. Also, the change in functional pattern was studied when regional stimulation or when EZ surgical resection were simulated.

Conclusions: Brain simulation is a complementary technique that enables inference on model parameters that reflect mechanisms that underlie emergent behavior. A future application of the proposed methodology could be to identify the optimal surgical strategy based on simulation of effects of different targeted surgical resections.

Key words: connectivity, computational modeling, structure-function relationship, epilepsy.

Consciousness Film Festival -Short Video Works

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Kenneth Van Gross, MD and Fusion Clinical Multimedia have been developing a series of films which are thematic in areas of Human Consciousness.

This presentation will include excerpts of these works under production. They include:

- Neurology and Consciousness themes in three short videos to accompany the full-length film Movement Disorder-**the blood dance**-by Kenneth Van Gross, MD (with educational acknowledgment to the music of Los Van Van and Ludwig van Beethoven)
- **Consciousness, the US and Cuba** -a music video uniting themes related to Consciousness, Nations and the Human Condition by Kenneth Van Gross, MD (with educational acknowledgment to the music of Los Van Van)
- "I Am Your Mind-**The Next Frontier**"-a short film-Abstract Images and Fractals on the Brain-Mind Interface and Visuals on the Cerebral Cortex of the great Albert Einstein-by Kenneth Van Gross, MD (with educational and acknowledgment to the music of Roy Agers)

Determination of Death by Neurologic Criteria for Adults – USA (State of New Jersey)

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Brain death determination is institution-specific, and varies among different states. Historically, clinical assessments of confirming absence brain stem reflexes were done multiple times separated by 6-12 hours between each exam, requiring multiple physicians. The latest AAN guidelines recommend only one clinical assessment and the state of New Jersey board of medical examiners endorse one clincal exam at this time. The three essential items of determining brain death is a. irreversible coma with identifiable case b. absence of all brain stem reflexes and c. apnea. The apnea is defined by absence of respiration and a terminal PCO2 greater than 60 mmHg or a terminal PCO2 at least 20 mmHg over the initial normal baseline PCO2.

The current adult brain death policy only applies to patients age $\geq$18 and the pediatric brain death policy still requires 2 exams separated by 6-12 hours.

Our policy is based on "Declaration of Death upon the Basis of Neurological Criteria" adopted by NJ Board of Medical Examiners August 3, 1992, amended October 1999, May, 2007 and most recently 2014.

NJS § 26:6A-4 no longer specifies the performance of particular clinical tests or protocols to determine death by neurological criteria. Rather the law requires that the physician making the determination exercise best medical judgement, "in accordance with currently accepted medical standards that are based upon nationally recognized sources of practice guidelines, including, but not limited to, those adopted by the American Academy of Neurology." These guidelines are intended to follow this standard. As such these guidelines make two significant modifications to prior, now legislatively-rescinded regulatory requirements, resolve a number of potential ambiguities in those requirements, and update certain clinical parameters. As to the first significant modification, prior regulations required a clinical assessment followed by either a second clinical assessment or a confirmatory test. The current AAN guideline, however, supports performing one comprehensive clinical assessment including an apnea test. Evidence has since revealed that there are several disadvantages with no concomitant benefits in requiring a second brain stem assessment. Extensive review of medical journals and studies conducted to date supports the use, after an appropriate waiting period, of a single proper assessment of brain and brainstem function including an apnea test, the results of which are diagnostic of death determined by neurological criteria.

In addition, conducting a second brain stem assessment within a reasonable timeframe is sometimes not possible, particularly in facilities that have only one physician privileged to perform brain death determinations. Current national guidelines now deem the second assessment unnecessary. Delays have been shown to be traumatic to families watching their loved ones in intensive care units and waiting for confirmation of their death. Moreover, while waiting for a second assessment, patients are susceptible to cardiac arrest and vulnerable to rapid deterioration of other organ systems, which could lead to a needlessly prolonged confirmation of death. Accordingly, the updated guidelines contained in this document allow for a single, rigorous clinical examination, including an apnea test, confirming that brain function has ceased.
The three essential findings in death declared by neurological criteria are irreversible coma, absence of brain stem reflexes, and apnea.

The role of Health expenditure and the Development process

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Abstract
The financing of health systems plays a central role in the coverage levels of health services. It also affects the quality and results achieved not only in this area, but also in social and economic terms. Health systems can be classified according to the source of the founding. It may go from schemes where the private funding has the key role, passing by mix ones, or can it can be part of a centralized economy. Latin American region remains as the most unequal one worldwide. A manifestation of this is precisely the huge differences between governments in terms of health expenditure as part of the GDP, as well as the way citizens access to health services.
The purpose of this article is to reflect on how the financing of health systems plays a key role in the provision of higher quality services, in achieving greater coverage and better results. The Cuban experience shows remarkable results in this area, which are a reference worldwide. In the case of Cuba, this has been translated into state funding increasingly in time allocated to the national health system, as a way to guarantee high coverage, universal access, sustainability of different programs; as well as, the quality and results achieved in that area.

Sudden death due to epilepsy? Evaluation of 10 patients seen in the telemetry service of the International Neurological Restoration Center

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Abstract
Objective: To show the clinical characteristics of 10 epileptic patients, who were attended in telemetry between 2000-2018 who

died. Describe which of them may have suffered sudden death due to epilepsy (SUDEP).
Methods: An analysis of the clinical characteristics of these patients was carried out –in the clinical history during their entrance into telemetry (n = 10), afterwards we conducted interviews with the relatives to obtain specific data on death and compare these evidences with SUDEP risk factors described in the updated literature.
Results: The incidence of SUDEP as well as the number of cases varies from study to study. In the sample of 10 patients with drug resistant epilepsy we considered 2 with possible cause of death by SUDEP, one confirmed by autopsy and another reported in this as a concomitant cause of death.
Conclusions: In congruence with what is described in the literature, SUDEP is rare in epilepsy. The risk factors described also coincide with those found in this study sample, the most significant being the history of generalized clonic tonic seizures, the poly therapy of antiepileptic drugs is difficult-to-control epilepsy; in one case, death after a crisis and in the other during sleep.

Continuous Electroencephalogram (CEEG) Monitoring in Intensive Care Unit. A Cuban experience.

