

The analgesic effect of magnetic fields

The constant, long-term effect of earth's magnetic field allowed adaptation and homeostasis in living organisms. However, all electrical appliances that have been working in our environment for over 100 years are the source of electromagnetic smog, which causes harmful, not yet fully known effects on living organisms.

Only recently have electromagnetic fields been used in disease diagnostics and therapy. The principle of "limited accessibility" allows the use of these fields as long as it is necessary, and as short as it is possible.

There appear to be various apparatuses generating magnetic fields and used by doctors and therapists, whose clinical action is not fully documented and which cure "everything". What is more, even well known companies produce equipment of not fully documented effect and application.

However, in the Rehabilitation Department of Health Centre in Sieradz (former District Hospital in Sieradz), research has been conducted into the analgesic effect of classic magnetotherapy and magnetostimulation.

99 persons with lower back pain syndrome were examined. The patients were divided into 3 groups. Group 1 was exposed to magnetostimulation, group 2 to placebo in the form of simulated application, and group 3 to magnetic field generated by a classic apparatus of 2.9 mT induction, 40 Hz frequency and rectangular impulse shape. The evaluation was done in measurable pain scales (Huskisson and Laitinen) as well as by Schober test.

The results indicate the highest effectiveness of magnetostimulation as far as pain lessening is concerned, as well as its frequency, the amount of painkillers taken and the increase in everyday activity. The range of spine mobility has also increased in patients exposed to magnetostimulation.

The results obtained in groups exposed to classic magnetotherapy did not differ from the ones obtained in placebo group.

The analgesic effect of slow-changing magnetic fields can be explained by direct effect on opioid system of the organism and directly through the anti-inflammatory effect of these fields. However, the observation that the resonant system has stronger analgesic effect needs further research.

Reiter and Karasek state that magnetic fields generated by household appliances and electrical conductors can lower melatonin level in people.

Czernicki et al. have indicated that medical application of magnetic field of 2.9 mT induction, 40 Hz frequency and rectangular impulse shape in lower back pain syndromes also causes a decrease in the night concentration of melatonin in all patients.

Karasek et. al. have proven that the application of variable magnetic field did not cause any changes in the night concentration of melatonin in patients treated for lower back pain.

Reiter also reports that the application of melatonin in patients with cancer and motor system diseases reduces the amount of administered painkillers. The level of melatonin in patients suffering from chronic pain is significantly lower. Time of reaction to pain in mice is two times longer after midnight, since at that time mice indicate the highest level of melatonin.

From the research and observations described above it can be concluded that the stronger analgesic effect of magnetostimulation is caused by maintaining the level of endogenous melatonin in patients with lower back pains.

Voltaire once wrote: "the art of medicine lies in occupying the patient until the disease goes away". In the case of physical therapy, occupying the patient to divert his attention is not so important as the fact that what we are applying should be good for his health.

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