Neurophysiologie Clinique/Clinical Neurophysiology (2019) 49, 249—250

Disponible en ligne sur
ScienceDirect
www.sciencedirect.com

Elsevier Masson France
EM|consulte
www.em-consulte.com/en

LETTER TO THE EDITOR

Repetitive transcranial magnetic stimulation as a treatment for chronic pain: A Tunisian series

KEYWORDS
Chronic pain;
Cortical stimulation;
Treatment

Repetitive transcranial magnetic stimulation (rTMS) is an innovative treatment based on non-invasive brain stimulation [1]. The first trials of analgesic rTMS therapy date were performed more than 15 years ago [2] and its clinical use is now practiced in several specialized centres in Europe [3]. The objective of our work was to evaluate rTMS efficacy in the treatment of chronic pain (CP) in a North African Tunisian series.

For this, 19 patients referred to the neurophysiological unit of the La Soukra clinic for evaluation of CP from May 2017 to November 2017 were enrolled. For all patients, clinical and demographic data were collected. Patients were asked to rate pain intensity on a verbal rating scale (VRS) from 0 to 10. The VRS was assessed before and one week after the last rTMS session. A treatment response to rTMS was defined as > 30% pain reduction.

Magnetic stimulation of the motor cortex was performed using a MagPro X100 and a Cool-B65 figure-of-8 coil (MagVenture, Farum, Denmark). The coil was placed over the primary motor cortex contralateral to the patient's reported pain and orientated to produce an anterior-to-posterior current flow. The rTMS protocol consisted of 40 trains of biphasic trains of TMS pulses of 5-second duration with a 25-second inter-train interval, delivered at a high frequency of 10 Hz The interval between two rTMS sessions was 48 hours Five consecutive sessions were performed for each patient.

The data were analysed using SPSS software version 19.0. The VRS pain scores were compared before and after rTMS using a Wilcoxon test. The correlation between rTMS efficacy (post pre-pain score difference) and age of the patient, duration of evolution, number of medications, or baseline pain score was studied using a Spearman test. For all statistical tests, the *P* value significance threshold was set at 0.05.

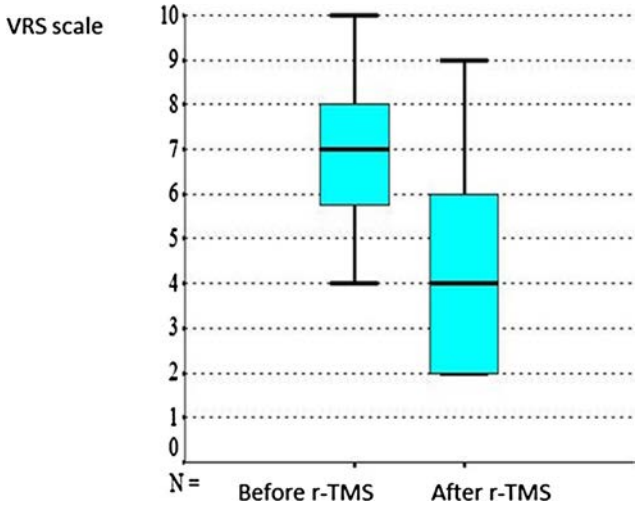

Figure 1 Box and whisker plots of Verbal Rating Scale (VRS) according to treatment response before and after rTMS in 19 patients evaluated for chronic pain. Upper and lower limits of each box represent upper and lower quartiles, respectively. Horizontal line within the box represents the median value. Upper and lower whiskers represent the maximum and minimum values, respectively. A significant difference was observed with a median VRS score decrease of 3 points.

Eight females and 11 males were enrolled with a median age of 34 years (ranging from 17 to 72 years). The median duration of CP was 12 months (3—120). The classes of medication were paracetamol, anti-epileptic drugs and antidepressants. The median number of medications was 3 (2—5). The median VRS score at inclusion was 6.9 (4—10). The aetiology of pain was post-traumatic lower limb pain in 11 cases, fibromyalgia with diffuse pain in 4 cases, stroke in 3 cases (facial pain in one patient and upper limb pain in two patients) and phantom limb pain in one case.

A statistically significant difference was observed in the VRS score before and after the rTMS sessions with a median decrease of 3 points in the intensity of pain ($P < 0.001$) (Fig. 1). No correlation was observed between efficacy of

https://doi.org/10.1016/j.neucli.2019.01.035

rTMS and age of the patient ($r = 0.088$, $P = 0.719$), duration of CP ($r = 0.039$, $P = 0.873$), or number of medications ($r = 0.018$, $P = 0.943$). No serious side effects were noted and in particular no epileptic seizures were observed. Less than 1% of rTMS sessions produced headache, which if occurred was reversible with analgesics.

In conclusion, rTMS is an innovative, well-tolerated and effective neurostimulation technique for the management of CP. rTMS can be prescribed at any age and regardless of the intensity or duration of CP. Our results are encouraging and consistent with those of the literature but must be interpreted with caution because of the small sample size, absence of follow up, and open label design of this study. More rTMS sessions and assessment on a longer term in a sham-controlled study are required to confirm our results.

Disclosure of interest

The authors declare that they have no competing interest.

References

[1] Lefaucheur JP. Cortical neurostimulation for neuropathic pain: state of the art and perspectives. Pain 2016;157:S81—9.

[2] Lefaucheur JP, Drouot X, Keravel Y, Nguyen JP. Pain relief induced by repetitive transcranial magnetic stimulation of precentral cortex. Neuroreport 2001;12:2963—5.

[3] Lefaucheur JP, André-Obadia N, Antal A, Ayache SS, Baeken C, Benninger D, et al. Evidence-based guidelines on the therapeutic use of repetitive transcranial magnetic stimulation (rTMS). Clin Neurophysiol 2014;125:2150—206.

Hela Mrabet*
Amel Mrabet
Nejib Hattab
Rachid Manai
Bechir Zouari
La Soukra Medical, Tunis, Tunisia

* Corresponding author.
E-mail address: helamrabet@yahoo.com (H. Mrabet)

Received 18 September 2018
Accepted 20 January 2019
Available online 30 January 2019