

AROUSAL EFFECT IN VEGETATIVE STATE AND MINIMALLY CONSCIOUS STATE PATIENTS WITH DBS OF CM-PF NUCLEI

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AIM: The arousal system originates from the brainstem reticular formation nuclei, ascends towards the thalamus, critical hub, from where projections have wide and non-specific distribution to different parts of the cerebral cortex. Insufficient understanding of the mechanisms of arousal effect can make unconsciousness a diagnostic challenge, directly affecting the treatment and the outcome of the patient and its value for prediction of influence in patients with disorder of consciousness are still a matter of debate.

METHODS: Fourteen patients were included in this study. The selection criteria for DBS included: neurological evaluation, electrophysiological evaluation and the use of imaging techniques such as positron emission tomography (PET) and magnetic resonance imaging (MRI). Video recordings of each patient when arousal effect was elicited were recorded. For each patient various occurrence of frequency, pulse duration and active contact were used. Patients underwent deep brain stimulation of centromedian-parafascicular nucleus (CM-pf) complex.

RESULTS: In each patient we elicited arousal effect using low frequency (25-30 Hz). The arousal effect with opening eyes, dilated pupils, higher pulse and systemic blood pressure was elicited in each patient, except one with huge brain atrophy.

CONCLUSION: Our results are in agreement with other studies presented in the literature and they indicate that DBS may be helpful in restoring consciousness in vegetative state and minimally conscious state patients.

Keywords: DBS, arousal effect, vegetative state, minimally conscious state

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