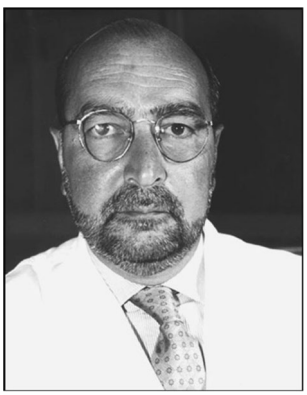
Neurological Sciences (2019) 40:1101–1103
https://doi.org/10.1007/s10072-019-03934-z

HIGHLIGHTS

Highlights of the issue 6, 2019

Published online: 14 May 2018



Prof. Antonio Federico

REVIEW ARTICLES

Italian recommendations for the diagnosis and treatment of myasthenia gravis

Amelia Evoli, Giovanni Antonini, Carlo Antozzi, Antonio DiMuzio, Francesco Habetswallner, Cesare Iani, Maurizio Inghilleri, Rocco Liguori, Renato Mantegazza, Roberto Massa, Elena Pegoraro, Roberta Ricciardi, Carmelo Rodolico

(Italy)

https://doi.org/10.1007/s10072-019-03746-1

Myasthenia gravis is a well treatable disease, in which a prompt diagnosis and an adequate management can achieve satisfactory control of symptoms in the great majority of patients. Improvedknowledgeof the disease pathogenesis has led to recognition of patient subgroups, according to associated antibodies, age at onset and thymus pathology, and to a more personalized treatment. When myasthenia gravis is suspected on clinical grounds, diagnostic confirmation relies mainly on the detection of specific antibodies. Neurophysiological studies and, to a lesser extent, clinical response to cholinesterase inhibitors support the diagnosis in seronegative patients. In these cases, the differentiation from congenital myasthenia can be challenging. Treatment planning must consider weakness extension and severity, disease subtype, thymus pathology, together with patient characteristics and comorbidities. Since most subjects with myasthenia gravis require long-term immunosuppressive therapy, surveillance of expected and potential adverse events is critical. For patients refractory to conventional immunosuppression, the use of biologic agents is highly promising. These recommendations are addressed to non-experts on neuromuscular transmission disorders. The diagnostic procedures and therapeutic approaches hereafter described are largely accessible in Italy.

A review of electrophysiological studies of lower motor neuron involvement in amyotrophic lateral sclerosis

Ali Amin Lari, Amer A. Ghavanini, Hamid Reza Bokaee

(Canada)

https://doi.org/10.1007/s10072-019-03832-4

Amyotrophic lateral sclerosis (ALS) is a neurodegenerative disease involving both the upper and lower motor neurons. In this review, the AA studied and compared different articles regarding the electrodiagnostic criteria for diagnosis of lower motor neuron pathology in ALS. They reviewed the most recent articles and metaanalysis regarding various lower motor neuron electrodiagnostic methods for ALS and their sensitivities. The conclusion was that Awaji Shima criteria is by far the most sensitive criteria for diagnosis of ALS.

ORIGINAL ARTICLES

Irisin and BDNF serum levels and behavioral disturbances in Alzheimer's disease

Elisa Conti, Denise Grana, Giovanni Stefanoni, Alberto Corsini, Margherita Botta, Paolo Magni, Angelo Aliprandi, Christian Lunetta, Ildebrando Appollonio, Carlo Ferrarese, Lucio Tremolizzo

(Italy)

https://doi.org/10.1007/s10072-019-03781-y

Behavioral dysfunctions (BPSD) represent the most important problem in Alzheimer's dementia(AD) management. The AA assessed the serum levels of two myokines in AD patients, preliminary investigating, as secondary aim, their role as potential biomarkers for agitation/aggression (AA) and aberrant motor behavior (AMB): irisin, since it is able to modify the motor pattern, and BDNF, since it was transcribed following irisin stimulation. Forty AD patients were recruited and characterized according to the expressed neuropsychiatric syndrome. Myokines were measured by ELISA. Irisin serum levels were slightly elevated in AA+ patients (+10.0%; $p < 0.05$) and correlated with the duration of AA ($r = 0.74$,$p < 0.03$). BDNF failed to show such differences. The AA propose that these selected myokines are not useful as surrogate markers for agitation in AD, but might represent interesting secondary outcomes when testing drugs for those BPSD implying elevated motor activity.

New insights into the role of neuron-specific enolase in tic disorders

Juanjuan Hao, Xin Zhang, Keyu Jiang, Min Wu

(China)

https://doi.org/10.1007/s10072-019-03811-9

Neuron-specific enolase (NSE) has been suggested for demonstrating brain metabolism in neuropsychiatric disorders. This study assessed serum NSE levels in patients with tic disorders (TD). In this retrospective case-control study, the AA investigated whether NSE levels were increased in TD patients. Then, the influencing factors and correlations between NSE levels and clinical features were analyzed. Finally, they tested its diagnostic value for identifying tic severity. NSE levels were increased in TD patients, although no statistically significant difference was present between transient TD, chronic TD, and Tourette syndrome. Factors influencing NSE levels assessed by multiple linear regression were the Yale Global Tic Severity Scale (YGTSS) global severity scores and gender. There were significant correlations between NSE levels and tic severity. The optimal cut-off value to distinguish mild tics from moderate-severe tics estimated by receiver operating characteristics curve was 24.95 ng/ml (AUC = 0.683). All findings suggested that NSE may be a significant biomarker in TD but should be confirmed in further investigation.

