

Portable device effective in zapping away migraine pain

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novel electronic device designed to "zap" away migraine pain before it starts has proven to be the next form of relief for those suffering from the debilitating disease, according to a study conducted at The Ohio State University Medical Center.

Results of the study, to be presented Friday (6/27) at the annual American Headache Society meeting in Boston, found that the experimental device is safe and effective in eliminating headaches when administered during the onset of the migraine.

With one in eight Americans suffering from chronic migraines, Dr. Yousef Mohammad, a neurologist and principal investigator of the study at Ohio State's Medical Center, says the study's results are promising given that only 50 to 60 percent of migraine patients respond to traditional migraine drug treatments.

The noninvasive transcranial magnetic stimulator (TMS) device interrupts the aura phase of the migraine, often described as electrical storms in the brain, before they lead to headaches. Migraine sufferers often describe "seeing" showers of shooting stars, zigzagging lines and flashing lights, and experiencing loss of vision, weakness, tingling or confusion, followed by intense throbbing head pain, nausea and vomiting.

Previous studies, conducted at Ohio State, using a heavy and bulky TMS device, reduced headache pain. To expedite treatment at home, a

portable hand-held device was developed and tested.

"Stimulation with magnetic pulses from the portable TMS device proved effective for the migraine patients," said Mohammad. "Because of the lack of adverse events in this trial and the established safety of the TMS device, this is a promising treatment for migraines with aura. This sets the stage for future studies in migraines without aura."

The TMS device sends a strong electric current through a metal coil, which creates an intense magnetic field for about one millisecond. This magnetic pulse, when held against a person's head, creates an electric current in the neurons of the brain, interrupting the aura before it results in a throbbing headache.

"The device's pulses are painless and safe," Mohammad said. "Since almost all migraine drugs have some side effects, and patients are prone to addiction from narcotics, or developing headaches from frequent use of over-the-counter medication, the TMS device holds great promise for migraine sufferers."

Of the 164 patients involved in the multi-center, randomized clinical trial receiving TMS treatment, 39 percent were pain free at the two-hour post-treatment point, compared to 22 percent in the group receiving "sham" pulses. There were no differences reported related to adverse reactions between the two groups.

It was previously believed that migraine headaches start with vascular constriction, which results in an aura, followed by vascular dilation that will lead to a throbbing headache. However, in the late 1990's it was suggested that neuronal electrical hyperexcitability resulted in a throbbing headache. This new understanding of the migraine mechanism assisted in the development of the TMS device.

Source: Ohio State University Medical Center

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