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# Zapper brings hope to migraine sufferers

By Sam Lister

**A new device uses a magnetic pulse to  
disrupt and stave off headaches**

THE debilitating pain caused by migraines, the splitting headaches suffered by millions of people, can be eliminated using a handheld device that “zaps” the condition as it kicks in, a study suggests.

Patients treated with the experimental device, which is held against the back of the head and emits a quick magnetic pulse, have reported significant improvements.

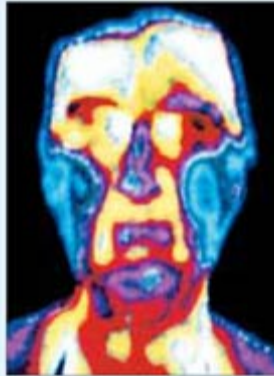
The pulse has been found to trigger an electric current in neurons in the brain, preventing the initial “electrical storm” from developing into a full-blown migraine.

A team of American scientists, based at Ohio State University Medical Centre, will present findings from their research today at the annual meeting of the American Headache Society in Los Angeles. In one study carried out by the group, more than two thirds of patients treated with the Transcranial Magnetic Stimulation device reported having either no pain or only mild pain two hours after treatment. Less than half of the placebo group reported similar pain levels.

More than 80 per cent did not experience pain when subjected to noise, and 64 per cent did not have an adverse reaction to bright light. The majority of the group with the device said that they could continue to work with only mild irritation after two hours. Only half of the control group said the same.

The device, which is made by a Californian company called Neuralieve, is designed to interrupt the aura phase of the migraine, the initial period of electrical activity in the brain, before it leads to headaches.

Sufferers of such severe headaches often describe seeing



#### IN THE PICTURE

■ The above image is a thermogram of the head (frontal view) of a patient suffering from a severe migraine. The colours represent temperatures: blues are “cold”, green is normal while red, yellow and white are “hot”. The white hot spots can be seen at the base of the neck, near the eyes, and around the brain

#### SORE HEADS

■ Several famous figures are said to have had migraines, including Julius Caesar, Napoleon and Thomas Jefferson

■ Generals Lee and Grant, opposing commanders in the American Civil War, were sufferers

■ *Alice's Adventures in Wonderland* may have drawn on feelings of distortion and light sensitivity experienced by Lewis Carroll in the grip of a migraine

showers of shooting stars, zigzagging lines and flashing lights, and experiencing loss of vision, weakness, tingling or confusion. These initial symptoms are typically followed by an intense throbbing head pain, nausea and vomiting.

About one in eight people in the UK suffers from migraines, which are twice as common in women as they are in men, and are estimated to cost the health service £1 billion annually.

Sufferers experience an average of 13 attacks each year. An attack can last for between four and 72 hours.

However, up to two thirds of sufferers do not consult their doctor because of the widely held view that nothing can be done to alleviate the discomfort.

The device, which is activated by a switch, sends a strong electric current through a metal coil, creating an intense magnetic field for about one millisecond. When held against a person's head, this magnetic pulse creates an electric current in the neurons that blocks the aura before the onset of a throbbing headache.

Describing the findings as very positive, Yousef Mohammad, a neurologist at Ohio, said that after treatment the patients studied reported a significant reduction in nausea, noise and light sensitivity.

“Perhaps the most significant effect of using the TMS device was on the two-hour symptom assessment, with 84 per cent of the episodes in patients using the TMS occurring without noise sensitivity.

“Work functioning also improved, and there were no side effects reported,” he said. “The device’s pulses are painless. The patients have felt a little pressure, but that’s all. These are very encouraging results.”

For Christina Sidebottom, a British woman who has been treated by Dr Mohammad in Ohio, the TMS zapper has transformed her life. “Before, I was pretty much resigned to going to bed with a lot of pain,” she said.

Dr Mohammad said that the project, which involved 42 people, 23 of whom had the TMS treatment, would be followed by a much larger study to expand on the research.

Scientists have suggested that migraines start with vascular constriction, a narrowing of blood vessels, resulting in an aura, followed by vascular dilation that causes a throbbing headache. A new theory, which has emerged in the past 10 years, is based on the notion that raised levels of neuronal electrical activity cause the condition and was the basis for the development of the device.