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Source analysis of residual cognitive functions in PVS patients by means of P300 paradigm with emotional content

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Cognitive potentials are more frequently obtained with more ecologic stimuli or having an emotional content. However, its functional mechanisms and neural basis remain unknown.

Objective: To determine and localize sources of residual electrical cognitive activities in patients in persistent vegetative state (PVS), applying an auditory stimulation paradigm with emotional content.

Methods: P300 component was recorded on 12 patients in Vegetative State, according to a paradigm validated in 25 healthy volunteers using 32 EEG channels. BAEPs were also recorded for hearing assessment. P300 Grand average was computed and electrical sources were estimated by means of BMA approach in healthy subjects. For PVS patients sources of P300 was estimated on their own MRI.

Results: Normal BAEPs were present in 8/10 patients. In 4 of them the P300 component was observed showing right lateralization. P300 major sources were localized in fronto-temporal and central-parietal cortical areas in healthy subjects. For patients, these sources were localized in residual functional cortical areas. ERPs were not related to the time from coma onset.

Conclusions: Regardless of VS duration, in some patients residual cognitive markers of central auditory processing of their own name appear. These results suggest recovery of consciousness, with its consequent practical and ethical implications. Moreover, these results support that Event Related Potentials is a helpful tool in identifying the ability to recover from VS and a valid measurement of clinical improvement.

Biography

She is currently working as Researcher in Cognitive Neurosciences. Clinical Neurophysiology Department. Lab. Assessment of cardiovascular autonomic function. Institute of Neurology and Neurosurgery. Havana City. Cuba.

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