The Effect of Parietal Transcranial Direct Current Stimulation on Attention and Memory in Stroke Patients

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To enhance our knowledge concerning the effectiveness of tDCS in the rehabilitation of stroke patients. Next to this, the results will also contribute to our knowledge concerning the role of the parietal cortex in episodic memory and attentional...

Ethical review	Approved WMO
Status	Will not start
Health condition type	Vascular haemorrhagic disorders
Study type	Interventional

Summary

ID

NL-OMON45586

Source
ToetsingOnline

Brief title
tDCS in Stroke Patients: Attention and Memory

Condition

- Vascular haemorrhagic disorders

Synonym
cerebrovascular accident, stroke

Research involving
Human

Sponsors and support

Primary sponsor: Klimmendaal Revalidatiespecialisten
Source(s) of monetary or material Support: Ministerie van OC&W,door de instelling zelf

Intervention

Keyword: attention, cerebrovascular accident patients, memory, parietal cortex, stroke patients, transcranial direct current stimulation

Outcome measures

Primary outcome

Reaction time and accuracy on the memory and attention task.

Secondary outcome

Not applicable.

Study description

Background summary

Chronic stroke patients often suffer from residual cognitive impairments, like executive dysfunction, attentional and memory problems, and reduced processing speed. Research into current rehabilitation programmes to ameliorate these cognitive problems, shows that there is insufficient support to refute or endorse the long-term effect of these programmes. Therefore, exploration of alternative methods, like non-invasive brain stimulation, is warranted. The aim of the current study is to explore the possibilities of using transcranial direct current stimulation (tDCS) to improve memory and attentional function in chronic stroke patients. Since the parietal cortex plays a vital role in cognitive functions like memory and attention, tDCS will be applied bilateral over the parietal cortices.

Study objective

To enhance our knowledge concerning the effectiveness of tDCS in the rehabilitation of stroke patients. Next to this, the results will also contribute to our knowledge concerning the role of the parietal cortex in episodic memory and attentional processes. A proof of concept study.

Study design

A randomized controlled double-blind within-subject design. The experiment consists of two test sessions on two separate days. In the test sessions, participants will perform a recognition memory task and a clinical attentional test. In one of the two test sessions, participants will receive sham tDCS over

the parietal cortex, and on the other active tDCS over the parietal cortex. Test sessions will be randomized and counterbalanced across participants.

Intervention

tDCS will be delivered by a battery-driven constant DC current stimulator (Eldith DC Stimulator (CE 0118), Ilmenau) using two 5-7 cm electrodes (35 cm2) and one 10-10 cm return electrode (100 cm2) in saline-soaked synthetic sponge at an electric current intensity of 2 mA for a maximum of 30 minutes. The two 5-7 electrodes will be placed bilaterally over the parietal cortex and the 10-10 return electrode will be placed centerally on top of the head (on top of the vertex).

Study burden and risks

The currently proposed tDCS procedure and experiment do not carry any significant risks. Potential side-effects of tDCS are light tingling, itching or burning sensations under the electrodes, light headache and/or fatigue. These are mild discomforts that respond promptly to common analgesics.

Contacts

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Trial sites

Listed location countries

Netherlands

Eligibility criteria

Age
Adults (18-64 years)
Elderly (65 years and older)

Inclusion criteria

Between 18-65 years of age, right-handed, non-smoking, normal or corrected-to-normal vision, have a history of an ischemic cerebral infarction (>4 months ago), reduced verbal long-term memory and attention/concentration assessed by neuropsychological testing, Dutch as a native language

Exclusion criteria

Skin disease, metal in cranium, use of psychotropic drugs (including cannabis, XTC, amphetamines and cocaine), epilepsy or family history of epilepsy, history of closed-head injury, history of head surgery (other than due to stroke), history of neurological or psychiatric disorders (other than stroke), pre-existent cognitive problems, severe aphasia, neglect, hemianopia, medication use (i.e., antiepileptics, benzodiazepines, antidepressants and neuroleptica), medication pump, history of previous stroke, heart disease, cardiac pacemaker, pregnancy, of electronic hearing devices.

Study design

Design

Study type: Interventional

Masking:	Double blinded (masking used)
Control:	Uncontrolled
Primary purpose:	Other

Recruitment

NL

Recruitment status:	Will not start
Enrollment:	20
Type:	Anticipated

Ethics review

Approved WMO Date:	14-02-2018
Application type:	First submission
Review commission:	CMO regio Arnhem-Nijmegen (Nijmegen)

Study registrations

Followed up by the following (possibly more current) registration

No registrations found.

Other (possibly less up-to-date) registrations in this register

No registrations found.

In other registers

Register	ID
CCMO	NL61201.091.17