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Abstract
Objective: To evaluate the usefulness of the CEEG in critical patient. To determine the relation between the CEEG and the Glasgow coma scale in this kind of patients.
Methods: CEEG with 19 cerebral channel, EKG, EMG and monitoring of ocular movements was recorded in 36 patients hospitalized in ICU of Neurology. The conventional and quantitative EEG analysis was done. Chi Square and Pearson test with $p \leq 0.005$ were used in the statistical analysis.
Results: CEEG show epileptiform activity with non-convulsive crisis in 32% of cases. No convulsive Status was evidenced in 10 patients. Quantitative analysis shows a diminished of integrated amplitude. Negative correlation between relative alpha variability in quantitative analysis and Glasgow scale less than 9 as poor prognosis sign was sign in moderate or severe cerebral damage.
Conclusions: CEEG is a useful tool detecting non-convulsive epileptic seizure in ICU patient. The fast identification of abnormal cortical activities allows a better actuation and improvement of prognosis. Glasgow and CEEG showed a closed predictive relation in ICU patient.
Key words: Continuous EEG, Intensive Care Unit prognosis, EEG monitoring, critical care patient

Amyotrophic Lateral Sclerosis (ALS): an uncommon illness

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Abstract
Amyotrophic Lateral Sclerosis (ALS) is an uncommon illness, it is caused by moto neuron degeneration, upper, lower and bulbar muscles are affected. Some research also report degeneration in no motor structures of the brain. We proposed to evaluate Electrophysiological and Image techniques like markers in ALS diagnosis and correlate these results. During January 2015 to January 2017, twenty patients with ALS diagnosis and twenty health subjects were evaluated. Sensory and by motor nerve conduction studies, Electromyography, Somato-Sensory Evoked Potentials were done to the patients. 3T MRI image were obtained from the patients and from the health subjects. Post processing MRI techniques like voxel based morphometric, diffusion techniques and corticospinal tract and corpus callosum tractography were applied at different levels of the brain structures. Nerve conduction study was positive in 90% of the patients, SSEP were positive in 60% and EMG abnormalities were observed in 100% of patients. Anatomic MRI was positive in 50% of the patients. Fractional Anisotropy was reduced in ALS group in comparison with health group, more significant at cortex, internal capsule and corpus callosum.
Fibers number of cortico-spinal tract and corpus callosum were diminished in ALS group in relation to health group. Also grey and white matter were reduce in ALS group, in areas such as: cingulate gyrus, anterior portion of occipital lobe, left caudate and putamen nucleus, right claustrum nucleus, lower and medium temporal gyrus bilateral, left precentral and post-central gyrus, corpus callosum, corticospinal tract, bilateral internal capsule, bilateral optical radiation, bilateral lower longitudinal fascicle, bilateral hippocampal fimbriae, bilateral radiated corona and pontocerebellar fibers. Electrophysiological studies confirmed ALS diagnosis in 100% of cases. MRI methods show abnormalities in motor and not motor structures of brain in ALS patients. They could be markers in early ALS diagnostic.

The philosophy of Glucose-Insulin in the brain and nervous system

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Summary
The brain and nervous system are the most consuming energy tissues in function to complain with their natural role in the body physiology. In human ATP is the main source of chemical energy used for physiological work and its synthesis is determined by the fuel and Oxygen availability as well as the metabolic machinery thermodynamically organized in order to relief free energy to couple the phosphorylation. Glucose in the evolution has been selected as the main fuel for brain and nervous system. Insulin on the other hand also has been selected as the fundamental regulator of the cell metabolism both gnomically and allosteric ally. In the last decades the role of pancreatic Insulin in the brain and nervous system has been clarify and it is accepted as one of the main regulators of brain biology. Insulin dysfunction is currently associated to several brain diseases including degenerative and mental, like Schizophrenia and Mood disorder. On the other hand, the Glucose supply is another very important element in the brain biology, it has been established that glucose uptake by the brain is affected throughout the functioning of the GUTs, mainly 1 and 3 from the blood The brain represent only 2% of the body mass but consume approximately 20% of the Glucose disposal. According with the current knowledge attention should be paid to a proper insulin function as well as glucose supply including the regulation of the gluconeogenetic mechanism in order to a well function of the brain and nervous system.

Quantitative Electroencephalogram. Characterization of absolute power in Alzheimer´S Disease.

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Abstract
Introduction: The absolute power is the total energy accumulated under the curve of the average of the four basic frequencies in the electroencephalogram quantitative analysis.
Objective: To characterize the absolute power in patients with Alzheimer's disease.
Methods: The present descriptive and transversal study was carried out. The universe coincided with the sample and consisted of 40 patients attended in the neurodegenerative diseases specialized consultation in the Carlos Manuel de Céspedes General Hospital in Bayamo.
Results: It was demonstrated that in the frontal region there is a statistically significant increase of the absolute powers with respect to other cortical regions.

Ancillary tests In Brain Death confirmation

(Comment to: Robbins N. ¿M, Bernat J.L.) When do you order ancillary tests to determine brain death? Neurology: Clinical Practice 2018; 8:1-9.

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We reported a case (Case 3 in our paper),1 contributing to the discussion of using ancillary tests in brain death (BD).2 This case showed BD clinical features, leading to a death certification. We studied the case 9 months later.1
We found preservation of intracranial structures, with a huge lesion at the brainstem.1 Conceptually, BD is characterized by a complete absence of cerebral blood flow.3 Conservancy of brain structures rejects BD diagnosis.1,3
EEG was found in this case. EEG may persist in posterior fossa catastrophes. 2
Using heart rate variability (HRV) methodology, we found preservation of all HRV bands, contrary to reports in BD.4 This case also showed autonomic reactivity to "Mother Talks" stimulation. This is a demonstration of autonomic central nervous system activity preservation.1
Our patient showed BD clinical features, but the use of ancillary tests denied this diagnosis. We claimed that this is a new state, non-previously classified, of a disorder of consciousness.1
Is there actually a diagnosis of any disease in which a confirmatory test (blood test, imaging, etc.) is not used, considering that pitfalls in clinical examination can occur? BD determination is the most challenging diagnosis for a physician Why not to use a confirmatory test?1,5

Keywords: Brain death, ancillary tests, autonomic nervous system, heart rate variability

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Vegetative state (unresponsive wakefulness syndrome), minimally conscious state, brain death, or a new state of disorder of consciousness?

