

Treating Migraines with PEMF

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Migraines are much more than a headache. According to Dr. Elizabeth Leroux, author of "Migraines." In her research, she relates how migraines are now viewed as a disorder of the central nervous system, of neurons themselves. They are fairly common place. In fact, one in ten people suffer from migraines. In 2012, the medical journal 'The Lancet' classified migraine as the third most common disease in the world, in all categories.

Migraines attacks involve several different brain structures and neurotransmitters. Migraine symptoms include a pounding or throbbing sensation along with sensitivities to light, sound, vibration, and sometimes touch. Migraines also cause nausea.

Phases of Migraines:

Migraines usually develop over phases. During the **warning phase** (prodrome or early symptoms) the victim will experience feelings of irritability, depression, tiredness and yawning, and possibly loss of appetite. Following this the **aura phase** develops (in about 1 out of 4 people). Its symptoms include vision loss or the appearance of flashing or shimmering lights, hallucinations are possible, along with feelings of numbness or muscle weakness. After this the migraine strikes in full force during the **headache phase**. This is where severe pain is usually felt on one side of the head (the temples), or in the front (forehead). However, it can be felt elsewhere as well. Often there is severe pain behind the eyes. The pain can last up to 72 hours. The victim may experience dizziness, irritability and extreme sensitivity to light, smell and sound. Usually they will retreat to a cool dark and quiet place away from all external stimuli. Finally, there is the **resolution phase** (postdrome or after effects), where the symptoms wind down, and the patient has trouble concentrating, is exhausted and possibly depressed.

Migraine – a Brain "Electrical Storm"

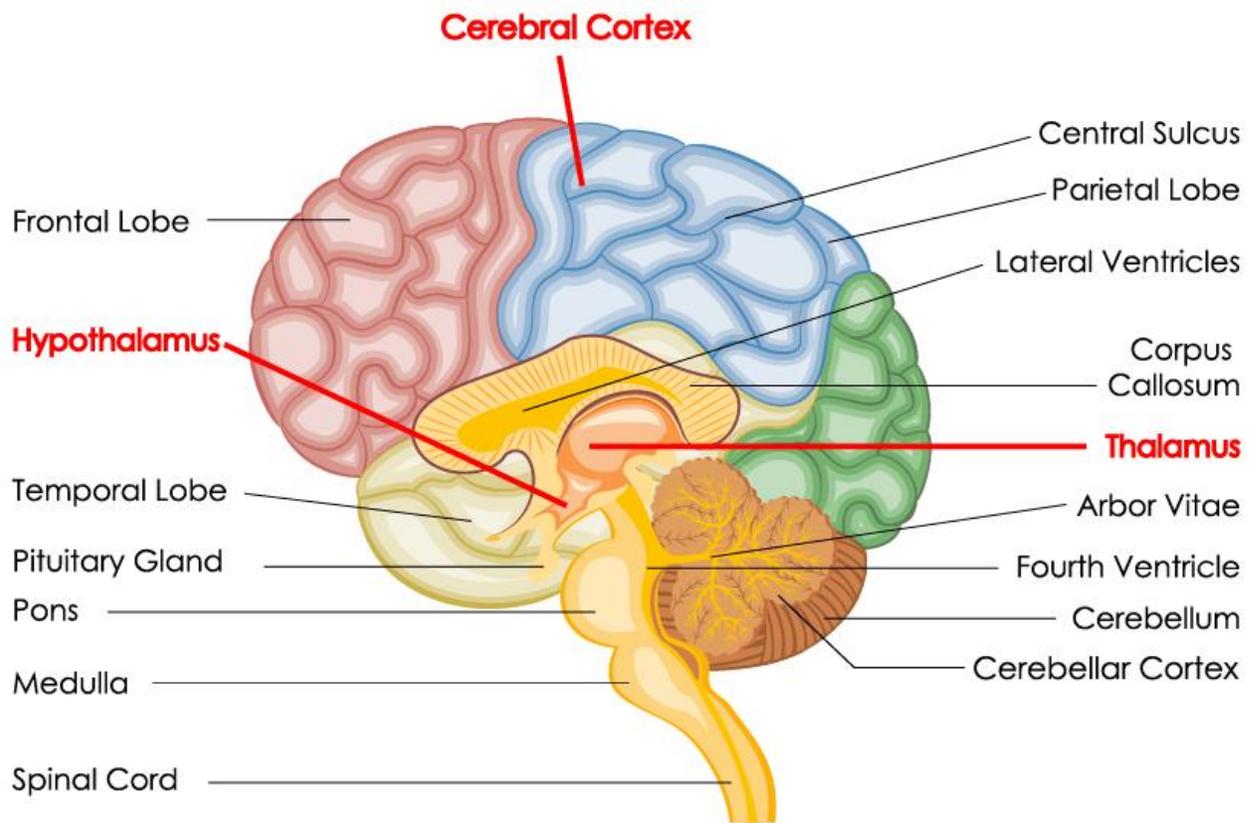
According to Doctor Elizabeth Leroux, author of *Migraines More than a Headache*,

