THE HONG KONG POLYTECHNIC UNIVERSITY
香港理工大學

中文及雙語學系
Department of Chinese & Bilingual Studies

CBS Research Seminar

The effect of right hemisphere stimulation on language recovery in left-brain damage patients with chronic aphasia

Presented by

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ABSTRACT

There are two opposing hypotheses, namely the interference hypothesis and the compensatory hypothesis regarding the role of right hemisphere (RH) activation in language recovery following the brain damage in the left hemisphere. The application of transcranial direct current stimulation (tDCS), has received an increasing attention as a potential complement to traditional behavioral therapy using the stimulation of right or left hemisphere language related regions. The present preliminary study aims to investigate the effect anodal tDCS of RH inferior frontal gyrus in left-hemispheric damaged patients with chronic aphasia to a) examine the compensatory versus interference role of RH in language recovery, and b) to confirm that the application of tDCS does not induce any adverse effects on other cognitive functions.

Four right-handed patients with aphasia following the left-hemisphere lesions participated in a randomized, double-blind, sham-controlled crossover experiment. The participants received five consecutive days of 20-minutes anodal tDCS (one mA) and five consecutive days of 20-minutes sham tDCS (with randomized order), together with online naming therapy. The patients' language and, cognitive performances were tested before and after each experimental condition.

In general, the patients showed more improvement in terms of their naming abilities following sham condition versus the anodal tDCS over RH, though the difference was statistically significant in one patient. No adverse effects of tDCS application were found on other cognitive functions. Therefore, the current study suggests that the excitatory stimulation of RH may exert an inhibitory effect on word learning in chronic patients with aphasia, which is more in the favor of the interference hypothesis. However, the results need to be further supported by different group studies conducted in patients with different stages of post-stroke aphasia.

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