

Repetitive transcranial magnetic stimulation: a potential therapeutic modality for chronic low back pain

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LETTER TO EDITORS

Chronic low back pain (CLBP) is a prevalent and highly disabling condition, and remains a major health problem worldwide. It has been reported that the prevalence of CLBP has doubled over time. CLBP can result in high treatment costs, individual suffering and loss of work productivity [1]. Despite considerable improvement in the pharmacologic and non-pharmacologic treatments for CLBP, its management is challenging and has only limited success [2,3].

Although the exact mechanism of chronic pain conditions such as CLBP has not yet been fully elucidated, neuroplasticity has been proposed as a relatively new plausible mechanism [4]. It has been shown that CLBP is associated with excitability and/or reorganization of the brain's motor cortex (M1) [5,6]. These changes are presumably correlated with the trunk muscles' postural adjustments, which are altered in patients with CLBP [5]. It is believed that using modalities that precisely direct the changes of the motor cortex in CLBP may reverse these changes and improve the clinical outcomes of these patients [7].

As an alternative and non-invasive technique, transcranial magnetic stimulation (TMS) can safely stimulate the cortical neurons for attenuation of chronic pain conditions. It has been shown that repeated delivery of TMS pulses (rTMS) could enhance neuroplasticity for long-term therapeutic advantages, however, its therapeutic efficacy in chronic pain conditions is still controversial [4,6,8]. In addition, there are currently very few published studies to evaluate the efficacy of rTMS in patients with CLBP. A recently published study by Ambriz-Tututi et al. demonstrates that 1-week of rTMS therapy produces long-term pain relief in patients with CLBP, without any side effects [9]. Moreover, the results of a case study confirmed the clinical efficacy of rTMS in treating chronic pain-associated depression and insomnia in two patients with CLBP [10].

Despite a dearth of research available, it seems that rTMS is a safe, innovative, well-tolerated and effective treatment for CLBP. However, further well-designed clinical trials are warranted to determine its potential safety and efficacy on clinical outcomes of patients with CLBP, as well as the optimal number of delivered pulses/session and better targeting for the application of rTMS.

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