Title: PERTURBATIONAL COMPLEXITY IN CHRONIC PATIENTS WITH DISORDERS OF CONSCIOUSNESS
Room: Poster Area - Session: 025 - Abstract Number: FENS-714 - Poster Board Number: 1056
Poster No: 0256
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Session: 025: Poster Session - Network interactions - Other
Poster boards: 007-046
Date: Monday, July 07, 2014: 11:15 - 12:15
Location: Poster Area
Subtopic: B.6 Other
Topic: B.6 Network interactions
Theme: B. Exocitability, synaptic transmitter, network functions

The level of consciousness is usually assessed from the ability of a subject to interact with the surrounding environment and communicate. Transcranial magnetic stimulation combined with electroencephalography (TMS-EEG) has been recently proposed to derive objective measures of the level of consciousness, in physiological and pathological conditions. Here we tested the reliability of the algorithmic complexity of TMS-evoked potentials (Perturbational Complexity Index - PCI) in a large sample of chronic patients with severe brain injury.

Sixty chronic patients (25 vegetative state - VS, 25 minimally conscious state - MCS, 13 conscious state - CS) were evaluated with the coma recovery scale-revised (CRS-R). PCI was computed for all TMS/EEG sessions and compared with clinical assessment.

The CRS-R score was significantly lower in VS group as compared to MCS and CS groups. PCI correctly distinguished between VS and MCS/CS conditions at the single-patient level. In these VS patients the PCI was higher than expected in the following months these patients evolved toward the MICS condition.

PCI is a promising tool to discriminate VS and MICS/CS conditions, who are difficult to evaluate in chronic patients because of a progressive decline of residual sensory and motor abilities. Future studies should involve larger populations to provide a comprehensive validation of PCI for the evaluation of consciousness in chronic patients. Moreover, it would be interesting to compare and integrate TMS-EEG results with other brain functional assessments, e.g. event-related potentials, functional magnetic-resonance imaging.
LOCAL CORTICAL CRESTABILITY CHANGES IN PATIENTS WITH UNILATERAL STROKE: A TMS-EOG STUDY

Authors: S. Sannazz, F. Scopfer, S. Savarre, C. Lardi, A. Benso, G. Wallarhead, M. Micheli, M. Reseau, M. Rosanvola

Abstract: In patients with a stroke, motor cortex excitability to TMS (transcranial magnetic stimulation) is altered. The aim of this study was to evaluate the effect of cortical excitability changes on the reliability of the EOG (electro-oculogram) response to TMS. We recorded EOG responses to 100 TMS pulses delivered to the motor cortex of 20 stroke patients and 20 healthy controls. The EOG responses were measured with a new method that combines TMS-induced sensory evoked potentials and visual evoked potentials. We found a significant reduction in the amplitude of the EOG responses in stroke patients compared to healthy controls. This result suggests that the changes in motor cortex excitability may affect the reliability of the EOG response to TMS.
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Giovedì 15 Maggio

POSTER

1. Epileptic seizures in pediatric stroke: data from the Italian registry for childhood thrombosis

2. EEG predictors of outcome in patients with disorders of consciousness
S. Bagnato, C. Boccagni, A. Sant’angelo, C. Prendiandro, R. Mazzilli, G. Galardi (Cefalù)

3. Long lasting corona
S. Bagnato, C. Boccagni, A. Sant’angelo, A.A. Fingelekurs, C. Gaggliardo, G. Galardi (Cefalù, Espoo Finland, Palermo)

4. Reliability of the perturbational complexity index in discriminating chronic patients with disorders of consciousness

5. Involvement of different cortico-subcortical circuits in chronic tinnitus
en sLORETA-based EEG study

6. Hyperventilation increases brain connectivity in healthy subjects and in focal cryptogenic epileptic patients
E. Mesuzzucchi, C. Voltono, A. Losurdo, E. Testani, V. Gionni, C. Di Blasi, N.M. Giannantoni, L. Lapenta, V. Brunetti, G. della Marca (Roma)

7. Physiological and pathological aging: a cortical connectivity analysis by graph theory model applied to brain network
F. Miraglia, F. Vecchio, P.M. Rossiri (Roma)

8. Pre-stimulus interhemispheric coupling of brain rhythms predicts cognitive-motor performance in healthy humans
F. Miraglia, F. Vecchio, G. Lacidogna, F. Ferreri, P.M. Rossini (Roma, Kuopio Finland)