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Global Synchronization Index as an indicator for Cognitive Function Changes by tDCS in TBI patient

HoYoung Lee^{1*}, Woo-Kyoung Yoo¹, Suk Hoon Ohn¹, Kwang-Ik Jung^{1†}

Hallym University College of Medicine, Department of Physical Medicine and Rehabilitation¹

Traumatic brain injury (TBI) is a main cause of long-term neurological disability, and therefore is an important medical problem for our society. Non-invasive transcranial direct current stimulation (tDCS) has been used in therapeutic purposes regarding cognitive dysfunction after TBI, by eliciting changes of brain excitability. We report the case of a 77-year-old male, who went through a traumatic brain injury and showed severe impairment of cognitive function (Figure1). After completing 20 sessions of 2mA tDCS over the left dorsolateral prefrontal cortex (DLPFC), he showed improvement in cognitive function. The latest analysis global synchronization index (GSI) assesses synchronization of neuronal signals and low-resolution brain electromagnetic tomography (LORETA) localizes brain electrical activity. We describe the effectiveness of tDCS on the cognitive function and cortical power distribution using these two electroencephalography (EEG) analyzing methods in a patient with traumatic brain injury (Figure2).



fig1

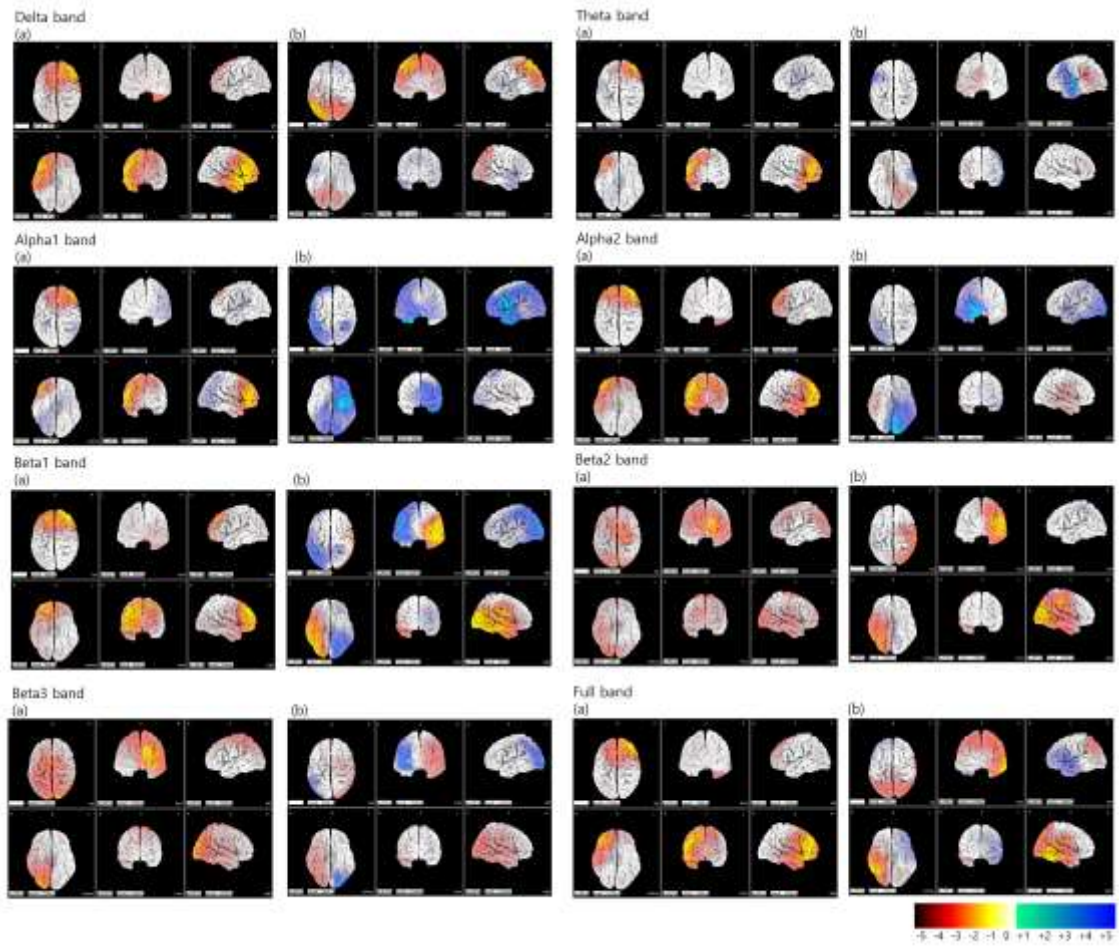


fig2