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Summary

Jahi McMath has been surely the most controversial suspected brain-dead case. We have been the only group who carefully studied Jahi's brain Preservation of intracranial structures, both in the brainstem and cerebral hemispheres were documented nine months after a cardiac arrest. Conceptually, a brain-dead patient has a complete absence of intracranial cerebral blood flow. Hence, this contradicts a BD diagnosis in Jahi. True EEG was found in this case over 2 μV of amplitude. Moreover, the power spectra analysis showed predominant activity within the delta-theta range. EEG may persist in posterior fossa catastrophes, not producing raised intracranial pressure. Jahi presented a huge lesion at the pons, extending to the medulla. All heart rate variability (HRV) bands were preserved in this patient. BD has been characterized by the loss of all HRV components. This is a demonstration of autonomic activity conservancy in the medulla, within vagal, and other autonomic central nuclei. Another significant finding was the autonomic reactivity, assessed by HRV, to "Mother Talks" stimulation, demonstrating remaining function at different levels of the central autonomic system. These results might explain the video findings reported by Dr. Shewmon, who observed Jahi's movements that he interpreted as responses to commands. Jahi displayed several clinical features of a BD state, but she was not braindead. She was not in coma, because her clinical examination showed a complete absence of brain-stem reflexes, and no spontaneous driving to breath. She was not either in a vegetative state (VS), recently named as unresponsive wakefulness syndrome (UWS) or in a minimally conscious state, because she did not the presence of sleep-wake cycles, and variably preserved cranial-nerve reflexes. Jahi was in a state of disorder of consciousness, not previously described. Considering the continuum of the consciousness spectrum, this state is placed between BD and Coma/VS/UWS. The authors accept that BD is synonym of death, and that in the great majority of cases, clinical examination is enough for BD determination, as affirmed by the American Academy of Neurology, and the Task Force for the Determination of Brain Death in Children. Jahi is a very rare case, resting in an uncommon state of consciousness. This might explain the controversies on her diagnosis. Actually, confirmatory tests are routinely used for the diagnosis of any disease. Ancillary tests will contribute to diminish pitfalls in the diagnosis of brain-dead cases. BD is the most challenging diagnosis for a medical doctor. Why not to use a confirmatory test?

Polysomnographic recordings in patients with Total Anterior Cerebral Infarct

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Abstract

Objective: to estimate the possible relationship between Apnea-Hypopnea Sleep (AHS) during acute phase of ictus and clinical, vital and functional prognosis of patients with total anterior cerebral infarct (TACI).

Methods: A descriptive observational study in 35 adult patients was made in the stroke unit of the Arnaldo Milián Castro Hospital between March of 2017 and March 2018. Polysomnographic recordings was obtained within 72 Hours of symptom-onset. Overall prognosis and its categories was evaluated using National Institutes of Health Stroke Scale (NIHSS), Barthel Index and modified Rankin Scale (mRS). From the inferential statistics was applied the Independence Test based on the Chi-square distribution and

the Student's t test. Logistic regression was used to determine if Apnea-Hypopnea Index (AHI) was a significant independent predictor of overall prognosis.
Results: Tenth out of 12 (83,33 %) patients with severe AHS and any one of patients with a normal AHI expired (X^2=13,24; p=0,003). Significant and positive correlation was found between AHI and NISHH (r=0,405; p=0,016), and Ranquin score (r=0,546; p=0,016), but negative correlation was found between AHI and Barthel Index score (r=-0,526; p=0,021). Patients with severe AHS had a higher probability of death (X2=13,24; p=0,003), having a worse clinical prognosis (X2=10,18; p=0,015) and a bad functional prognosis at 3 months of follow-up (X2=5,63; p=0,015). Each one unit increase in AHI was estimated to increase unfavourable prognosis risk in 1.13 (OR=1.13).
Conclusions: AHS may be considered an independent prognostic factor related to fatal outcome after a TACI.
Keywords. Total anterior cerebral infarct, polysomnography, Apnea-Hypopnea Sleep, Prognosis.

40 Hz auditory steady-state responses in patients with disorders of consciousness: Correlation between phase-locking index and Coma Recovery Scale-Revised score.

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Abstract
Objectives: We aimed to elucidate whether 40 Hz auditory steady-state response (ASSR) could be sensitive to the state of patients with disorders of consciousness (DOC) as estimated with Coma Recovery Scale-Revised (CRS-R) diagnostic tool.
Methods: Fifteen DOC patients and 24 healthy controls took part in the study. The 40 Hz click trains were used to evoke ASSRs. Mean evoked amplitude (EA) and phase-locking index (PLI) within 38–42 Hz window were calculated for 100 ms bins, starting from −200 to 700 ms relative to stimulus onset.
Results: The PLI values from the patient group in the period of 200–500 ms after the stimulus onset positively correlated with the CRS-R total score and with the scores of the Auditory and Visual subscales.
Conclusions: The phase-locking index of 40 Hz auditory steady-state responses can be an indicator of the level of dysfunction of the central nervous system in DOC.
Significance: Our results emphasize the role of central auditory system integrity in determining the level of functioning of DOC patients and suggest the possibility to use the ASSR protocol as an objective diagnostic method in DOC patients.
Keywords: Auditory steady-state response, 40 Hz, Disorders of consciousness, CRS-R score, Auditory system, Electroencephalography

P300 during a visual sustained attention task in patients with Parkinson's disease

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Abstract
Objective: The purpose of the work was to evaluate the characteristics of the P300 component in a group of Parkinson's disease patients during the execution of a visual sustained attention task.
Methods: Fifty-six patients (41 male) with grade II-III on the Hoehn and Yahr scale, average age of 60.47 years, and average duration of the disease of 7.68 years were included in the study. The brain electrical activity was recorded during the execution of a visual sustained attention task using a classic odd-ball paradigm with 80% of frequent stimuli and 20% of infrequent stimuli. The patients responded by pressing the space bar to the infrequent stimuli with the least affected hand.
Results: The off-line analysis of the signal evidenced the presence of the P300 component in all patients, with an average latency of 414.87 ms, amplitude of 8.13 μV, and centro-parietal distribution. We found significant differences between groups according to the Hoehn and Yahr scale for the latency of P300 (T test, $p<0.05$) being longer in the scale III group. We also found a negative

correlation of the number of correct answers with age, and a similar correlation of reaction time (RT) with education. There was a positive correlation of RT with the absence of response and with age (Pearson correlation test, $p<0.05$).
Conclusions: The age and education level are closely related to behavioral variables during the task execution, while the speed of attention processing derived from P300 depends on the degree of clinical involvement of patients.
Key words: evoked response; Parkinson´s disease; P300; visual attention.

