MIGRAINE

Portable sTMS device relieves the pain of migraine

Treatment with single-pulse transcranial magnetic stimulation (sTMS), delivered via a portable device, successfully relieved pain in patients with migraine with aura, and could be a promising alternative to drugs for self-treatment at home, according to new research from the US. “sTMS provided a noninvasive candidate method for disrupting cortical spreading depression. Applied at the surface of the scalp, it induces current in underlying brain tissue and may be effective in migraine,” says Richard B. Lipton, Professor of Neurology at the Einstein College of Medicine and Director of the Montefiore Headache Center in New York.

In the US and western Europe, 18% of women and 6% of men experience migraines, either with or without aura. Auras are the neurological symptoms—including visual disturbances, somatosensory indications and motor effects—that precede the onset of migraine, and they occur in 20–30% of patients with this headache disorder. Cortical spreading depression is now widely accepted as the underlying mechanism of migraine aura, and disruption of this wave of neural

excitation and inhibition could prevent aura and headache.

“sTMS is a 30 year-old technology, and treatment has traditionally been delivered using a large tabletop device in a medical setting under medical supervision,” explains Lipton, but “home treatment with medication is the norm and the approach patients prefer.” Therefore, Lipton *et al.* investigated the use of portable sTMS devices to deliver brief, individual magnetic pulses for the self-treatment of acute migraine attacks.

The investigators recruited 201 adults with migraine and associated aura (aged 18–68 years) from 16 centers in the US and randomly assigned half to use the sTMS handheld device while the remainder used a sham device, which was identical to the active device except that it did not deliver a magnetic pulse. Of the 164 patients who treated a migraine attack, 39% of patients who used the sTMS device reported they were pain free after 2 h, compared with only 22% of patients who received sham stimulation. Moreover, this absence of pain was reported to last up to 48 h after initial sTMS treatment.

“The most important finding [from our study] was that patients treated with sTMS

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were significantly more likely to be free of pain than those treated with the sham device,” adds Lipton, although he points out that the study was restricted to individuals who had migraine with aura. He now hopes to establish whether sTMS can be used to treat migraine without aura, as suggested by preliminary data, and to define the optimum timing and dose for its use.

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Original article Lipton, R. B. *et al.* Single-pulse transcranial magnetic stimulation for acute treatment of migraine with aura: a randomised, double-blind, parallel-group, sham-controlled trial. *Lancet Neurol.* 9, 373–380 (2010)