nerve applied on the paretic side. The second group receives the same ePNS combined with sham tDCS. Motor performance and cortical excitability are tested at baseline and after the intervention at day 5, 15 and 30. The primary endpoint is the full time to complete the Jelfsen and Taylor Hand Function Test (JTHT).

Results.– So far, 17 patients have been included within the 5 days (+3) after stroke. No side effects have been reported during the treatment. Preliminary results show significant differences between the two groups at day 5 ($P = 0.006$) and day 15 $P = 0.04$ for the 14 patients who have ended the study (three are still on course).

Conclusion.– These promising results could suggest, as far as they will be further confirmed, that an early cortical neuromodulation with anodal tDCS in association with ePNS, could act in the early post-stroke phase as an efficient adjuvant to promote the natural cortical plasticity involved in the recovery processes.

References

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Cipass: Trial of a daily program of cerebral stimulation by TMS using a PAS paradigm in the recovery phase of stroke patients

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Keywords: Stroke; Transcranial magnetic stimulation; Cerebral plasticity

Introduction and goals.– The Paired Associative Stimulation (PAS) is a non-invasive brain stimulation method that modulate cortical plasticity. The intervention consists of a combination of two stimulations: an electrical peripheral one and a magnetic cortical one with a frequency at 0.1 Hz over 30 min. The CIPASS is a new neuromodulation protocol where a PAS session is performed on a daily basis during 5 days to hemiparetic patients with a stroke (less than 6 months). This is a randomized, double-blind and placebo-controlled trial. Our goal is to demonstrate a lasting increase of motor cortical plasticity for wrist muscles. Our judgment criteria are electrophysiological and motors parameters. The movement tasks included of both active execution of wrist muscles and guided self-rehabilitation contracts for inpatients with stroke patients.

Method.– Eight patients (five men and three women, mean age: 53 ± 6.2 years) have been included (Fugl-Meyer motor Scale = FMS, upper limb section: 23/347%); and a CHU-CRRRF, Angers, France
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Keywords: IMRI study; Passive movement; Visual guidance; Stroke rehabilitation; Imitation; Active movement

Background.– Passive and active movements as well as action observation have a positive impact on recovery of motor function in stroke patients [1,2]. Combining action observation and movement execution might therefore also be a useful tool for rehabilitation. The aim of this study was to explore the neural networks involved in this approach in healthy subjects.

Methods.– Using IMRI block design, right hand movement performed by 17 right handed participants with (imitation) and without visual guidance was investigated. The movement tasks included of both active execution of movement and passive movement, imposed by the examiner.

Results.– Movement imitation caused cortical activation in bilateral occipito-temporal areas both in passive and active movement. However, only active imitation led to activation in right inferior and superior parietal lobe, left frontal areas and cerebellum, whereas passive imitation activated right prefrontal cortex and the left supplementary motor area (SMA).

Conclusion.– These preliminary results indicate that different networks are activated during active and passive imitation tasks. The networks detected in our study are known to be important for functional recovery after stroke [3] and include attention, top-down control and reach to grasp movement for active imitation and a motor inhibitory network for passive imitation. These findings provide theoretical backing for the integration of active and passive movement with visual guidance in a new rehabilitation approach.

References

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The effect of video-guidance on passive and active movements as assessed by fMRI: Useful for upper limb stroke rehabilitation?

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Keywords: fMRI study; Passive movement; Visual guidance; Stroke rehabilitation

Background.– Using a video of a movement performed by a model (video-guidance), we investigated the effect of video-guidance on passive and active movements, performed by stroke patients [1,2].

Methods.– A randomized cross-over study was conducted: 17 patients with chronic stroke (6 months to 6 years) divided in two groups. Both groups received the same active and passive movement tasks. The first group received visual guidance during the movements and the second group did not receive any video-feedback during the practice. The movement tasks included of both active execution of wrist and hand movements and guided self-rehabilitation contracts for inpatients with spastic paresis.

Results.– Both groups showed a similar increase of active movements. The group with video-guidance showed a more significant increase of passive movements compared to the group without video-guidance. The movement tasks included of both active execution of wrist and hand movements and guided self-rehabilitation contracts for inpatients with spastic paresis.

Conclusion.– The neurorehabilitation team of Albert Chenevier Hospital in Créteil (94) has developed Guided Self-Rehabilitation Contracts (GSC) providing paretic patients with an exercise manual containing explanations, illustrations and a logbook on which the patient notes daily performances [1]. The use of this manual has proven somewhat complicated for some patients,