Neuralplasticity in aging and the Alzheimer´s disease

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Abstract
Aging and Alzheimer's disease (AD) are related to cognitive impairment; aging is the primary risk factor for development AD. Cognitive deficit is associated to alterations of the brain-derived neurotrophic factor (BDNF), it plays an important role in survival of neurons and synaptic plasticity. Objective:Here we discuss the involving of these neurotrophic factor in AD. Method: The study was supported by a correlational investigation, in 64 aged subjects of the Mental Health Clinic of San Antonio de los Baños, 32% affected with AD, 42% with MCI diagnosis and 25% healthy controls. The serum levels of BDNF (Emax Elisa kit, Promega method), neuropshycologicals tests (MMSE, CDR, GDS, Trial-Making test part B-A into others) help to assess the presence of variables. Statistical analysis of data was performed using the one-way ANOVA test, the T of students' parametric test, and the Pearson correlation coefficient with a significance level ($p<0.05$). Results: Our findings demonstrated a significant correlation between the BDNF and the AD diagnosis associated with global cognitive impairment, executive dysfunction and memory performance. Conclusions:These results suggest that decreased serum levels of BDNF is a key contributor to impairment on executive dysfunction in AD and MCI across the continuum of cognitive impairment and dementia.
Keywords: Neuroplasticity, BDNF, executive function, Mild cognitive impairment, Alzheimer's disease.

Understanding the Molecular Mechanisms In Neurodegeneration. Recent Insights.

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Summary
Synaptic dysfunction in neurodegeneration is a very earliest event, previous to the appearance of symptoms and to the miss folding and aggregation of proteins. Conformational variants of proteins resulting from genetic modifications lead to abnormal assemblies observed by imaging techniques as the characteristic lesions in neurodegenerative disorders. Understanding the signaling pathways involved and the molecular mechanisms underlying pathogenesis contribute to identify novel therapeutic targets to support physiological synaptic function and to enhance cellular mechanisms as autophagy to preserve neuronal survival. The gradual comprehension of how gene's products and environmental factors relationship contribute to the onset and progression of the diseases could improve the design of therapeutic interventions. The involvement of specific genes recently identified as potential key pathophysiological elements in neurodegenerative disorders as Amyotrophic Lateral Sclerosis or Spinal Muscular Atrophy, and the role of its products in several signaling pathways will be highlighted as well as emerging evidences suggesting the implication of epigenetic dysregulation in Huntington and Parkinson diseases.

Coma: autonomic biomarkers in the prediction of mortality.

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Abstract

Objective: To assess and compare the functional state of the autonomic nervous system in healthy individuals with patients in coma using measures of heart rate variability (HRV), and to evaluate its efficiency in predicting mortality.

Methods: Time, informational, and frequency domain HRV indices were calculated from 7 minutes of free of artefacts electrocardiograms, using the Hilbert-Huang method in the spectral range 0.02-0.6 Hz in 47 patients in coma, 23 of them with a Glasgow Coma Score (GCS) between 6-8, and 24 with a GCS between 3-5. A special statistical based procedure was applied to avoid the effect of confounding factors. Stepwise multiple regression logistic analysis (SMRLA), followed by ROC curve analysis were applied to evaluate predictions.

Results: HRV reduction with a progressive trend associated with deepening of coma assessed by the GCS, was the most outstanding finding. We also found a sliding effect of the spectral frequencies in multiple physiologically relevant spectral ranges, related to the deepening of the coma, and the identification of 5 different patterns of the HRV spectra, that showed clear differences between patients with different values of the GCS. The mortality at 6 months in the group of patients was 42.55 %. A mortality score model was calculated including three spectral HRV indices: absolute power values of the very low, low frequency, and the power in normalized units of the very high frequency bands (0.4-0.6 Hz). The SMRLA model showed sensitivity of 95.65%, specificity of 95.83%, positive predictive value of 95.65%, overall efficiency of 95.74%, and the AUC of the ROC curve was 0.939.

Conclusions: Reduced HRV should be considered as a biomarker reflecting the loss of commands and control of the heart in coma patients. HRV indices can be used successfully for monitoring the integrity of structures of the lower segments of the brainstem, that control the cardiovascular regulation in these patients.

Key Words: coma, heart rate variability, Hilbert-Huang method, empirical mode decomposition, Autonomic nervous system.

The use of an instrument to subjectively assess children's sleep. Comparison between primary autism and epilepsy. Results.

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Abstract

Objective: To present the results of the use of a questionnaire of infant sleep habits in the neurophysiology laboratory. Show its usefulness by comparing between a group of children with autism and one with epilepsy.

Methods: An analysis was made of different questionnaires available to subjectively the infantile sleep. We select CHILDREN'S SLEEP HABITS QUESTIONNAIRE. First, we validate its use in Spanish. Later we compared an n of 21 healthy children with a group of children with primary autism (n = 21) and one with epilepsy (n = 10) applying this instrument. A prospective cross-sectional cohort study was conducted, we used the statistic software 8, p values were considered significant below 0.05. The differences between independent groups were calculated by applying to U Mann Whitney Test.

Results: The internal consistency of the questionnaire (Cronbach's alpha) was 0.67 for the total scale. Children with autism showed very high values of the total scale (48 ± 6.13) compared to the control group (36.4 ± 1.32) p = 0.00. The group with epilepsy behaved in the same way (51.2 ± 5.28). Both showed significant differences for all sub scales p = 0.00 except the sub scale 7.

Conclusions: The questionnaire is a highly reliable instrument (your Cronbach's alpha is very close to the recommended one). There is a high frequency of sleep disorders in both groups evaluated; this is manifested with affectation in all the sub scales with the exception of respiratory disorders of sleep.

Key words: (CSHQ) CHILDREN'S SLEEP HABITS QUESTIONNAIRE (NICH SECCYD-Wisconsin).

Determining Brain Death: The updated version of the Brain Death Protocol of The Netherlands.

