

Headache

EEG EMG Z Elektroenzephalogr Elektromyogr Verwandte Geb. 1985 Dec;16(4):227-30.

[Cerebral use of a pulsating magnetic field in neuropsychiatry patients with long-term headache]

[Article in German]

Grunner O.

A pulsed magnetic field ($f = 260$ Hz; $t = 3$ ms; induction $B = 1.9$ mT; gradient = 0.5 mT/cm) was applied at 40 patients with headaches of various etiology. The change of cephalgia intensity was evaluated according to the patients' statements. These statements were further compared with the changes of the EEG. By means of frequency analysis of the EEG, significant changes in percentages of delta and alpha 1 activities (7.5-9.5/s) were stated after the application of the real treatment regarding the sham treatment. Any treatment lasted one half hour. The retreat of subjective difficulties as well as the amelioration of EEG were stated accordingly at headaches, which were bounded with cerebral arteriosclerosis, with states after cerebral concussion, with depressive neurosis, or with tension headache. Pulsed magnetic field could be applied only there, where the visual evaluation stated EEG as physiological.

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Treatment of Migraine With Pulsing Electromagnetic Fields: A Double-Blind, Placebo-Controlled Study

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The effect of exposure to pulsing electromagnetic fields on migraine activity was evaluated by having 42 subjects (34 women and 8 men), who met the International Headache Society's criteria for migraine, participate in a double-blind, placebo-controlled study. Each subject kept a 1-month, pretreatment, baseline log of headache activity prior to being randomized to having either actual or placebo pulsing electromagnetic fields applied to their inner thighs for 1 hour per day, 5 days per week, for 2 weeks.

After exposure, all subjects kept the log for at least 1 follow-up month. During the first month of follow-up, 73% of those receiving actual exposure reported decreased headaches.

(45% good decrease, 14% excellent decrease) compared to half of those receiving the placebo (15% worse, 20% good, 0% excellent). Ten of the 22 subjects who had actual exposure received 2 additional weeks of actual exposure after their initial 1-month follow-up. All showed decreased headache activity (50% good, 38% excellent). Thirteen subjects from the actual exposure group elected not to receive additional exposure. Twelve of them showed decreased headache activity by the second month (29% good, 43% excellent). Eight of the subjects in the placebo group elected to receive 2 weeks of actual exposure after the initial 1-month follow-up with 75% showing decreased headache activity (38% good, 38% excellent).

In conclusion, exposure of the inner thighs to pulsing electromagnetic fields for at least 3 weeks is an effective, short-term intervention for migraine, but not tension headaches.

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Initial Exploration of Pulsing Electromagnetic Fields for Treatment of Migraine

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Two studies were conducted during which 23 patients with chronic migraine were exposed to pulsing electromagnetic fields over the inner thigh. In an open study, 11 subjects kept a 2-week headache log before and after 2 to 3 weeks of exposure to pulsing electromagnetic fields for 1 hour per day, 5 days per week. The number of headaches per week decreased from 4.03 during the baseline period to 0.43 during the initial 2-week follow-up period and to 0.14 during the extended follow-up which averaged 8.1 months. In a double-blind study, 9 subjects kept a 3-week log of headache activity and were randomly assigned to receive 2 weeks of real or placebo pulsing electromagnetic field exposures as described above. They were subsequently switched to 2 weeks of the other mode, after which they kept a final 3-week log. Three additional subjects in the blind study inadvertently received half-power pulsing electromagnetic field exposures. The 6 subjects exposed to the actual device first showed a change in headache activity from 3.32 per week to 0.58 per week. The 3 subjects exposed to only half the dose showed no change in headache activity. Large controlled studies should be performed to determine whether this intervention is actually effective