The role of low-frequency rTMS in the superior parietal cortex during time estimation

Fernanda Manaia, Kaline Rocha, Victor Marinho, Francisco Magalhães, Thomaz Oliveira, Valécia Carvalho, Thalys Araújo, Carla Ayres, Daya Gupta, Bruna Velasques, Pedro Ribeiro, Mauricio Cagy, Victor Hugo Bastos, Silmar Teixeira

(Brazil, USA)

https://doi.org/10.1007/s10072-019-03820-8

The low-frequency repetitive transcranial magnetic stimulation (rTMS) application has been associated with changes in cognitive processes embedded during time perception tasks. Although several studies have investigated the influence of neuromodulation on time perception, the effect of the 1-Hz rTMS application on the superior parietal cortex is not clearly understood. This study analyzes the effect of the low-frequency rTMS on time estimation when applied in the parietal medial longitudinal fissure. For the proposed study, 20 subjects were randomly selected for a crossover study with two conditions (sham and 1 Hz). All findings reveal that participant underestimate 1-stime interval and overestimate 4-sand 9-stime intervals after1-HzrTMS ($p \leq 0.05$). They conclude that the 1-Hz rTMS in the parietal medial longitudinal fissure delays short interval and speed up long time intervals. This could be due to the effect of parietal inhibition on the attentional level and working memory functions during time estimation.

Effects of aging on brain volumes in healthy individuals across adulthood

Iman Beheshti, Norihide Maikusa, Hiroshi Matsuda

(Japan)

https://doi.org/10.1007/s10072-019-03817-3

In this retrospective study, the AA analyzed the effects of age on brain volumes in healthy brains across adulthood. They investigated the correlations between brain volumes and age in the brains of 563 healthy individuals (age range: 20–86, 55% female) whose MRI scans and related information were drawn from the IXI database (brain-development.org/ixi-dataset/). They conducted a regression analysis to assess the effect of age on whole-brain volumes as well as selected regional volumetric measures. The whole-brain analysis revealed a negative linear relationship between gray matter (GM) and age as well as nonlinear patterns of the relationship between age and the white matter (WM), cerebrospinal fluid (CSF), and the GM/WM ratio across adulthood. The regional volumetric analysis showed linear and non-linear age-related

regional volumetric changes with aging. The present findings contribute to the understanding of how structures in the human brain change over the adult years and will help address the pathological age-related neural changes in age-related neural disorders such as Parkinson disease and Alzheimer disease.

Cortical and spinal excitability changes after repetitive transcranial magnetic stimulation combined to physiotherapy in stroke spastic patients

Rebeka Borba Costa dos Santos, Silvana Carla Barros Galvão, Labibe Mara Pinel Frederico, Nathália Serrano Lucena Amaral, Maíra Izzadora Souza Carneiro, Alberto Galvão de Moura Filho, Daniele Piscitelli, Kátia Monte-Silva

(Brazil, Canada)

https://doi.org/10.1007/s10072-019-03765-y

Repetitive Transcranial Magnetic Stimulation (rTMS) has been used to treat post-stroke upper limb spasticity (ULS) in addition to physiotherapy (PT). To determine whether rTMS associated with PT modulates cortical and spinal cord excitability as well as decreases ULS of post-stroke patients. Twenty chronic patients were randomly assigned to either the intervention group-1Hzr TMS on the unaffected hemisphere and PT, or control group-sham stimulation and PT, for ten sessions. Beforeand after sessions, ULS was measured using the modified Ashworth scale and cortical excitability using the output intensity of the magnetic stimulator (MSO). The spinal excitability was measured by the Hmax/Mmax ratio of the median nerve at baseline, at the end of treatment, and at the 4-week follow-up. The experimental group showed at the end of treatment an enhancement of cortical excitability, i.e., lower values of MSO, compared to control group ($p = 0.044$) and to baseline ($p = 0.028$). The experimental group showed a decreased spinal cord excitability at the 4-week follow-up compared to control group ($p = 0.021$). ULS decreased by the sixth session in the experimental group ($p < 0.05$). One-hertz rTMS associated with PT increased the unaffected hemisphere excitability, decreased spinal excitability, and reduced post-stroke ULS.

Abnormal nuclear aggregation and myotube degeneration in myotonic dystrophy type 1

Yanlin Wang, Lei Hao, Hui Li, John D. Cleary, Michael P. Tomac, Arjun Thapa, Xiuming Guo, Desmond Zeng, Hongcai Wang, MacKezie McRae, Olivia Jastrzemski, Ali Marichen Smith-Fassler, Yuming Xu, Guangbin Xia

(China, USA)

https://doi.org/10.1007/s10072-019-03783-w

Myotonic dystrophy type 1 (DM1) is caused by CTG nucleotide repeat expansions in the 3′-untranslated region (3′-UTR) of the dystrophia myotonica protein kinase (DMPK) gene. The expanded CTG repeats encode toxic CUG RNAs that cause disease, largely through RNA gain-of-function. DM1 is a fatal disease characterized by progressive muscle wasting, which has no cure. Regenerative medicine has emerged as a promising therapeutic modality for DM1, especially with the advancement of induced pluripotent stem (iPS) cell technology and therapeutic genome editing. However, there is an unmet need to identify in vitro outcome measures to demonstrate the therapeutic effects prior to in vivo clinical trials. In this study, the AA examined the muscle regeneration (myotube formation) in normal and DM1 myoblasts in vitro to establish outcome measures for therapeutic monitoring. The AA found normal proliferation of DM1 myoblasts, but abnormal nuclear aggregation during the early stage myotube formation, as well as myotube degeneration during the late stage of myotube formation. They concluded that early abnormal nuclear aggregation and late myotube degeneration offer easy and sensitive outcome measures to monitor therapeutic effects in vitro.