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Abstract

In 1998 the Organ Donation Act (WOD) was introduced to provide legal safeguards for a careful approach to organ donation and to safeguard the rights of the donor. Among other things, the act dictates that it must be determined whether a potential donor is brain dead. This determination must occur according to the Brain Death Protocol, drafted by the Health Council of the Netherlands, based on the current state of the art regarding methods and criteria for determining brain death. Periodic adjustment of the protocol is part of this process. The last updated version was published in 2015.
The Dutch law states (WOD) that determination of death in brain death follows the Brain Death Protocol (BDP), drafted and revised by the Health Council. Since the previous revision of the BDP in 2006, however, a number of problems have been reported regarding its implementation. They pertain primarily to the performance and order of (supplemental) tests. These issues made revision necessary. The underlying principle in the BDP is the whole brain death concept, as codified in the law: death as the complete and irreversible loss of brain function, including brain stem and spinal cord function. Brain death is determined in three steps: 1) determining whether the so-called preconditions have been met; 2) clinical neurological examination; 3) supplemental testing, encompassing the following tests: electro encephalography (EEG), transcranial Doppler study (TCD), or CT angiography of the brain vessels (CTA), and the apnoea test. One of the changes currently proposed by the Committee is that patients who receive medication to suppress brain function (pharmacological neurodepression) may not be assessed for brain death, in case as the neurodepression interferes with an accurate evaluation of test results. The procedure may only be initiated once it can be assumed that the effects of the medication have worn off sufficiently. After circulatory arrest, Brain Death cannot be determined in the first 12 hours after that circulatory arrest. Furthermore, the Committee states that loss of higher brain function must be determined using one of the following investigations: EEG, TCD or CTA. For this purpose, these tests may be considered to be equivalent. However, an exemption is a situation in which circulatory arrest is imminent while pharmacological neurodepression is still present. In such a circumstance, a test of brain perfusion, with either TCD or CTA, must be performed. If the supplemental test used indicates a lack of brain function or perfusion, the subsequent apnoea test must always be performed to confirm brain death.

Are 'Brain Death' and 'Death' Equivalent? Opinions in the General Public and in Clinicians

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Abstract

This year saw the 50th anniversary of the Harvard ad hoc committee report that described a definition of death based on neurologic criteria, a concept now embraced in law in most countries. Controversy has persisted, however, in regard to its validity as a clinical construct, but also in ethical and moral terms. Recent high-profile cases in the US and Canada have refocussed public interest. Anecdotally, families refusing brain death testing appear to be increasing and in Australia families objecting to the diagnosis of brain death have been taken to State Supreme Courts this year. Surveys documenting the level of public and clinician acceptance of the concept that brain death is equivalent to whole person death have been published. None has found complete agreement with the concept, even amongst clinicians involved in organ donation and transplantation. Those 'unsure' or 'disagreeing' have ranged from 7% to as many as 30%. As it is likely that cases of objection to brain death as equivalent to death will become more common, there is

urgent need to describe the current level of support for the concept in the general public and among clinicians in a carefully designed study. Our group is commencing such a study in Australia and are seeking collaborators internationally to join the endeavour. Brain death has underpinned deceased organ donation, through satisfying the 'dead donor rule', however it is possible that public support for donation following brain death determination may not require the equivalence between brain death and death.

Astroglia and respiratory chemosensitivity

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Abstract

Carotid body (CB) chemoreceptors are by now considered the main sensors of hypoxemia. In pathologies in which hypoxemia is progressive, such as severe respiratory infections or respiratory failure, hypoxic chemosensitivity may be key for maintaining breathing. Although the transduction pathway of the hypoxic signal at the chemoreceptor cells and its later translation into the hyperventilatory response is well worked out, the true existence and nature of the detector of hypoxia remain enigmatic. Nor is there any reasonable way to enhance CB function. Recently, attention has been diverted to the brain astrocytes, macroglia cells, as the potential players in chemosensing. Astrocytes, are constantly encountered in the brainstem respiratory regions. They also are densely distributed at the level of phrenic motoneurons located in the spinal cord, where there appear optical images of the inspiratory-related depolarizing activity in astrocytes. Further, astrocytes, like carotid chemoreceptor cells, express ion channels and a spate of neurotransmitters and receptors, and are subject to calcium trafficking and calcium-related neurotransmitter release upon stimulation; the features operational in CB-mediated hypoxia sensing. We have recently provided experimental evidence, using arundic acid, a specific inhibitory moderator of astrocytic activity, that astrocytes are engaged in upholding cerebral function and ventilation in the late depressant stage of hypoxia. In separate investigations we have found that inhibitory modulation of astrocytes has a potential to effectively counteract ictic-like seizures and death due to severe hypoxia. In synopsis, astroglia seems an essential component of central chemosensitivity, which poses a novel avenue of clinically-oriented research.

Breathing in parkinsonism

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Abstract

Respiration in Parkinson's disease (PD) is a contentious issue of limited understanding. Studies show that breathing is impaired in PD, which leads to chronic hypoxia that may worsen the condition. Hypoxia also predisposes to inflammatory states, and pneumonia is the most common cause of death in PD patients. Further, chronic hypoxia may blunt the hyperventilatory ventilatory response (HVR), generated by the carotid body (CB), a peripheral chemosensory organ, which aggravates the hypoxia-mediated sequelae. DA is essential for HVR, being stimulatory at the brain and inhibitory at the CB level. Dopaminergic transmission degenerates in the parkinsonic brain, but its function in parkinsonic CB has never been studied. This report seeks to define the level of ventilation and its hypoxic responsiveness in a model of parkinsonism induced by systemic injection of reserpine and alpha-methyltyrosine, verified by locomotor activity testing. HVRs were investigated plethysmographically in conscious rats. Further, we distinguished between the role of brain and CB DA in the ventilatory dysfunction of parkinsonism, repeating the ventilatory investigation after administration of domperidone, a peripheral D2 DA receptor antagonist that does not penetrate the blood-brain barrier, and levodopa, a central D2 agonist that penetrates the barrier. The findings were that HVR was strongly reduced in parkinsonism. Domperidone, which enhanced HVR in healthy controls, failed to reverse the reduced parkinsonic HVR. In contrast, levodopa, which did not affect HVR in healthy controls, reversed the reduced parkinsonic HVR. In conclusion, the findings show that the missing brain DA-related stimulatory component, rather than CB-related chemosensitivity dysfunction, underlies the ventilatory impediment of parkinsonism.

The science of survival time after severe traumatic brain injury

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Abstract
Objectives: The topic of survival time will be examined as related to both clinical and forensic aspects of importance to clinicians working with this special population of patients following severe traumatic brain Injury (STBI). Nomenclature issues relevant to biostatistics and the neuroscientific investigation of survival after STBI will also be explored. Biostatistical methods used for determining survival time will be reviewed. Some of the relevant topics to be discussed include the utility and design of life tables, basic biostatistics relevant to life expectancy determination, methodologies for survival data analysis, caveats on interpreting survival data, and prediction of survival time The latest evidence-based data on morbidity and mortality survival risk factors after STBI will be explored. Clinical as well as forensic issues pertinent to prognosticating survival time will also be enumerated. Current literature examining life expectancy issues after STBI will also be reviewed.

