Can brain stimulation improve prognosis of post-stroke neglect?

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Neglect is a syndrome frequently associated with right hemisphere stroke. Numerous rehabilitation techniques have been developed [1], but this syndrome is associated with a poor functional outcome. The concept of interhemispheric competition is more and more believed to explain this syndrome [2]. Therefore, any intervention aiming at restoring the physiological balance between the brain hemispheres could improve the symptoms.

Non-invasive brain stimulations are emerging in neuro-rehabilitation: transcranial Direct Current Stimulation (tDCS) and repetitive Transcranial Magnetic Stimulation (rTMS) have already shown their ability to modify cortical excitability [3]. Their use for the interhemispheric balance restoration after a stroke is therefore interesting.

We realised a literature review of the studies where the use of these techniques with neglect patients was evaluated. Publications in English referenced in Pubmed were collected, combining “rTMS” or “transcranial magnetic stimulation”, “tDCS”, “brain stimulation”, “neuro-modulation” and “neglect” or “spatial neglect”. Nine original papers were reviewed. Parietal lobe inhibition of the intact hemisphere is the most used strategy. Mainly rTMS was used. Authors report visuo-spatial improvement for the patients with paper and pencil tests. Few papers evaluate generalisation to patients’ daily life autonomy.

We focus on the results of these studies in the search for a possible improvement of neglect patients’ outcomes.

References

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