

뇌신경재활

게시일시 및 장소 : 10 월 18 일(금) 13:15-18:00 Room G(3F)

질의응답 일시 및 장소 : 10 월 18 일(금) 16:09-16:13 Room G(3F)

P 2-7

Experimental evidences for functional changes in cortical blood flow by tDCS

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Background

Several clinical studies have demonstrated that Transcranial direct current stimulation (tDCS) can change cerebral blood flow with a polarity - specific manner. However, there is a little information about possible underlying mechanisms for modulation of cerebral blood flow by tDCS.

Purpose

The purpose of this study was to evaluate changes in functional or structural changes in cortical blood vessel by tDCS.

Method and Materials

tDCS was applied bilaterally on the skull with intensity of 150 uA and duration of 20 min from Sprague – Dawley rats. Structural changes in cortical blood vessel were evaluated by imaging cortical blood vessel stained with Evans-blue dye or by direct visualization of cortical vessels stained with fluorescent dye with a confocal microscope. Functional changes was monitored by direct measurement of cortical blood flow with a Laser-Doppler and by direct recording of oxygen and nitric oxide concentration from the cortex using a voltammetric technique.

Results

Anodal tDCS resulted in increase in diameter of blood vessels in the cortex and also upregulation of oxygen and nitric oxide concentrations in the cortex. In contrast to, cathodal tDCS cause the reduction of size of cortical blood vessels and of oxygen concentration. But there is a little changes in concentration of nitric oxide in the cortex under cathodal tDCS.

Conclusions

This results suggest that tDCS may modulate functional changes in blood flow by changes in release of nitric oxide in the cortex.

Acknowledgment :This research was supported by the Bio & Medical Technology Development Program of the National Research Foundation (NRF) funded by the Ministry of Science & ICT (NRF-2017M3A9E9032772 & NRF-2018R1A6A3A01011531).