Pharmacotherapy in Disorders of Consciousness: controversies, caveats and conundrums

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Abstract
Objectives: Pharmacotherapeutic interventions and persons with disorders of consciousness is a relatively new in controversial area of neuro rehabilitation. This lecture will focus on the use of pharmacotherapeutic agents in enhancement function in low level neurological states seen after severe acquired brain injury and in particular severe traumatic brain injury. Discussions regarding facilitation of neurorecovery via neuroplastic enhancement versus more straightforward impairment modulation will be explored. A proposed hierarchical approach to drug treatment will be proposed examining the existing literature and theoretical basis for treatment with various drug classes including but not necessarily limited to dopaminergic and noradrenergic agonists for facilitation of arousal, recovery and bradykinesia. Other more "novel" medications including Zolpidem, intrathecal baclofen, modafinil/armodafinil, apomorphine, lamotrigine and naltrexone. An issue regarding dosing, side effects and precautions discussed as well theoretical mechanism was to explain positive effects of such treatments.

Ethical controversies in the diagnosis of brain death: ancillary testing

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Abstract
Significant variation in practice standards exist in the use of ancillary tests to assist in the diagnosis of brain death. Here I provide a brief background on ancillary testing. I then discuss results from a recent international survey that was conducted exploring worldwide practice variation, using a case-based format. I will also discuss ethical issues pertaining to practice variations in the use of ancillary tests to assist in the diagnosis of death by neurological criteria.

Coomorbidity: Depression and Alzheimer'S Disease

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Abstract

Over 50% of patients with dementing illnesses, such as Alzheimer's disease (AD), may also have depressive symptoms, with 20% meeting criteria for a major depressive episode. The geriatric's depression, with prevalence of 0.6% to 29.7% can be a risk factor for the development of dementia. The relationship between AD and depression is a complex field of investigation, they can be together or in an independent way, or just closely. Goal: To describe a disorder: Alzheimer´s disease and identified the possible correlation with depression in patients of the Psychogeriatric Consult, Polyclinic No.2 "Felipe Ismael Rodríguez Ramos", Mental Health Department: September 2016-January 2017. Methodology: We support a correlational, descriptive, transversal investigation, on 60 AD patients (Mild 46.7%, Moderate 30% and Severe 23%) with depressive symptoms. Cognitive and behavioral tests (MMSE and Cornell scale for depression in dementia) help to assess the presence of variables. Statistics analyzes were used, such as the ANOVA factorial test and the Pearson correlation coefficient with a significance level ($p < 0.05$) to determine the possible correlation between depressive symptoms and the degree of cognitive impairment as scores achieved by the patient in the MMSE. Statistical analysis of data was performed using STATISTICA software, version 7. Results: Our findings suggested a significant correlation between humors related symptoms and cognitive impairment in mild and moderate stages. Conclusions: As the disease shows different stages, depression reflects a pattern of progression among cognitive impairment suggesting a correlation between both clinical diagnoses.

Keywords: depressive symptoms, Alzheimer's disease, cognitive function.

Aristotle and the neurological determination of death

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Abstract

This oral presentation has two parts. The first part differentiates the main positions in the debate over the neurological determination of death (NDD) according to the standard for declaring death. The traditional position (TP) recognizes one standard only: the irreversible cessation of cardiopulmonary function. The whole-brain position (WBP) recognizes an additional standard: the irreversible cessation of all functions of the entire brain, including the brain stem. The higher-brain position (HBP) adds a third standard: the irreversible loss of the capacity for consciousness. The second part turns to Aristotle and interprets TP, WBP and HBP in traditional terms: as the disintegration of the complex unity that distinguishes the living from the non-living. Aristotle describes organisms of increasing complexity when he differentiates animals from plants: somatic integration requires metabolism so metabolism is present in every organism; unlike plants, animals need to find and consume food so they are also sensate; as sensate organisms, animals are oriented by the desire to satisfy their needs and avoid harm. This increased complexity yields three kinds of disintegration—one for each position in the NDD debate. TP: death is unambiguous when the failure of metabolism ends in somatic disintegration. WBP: while there is ambiguity, the organism ceases to be an animal when the union of sensation and metabolism disintegrates. HBP: the separation of sensation and desire destroys the orientation displayed by all animals, but the disintegration is (so far) too ambiguous to accept as death. The Aristotelian account of NDD shows promise for understanding the debate.

Keywords: philosophy, ethics, Aristotle, ambiguity, "brain death" "whole-brain death" "higher-brain death"

Resistance to eye opening in patients with disorders of consciousness

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Abstract

Objectives: Resistance to eye opening (REO) is a commonly encountered phenomenon in clinical practice. We aim to investigate whether REO is a sign of consciousness or a reflex in severely brain-injured patients

Methods: We recorded REO in chronic patients with disorders of consciousness during a multimodal diagnostic assessment. REO evaluations were performed daily in each patient and clinical diagnosis of unresponsive wakefulness syndrome (UWS), minimally conscious state with (MCS+) or without (MCS-) preserved language processing was made using the Coma Recovery Scale-Revised

(CRS-R).

Results: Out of 150 consecutive patients, 79 patients fit inclusion criteria. REO was seen in 19 patients (24.1%). At the group level, there was a significant relationship between the presence of REO and the level of consciousness ($\chi 2 = 10.25$, $df = 2$, $p = 0.006$). We also observed a difference in the repeatability of REO in patients in MCS+ compared to UWS and MCS- ($\chi 2 = 6.01$, $df = 2$, $p = 0.049$). Out of 23 patients in UWS, six showed REO, in whom five showed atypical brain patterns activation.

Conclusions: Our findings suggest a voluntary basis for REO and stress the need for multiple serial assessments of REO in these patients, especially since most patients show fluctuating levels of consciousness.

Keywords: disorders of consciousness, resistance to eye opening, unresponsive wakefulness syndrome, minimally conscious state, diagnosis, behavior.

Euthanasia. Legal regulations

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Abstract

The euthanasia is developed inside a complex lattice of juridical and medical considerations, without keeping in mind the moral mark, psychosocial or ideological of this net. At the present time many are the cases that generate big controversies from the legal medical point of view.

Objective: To value the artificial regulation of the euthanasia in Cuba keeping in mind the existent doctrine on the topic; as well as to value the performance legal doctor in these cases.

Methods: Juridical doctrinal, essentially for the analysis and valuation of the existent doctrine on the euthanasia, the juridical historical method, to value the evolution and traffic of the euthanasia, the juridical analytic method, with the purpose of valuing the Cuban legislation, to analyze their contents as regards euthanasia.

Results: The juridical debate is wide and complex in relation to the euthanasia, consent doesn't exist keeping in mind the function of saving the personnel of the health lives. The euthanasia is legally an act of will necessary. Jurists and doctors seem to agree in that alone an emergency situation and of suffering without perspectives justifies the euthanasia.

