Introduction.— During a rehabilitation session, the use of robot-assisted device allows high number of movements, enhancing motor command in hemiparesis [1]. The robot can also be used as a tool to quantify effects of upper limb robot-assisted training associated with standard therapy in subacute stroke.

Methods.— Seventeen patients with subacute hemiparesis (52 ± 20 years; time since stroke 54 ± 27 days; upper limb Motricity Index, 31 ± 15/100; Functional Independence Measure, 74 ± 25/126) performed 16 sessions (4/week) of robot-assisted shoulder/elbow training (MIT-Manus, InMotion Inc., MA, USA) associated with standard therapy. Number of movements and assistance provided by the robot were collected at sessions S1, S8 and S16. Patients were also evaluated on the 4-target pointing task (14 cm apart) without robot-assistance, by measuring task success index (1 = target reached; 0 = not reached), hand trajectory length, velocity and smoothness index.

Results.— Overall, the mean number of movements performed per session with the robot was 681 ± 214 [357–1000]. At S8, there was an increase by 46% of the number of movements (S1, 513 ± 262; S8, 750 ± 261, P = 0.002), by a decrease by 8% of robot-assistance intensity (S1, 205 ± 7Nm; S8, 189 ± 23Nm, P = 0.009), and an improvement in task success index (+28%, P = 0.04), and in movement velocity (+61%, P = 0.007). Between S8 and S16, there was further increase in movement velocity (+50%, P = 0.0082) and a decrease in hand trajectory (~17%, P = 0.004). Smoothness remained unchanged.

Conclusion.— Robot-assisted training may provide high intensity training in combination with standard rehabilitation in subacute hemiparesis. With an upper limb rehabilitation program including robot-assisted training, kinematic improvement occurred from the first sessions and trajectory accuracy increased during the last sessions (S8–S16).

Reference
nerve applied on the paretic side. The second group receives the same rEPNS 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 Jebsen and Taylor Hand Function Test (JTHFT).

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 rEPNS, 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.

Method.– Eight patients (five men and three women, mean age: 53 ± 6.2 years) have been included in this study (Fugl-Meyer motor Scale = FMS, upper limb section: 23/66 ± 7); one session of PAS stimulation were applied to the Extensor Carpi Radialis (ECR) muscle on a daily basis during 5 days. The motor-evoked potential (MEP) surface of ECR muscle and the Fugl-Meyer motor Scale variations have been analysed.

Results.– An increase of MEP surfaces has been demonstrated, 3 days after the end of the last session, for patients of stimulated group (+300% ± 347%); and a less important increase for those of placebo group (+25% ± 28%). This translates a more important increase of motor cortical excitability for the stimulated group. It has also been reported motor performance improvements (FMS) for the stimulated group (+5.25/C6 stimulated group. It has also been reported motor performance improvements translates a more important increase of motor cortical excitability for the less important increase for those of placebo group (+25% end of the last session, for patients of stimulated group (+300%)

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 rEPNS, 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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Simplified instructional cards for the implementation of guided self-rehabilitation contracts for inpatients with spastic paresis
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Keywords: Guided Self-Rehabilitation Contracts; Simplified cards; Individual sessions; Group workshops; Logbooks
Objective.– 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,