Conclusions: The current Cuban legislation is very specific as for the euthanasia; but they are still important aspects without regulating expressly, it becomes necessary to protect even more the life and the health of all. The complex problems that are presented in the medical ethics cannot solve them all the Right but it is a road to put order and to punish the behaviors that affect the relationship patient doctor.

Keywords: Euthanasia/Good dead/Debate/Emergency

Can Spreading Cortical Depolarization Contribute to Minimally Conscious State in High-Grade Subarachnoid Hemorrhage or Stroke? An Analysis

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Background and Purpose: Delayed Ischemic Neurological Deficit (DIND) is one of the main causes of poor outcome in subarachnoid hemorrhage [(SAH), a disease that strikes a relatively young population and carries a 50% mortality]. Some trials have demonstrated a 33-38% incidence of DIND after SAH. Spreading depolarizations have been documented in the setting of focal cerebral ischemia in trauma patients and recently in subarachnoid hemorrhage patients. A literature review and discussion of the role of spreading depolarization and the methods of monitoring these patients in the critical care unit will be briefly discussed.

Hypokalemic coma: a case report

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Abstract:
Objective: To describe the clinical and laboratory characteristics that allowed the diagnosis of a hypokalemic coma in a male patient from Holguín province in 2018 at the Vladimir I. Lenin Hospital.
Material and Methods: A case is presented of a 54-year-old male patient with hypokalemic coma.
Results: We present a case of a 54-year-old male patient with hypokalemic coma who, just over a year ago, had episodes of loss of consciousness up to three days of evolution. He was brought to the emergency department in a state of hyporeflectic coma. All in parameters of normality except for a very discrete metabolic alkalosis and a severe hypokalemia with 1.3 milli moles of potassium. To the same extent that the potassium values recovered, a process of recovery of the state of consciousness was initiated. Once the case is known, an ionogram is performed where very low potassium values are detected. Permanent treatment with aldactone and dietary supplements is available. The patient remains asymptomatic. The diagnosis was confirmed by clinical and ionogram as well as therapeutic response to potassium replacement.
Conclusions: Among the causes described in the coma literature is hypokalemia; however a case of hypokalemic coma has never been reported. The correct hydroelectrolytic management, a correct anamnesis and physical examination in the diagnosis and treatment of it are of vital importance.
Keywords: hypokalemic coma, hyporeflectic, management, potassium replacement

Altered states of consciousness - near-death & spiritual contemplative experiences

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Abstract
Objective: Two independent bodies of research show that having a faith belief and practicing secular meditation both promote healing. Yet all major faith beliefs have a form of meditation. Since about 87% of the world's population believes in a God, the objective for us, as medical healers, is to understand our patients' faith beliefs and meditative practices and their healing qualities.
Methods: The method of this presentation will be to explore the neuroscience and neurotheology related to the conscious and unconscious brain. It will explore the attributes that are common between near-death experiences (NDE) and spiritual contemplative experiences (SCE). SCE have been reported throughout history including by the Abrahamic religious contemplatives: Catholic Mystic St. Teresa of Avila, Muslim Sufi Rumi, and Jewish Kabbalist Moses De Leon.
Results: Examples of contemporary SCE will be discussed that resulted in the proposal to scientifically compare the memories of the altered states of consciousness of NDE and SCE using functional MRI (fMRI) and Quantitative EEG (QEEG).
Conclusions: Attendees will be encouraged to draw their own conclusions. This will be facilitated by an interfaith practicum on silent meditation to allow participants the opportunity to experience the ancient meditative practice that can lead to SCE.
Key Words: altered states of consciousness, NDE, contemplation, spirituality, neurotheology, neuroscience, meditation, conscious, unconscious

Ethical issues in CardioPulmoCerebral Reanimation

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Abstract

The ethical aspects in medicine have been very linked to health, the diseases, life and death. The present-day challenge like health-care professionals is a challenge that has two faces:

On one hand, making a medicine in agreement to scientific advances on the moment, for others, to recover a moral authority in front of the society, taking care to preserve the credibility. The cardiopulmonar, as well as specifying his differences among adults and children, has total success for the sake of describing the ethical considerations and bioethics related to revival present the bibliographic revision. It has been understood that revival must fulfill the beginnings of medical ethics, although are complex elements: The start and end of the action, who must come true for them, the informed consent, the right to worthy death and the donation of organs. In little childs, relatives's presence like decision makers includes itself, and they reinforce the social aspects.

Key words: ethics; medical ethics; bioethics; cardiac stop; life support

Characterization of patients with spontaneous cerebral hemorrhage in Cienfuegos, January-October, 2017

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Abstract

Background: A stroke is a medical urgency, which constitutes a world health problem being the third cause of death, the first disability in adults and the second of demencia in the world.

Objective: to characterize, clinical and epidemiological, the patients who were admitted with spontaneous cerebral hemorrhagic at the provincial hospital of Cienfuegos from January to October, 2017.

Methods: an observational, descriptive, transversal section, on a series of cases. Population of study conformed of 62 patients with the diagnosis of spontaneous hemorrhagic stroke, between January 1st and October 31st 2017, reported in the statistic department of Dr. Gustavo Aldereguía Lima hospital. Variables analyzed were sociodemographic, clinical and risk factors amongst others. Processed the statistics from SPSS 21.0 to improve the representation of the results.

Results: Patients older than 50 years (more than 80%), masculine (58,1%) and white (74,2%) were the representatives. The intraparechymatous hemorrhage affected 30 individuals, whose hospital stay was longer and Glasgow parameters were milder. 18 patients died.

Conclusions: intraparechymatous hemorrhage constitutes an encephalic vascular accident that is more evident, more so they present combined with other types. The minority was subjected to a neurosurgical intervention. Arterial Hypertension is the principal risk factor associated with stroke patients.

Key words: cerebral vascular accident, cerebral hemorrhage, hospital attention, ictus.

Anthropology of Brain Death

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Summary

After almost fifty years from Harvard and a decade from Vatican Pontiphical Academy for Science statements dealing with brain death definition and supporting both diagnosis and following decisions.

After acceptance in most cases, denials and rejections from respected authors in a few others, it is time to consider if as in the case of death there is a cultural and social significance that could be used as a foundation of anthropology of brain death.

For centuries death has been inculturated, legislated, sacralized, humanized and intervened by human rationality and sensibility .Can it be for brain death according that it is a subject in which technology rather than culture and sociology is the mediator in order to settle the foundations for concepts and guidelines. Would it be possible to build in such short time an anthropology for brain death considering that technology can speed philosophy and bioethics?

Assessment the Arteries of The Circle Of Willis by segments ¿Where Is The Internal Carotid?

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Summary

The Circle of Willis (CoW), is an arterial anastomosis located at the base of the brain that serves as a compensatory system for collateral circulation to overcome any arterial occlusion. Recently some studies demonstrated that the anterior component of CoW serves to limit peak systolic pressure propagating into cerebral arteries and perform as a passive energy-dissipating system under physiologic conditions.

The cerebral arterial circle described by Thomas Willis include: the cerebral parts of right and left internal carotid arteries (ICA-C4), pre-communicating parts of both anterior cerebral arteries (ACA-A1), anterior communicating artery (AComA), right and left posterior communicating arteries (PComA), and the pre-communicating parts of the bilateral posterior cerebral arteries (PCA-P1).

In this review result, many articles use separate template-based patterns for the anterior or posterior segments to categorize variants. Anterior CoW morphology include the ACA-A1 and AComA, and the posterior contain the PCA-P1 and PComA. Both configurations also are classified in different subtypes according to size of these arteries, but many of these protocols are not designed for check the morphology of the internal carotid artery.

The anterior and posterior segments of CoW show many variations and are associated to cerebrovascular accidents, but, some studies demonstrated that a shorter cranial part of the ICA-C4 and haemodynamic stress, acting across this variant, also have been reported as a risk factor for the development of aneurysms. Include internal carotid morphology when segments are analyzing, is necessary to help understand better the physiopathology of strokes in patients with CoW variants.

Balancing the Brain & Therapy Methodologies

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Abstract

Techniques for balancing the left and right hemispheres of the brain via the pineal gland. Discussion on the electromagnetic energies in color verified by Russian Kirlian Photography and how to recreate this mentally using visualization. The use of sunlight and pure color filters to create healing effects on the brain and body.

About Caregiver in some neurogenetics diseases

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Abstract

In the Institute of Neurology and Neurosurgery, in Havana, there are two multidisciplinary clinics: Huntington´s Disease (HD) and Amyotrophic lateral sclerosis (ALS). Besides there is a Neurogenetics service, which has been working on genetic counselling since 1998. All patients are registered in a clinic register.

A study about the primary informal caregivers of adults, with diagnosis of ALS, HD and Steinert´s disease during the months of November 2016 to February 2017.

The aim of this study was to characterize the psychological well-being of the primary informal caregivers of these patients.

The sample was formed of 19 primary informal caregivers with an average age of 46 years, which were administered techniques such as the Initial interview of characterization of the caregiver, the semi-structured interview and the Adult Psychological Well-Being Scale.

The results shown unstructured life projects, predominance of negative emotional states and a reduction of spaces of socialization as factors that negatively affect psychological well-being. On the other hand, the mainly protective factors were the satisfactions in the family area, linked to functional dynamics.

Summarizing, the psychological well-being of the primary informal caregivers is affected, with life projects being the most deteriorated dimension.

Transplantation of Mononuclear Cells from Bone Marrow in A Rat Model of Huntington's Disease

Authors: Teresa Serrano, Paula Pierozan, Esteban Alberti, Lisette Blanco, Karelys de la Cuétara Bernal, María E González, Nancy Pavón, Lourdes Lorigados, María A Robinson Agramonte, Jorge A Bergado
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Summary
This article investigates the possible effects of transplantation of mononuclear bone marrow cells (mBMCs) to ameliorate or prevent the behavioral impairments and the cellular damage observed in a quinolinic acid (QA) model of Huntington's disease. mBMCs were isolated using a standard procedure and implanted within the QA-lesioned striatum. Behavior was explored using motor (beam test) and memory (object recognition and Morris water maze) tests. Morphology was evaluated using conventional histology (cresyl violet), bisbenzimide (to evaluate cell vitality), and immunohystochemistry to identify neurons or glia. mBMC-transplanted animals showed improvements in motor coordination (beam test). Regarding memory, object recognition was significantly improved in transplanted animals, while spatial memory (Morris water maze test) was not severely affected by QA and, therefore, the results after transplantation were significant only in the probe-trial retention test. In samples taken from the animals that participated in the behavioral tests, a preserved morphology of striatal neurons and a reduced glial reaction indicated a possible neuroprotective effect of the transplanted mBMCs. A parallel study confirmed that the transplanted mBMCs have a long survival period (1 year follow-up). The results presented confirm the possibility that mBMC transplantation may be a viable therapeutic option for Huntington's disease. Keywords: mononuclear bone marrow cells, Huntington's disease, quinolinic acid, transplant, Fluoro-Jade C, glial fibrillary acidic protein, neuronal nuclear marker.

Brain death. Bioethical approach

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Abstract
Brain death is an uncertain area of debate as well in the scientific community as in the general society, intimately related, with the cultural context in which it takes place.
In relation with the end of life there have being stablish ethical, religious, cultural and scientific debates, as well as complexes issues related to topics like organs transplant, from a body which its hearth still beat.
A study of brain death was made from the ethical, medical, religious and popular point of view, gathering a variety of criteria. Its recommended to take as reference the main principles of Bioethics: beneficence, no maleficence, autonomy and justice in the process that are lead to patients with brain death.

Contagious laugh effects on health and learning

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Summary
Health and other benefits of humor and the potential advantages of having a good Sense of Humor (SoH) have been long recognized[1-3]. By the other hand contagious laugh have been reported since 1960.[th 4] Taking in account these two facts we decided to study contagious laugh effects on learning of students and on patients wellbeing. Antecedents of this work can be found in a report of the laugh group of Victoria de Girón[5]. We follow three research steps: I. Selection of jokes, songs and testing their possible induction of contagious laugh II. Studying learning effects of contagious laugh during conferences of Physiology III. The same study in various health locations. Results show positive cardiac autonomic changes after a session of contagious laugh in both students attending lectures of Physiology and also in old subjects who assisted to a theater performance. It was demonstrated a regulatory homeostatic role of contagious laugh in 10 subjects participating during one hour in the laugh room of the medical school. Similar results were obtained with patients and caregivers in three general hospitals of Havana. The discussion of results was on the basis of the laugh control of stress and immune system [6] integrated with the activity of mirror neurons for explaining the contagious of laugh[7]. Future research in the topic seems to be a promising task. In conclusion we suggest that controlled laugh contagious can be a useful tool in learning and health activities.

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Cuba

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Summary

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