“A migraine attack involves several different brain structures and neurotransmitters... a migraine attack is caused by inflammatory electrical mechanisms that occur on a microscopic scale...

A migraine may occur in response to an imbalance in the brain that triggers an aura in the cortex (an electrical wave) or prodrome in the hypothalamus.” (p52, 63) ¹

When breaking down the stages of migraines, and the biology of each phase Doctor Leroux observes of the Aura:

“Aura’s can now be explained by the discovery of cortical spreading depression (CSD). This is an electrical wave that travels from neuron to neuron across the cortex and produces symptoms specific to the area involved.... CSD may be compared to an electrical and chemical storm that seriously disturbs neuronal function.” (p63) ¹



Anatomy of a Migraine

When describing the migraine, she notes:

“Migraine pain results from inflammation inside the cranium... Inflammation is usually triggered by a disruption in the organism (infection, injury) requiring immune system intervention and tissue repair. The brain stem is responsible for migraine inflammation. In response to a trigger, the trigeminal nucleus is activated. It sends an electrical message to the fibres surrounding the brain arteries and meninges.... This irritates the nerve fibres and sends a painful signal back to the brain stem. The trigeminal nucleus then pass on the information to the thalamus, which sends it to the cortex where it is interpreted as pain. This very important and complex process is called neurogenic inflammation.” (p64)¹



What is fascinating about this is that migraines are basically electrical storms brought about by different triggers. This electrical brain storm can result in referred pain in the forehead, eyes, temples, sinuses and in the neck. Researchers found that migraine pain is often pulsating but is completely different from the patient's heartbeat, and therefore is not arterial in origin. Doctor Leroux also noted another common reaction is for everything to hurt, called allodynia. This is a type of sensitization. Other reactions she noted were a difficulty tolerating light (photophobia), and dizziness or vertigo. She relates the cause of nausea and vomiting:

“...a migraine attack’s electrical storm involves the areas that control the digestive system, causing symptoms of nausea, vomiting and sometimes diarrhea.” (p70) ¹

Common Treatment of Migraines

Dr. Leroux spends a lot of time discussing various treatments for migraines in her book. These included pain killing medications such as acetaminophen and codeine, sometimes mixed with caffeine. There are anti-inflammatory drugs such as aspirin, ibuprofen and naproxen but these can cause stomach issues and affect the kidneys. Botox (botulinic toxin) is also used as it prevents nerve endings from releasing various neurotransmitters. There are also triptans which stimulate the serotonin receptors in the brain. Finally, there are narcotics, which are addictive. Each of these solutions bring with them a host of side effects including: drowsiness, dry mouth, weight gain or loss, nightmares, anxiety, numbness, memory impairment, loss of appetite, tremors, hair loss, reduction in blood pressure, fainting, fatigue, dizziness, nausea, depression, liver toxicity and other distressing issues. If that were not bad enough, adding to the complexity of the situation, medication can become ineffective. Dr. Leroux explains:

“The closer together the migraine attacks are, the more sensitive the system becomes, meaning that attacks are triggered more and more easily.... On a microscopic level, this sensitization is found at entry level of the brain’s electrical network: the cortex is more sensitive, the thalamus is more sensitive, the brain stem is more sensitive, so are the sensory nerves. Regularly taking medications contributes to this phenomenon. The brain gets used to painkillers and respond less and less, meaning that stronger, more frequent doses are needed.” (p78-81)¹

One fascinating element Dr. Leroux explains in her book is Neurostimulation. This is the idea of sensory stimulation diversion. When we bump a limb, we tend to rub it to relieve the sharp pain:

“This competition between a non-painful sensation and pain occurs in both the spinal cord and the brain. This biological mechanism is sometimes called “gate control theory,” as though the spinal cord, opening the gate to one sensation, had to choose to close the gate on another.... A migraine attack... occurs in structures located inside the skull and cannot be stimulated directly... (various types) of stimulation use an electrical signal directed at the sensory nerve endings in the forehead and temples. The signal is supposed to interfere with the migraine’s pain signal and make the headache go away.” (p158)¹

PEMF and treating migraines.

As a migraine is an electrical storm in the brain, treatment with pulsed electromagnetic fields has been found to be very effective. The goal of PEMF is to stimulate the brain and restore normal function, while reducing inflammation.

PEMF has long been found to reduce inflammation restore cells to normal function. An study reported in the Journal of Neurological Sciences found the following:

“Electromagnetic fields at 2—12 Hz have been reported to affect behavior in man and animals and several animal studies suggest that EMFs can specifically alter brain electrical activity.” ²

An article in the publication Advances in Therapy reported the results of a double-blind, placebo-controlled study of impulse magnetic-field therapy. Its results are encouraging to migraine sufferers:

“In the active-treatment group, all assessed criteria were significantly improved at the end of the study... Seventy-six percent of active-treatment patients experienced clear or very clear relief of their complaints.”³

The effect of PEMF with migraine sufferers has been clearly documented. Another double-blind, placebo controlled study reported:

“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... 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).” ⁴

This is critical in restoring “quality of life” and basic function. A 2016 paper studied the efficiency of pulsed electromagnetic field in refractory migraine headaches. It concluded:

“There was a significant improvement for the active group in terms of their headache days, durations and work-loss hours due to headache compared to the placebo group after 2 weeks. The added results of the assessment of the active group indicated a significant improvement in the days and duration of headaches, work-loss hours and number of medications even after a following 4-8-month period.... can be considered as a beneficial and persistent prophylactic treatment option for refractory migraine.” ⁵

Many treatments for migraines try to stimulate the brain in different ways. However, this is difficult to do as you cannot “massage” the brain, as it is protected beneath the skull.

Power to Penetrate the Brain.

Many migraine treatments can only penetrate the skull and stimulate the brain by use of chemically induced reactions produced through medications ingested or injected into the blood. However, as already discussed these carry dangerous and undesired side effects. Pulsed electromagnetic fields can enter the brain directly, and produce no undesired side effects.

In the electrical storm created in the brain, some of the areas critically affected are deep within the skull:

“A migraine attack may occur in response to an imbalance in the brain that triggers an aura in the cortex (an electrical wave), or prodrome in the hypothalamus.” (p63) ¹

As the migraine is triggered deep within the brain, it is necessary to reach the affected areas with treatment. Curatron sets itself apart from other PEMF devices with its power to penetrate the skull and deliver a significant dose of energy medicine between 100,000 microTeslas and 160,000 microTeslas depending on which configuration is used. The PC and 3D model both have settings for migraine which directly affect the brain reducing inflammation restoring normal brain function.

Dealing with both Cause and Effect

The causes of migraines are varied, but a significant amount are caused by physiological stimulants. Doctor Leroux relates:

“In some cases, chronic migraine is associated with an inconsolable stressful situation that has persisted for several years: a parent being cared for, marital problems, financial instability, a hostile workplace, unresolved post-traumatic stress.” (p124) ¹

PEMF is capable of dealing with the symptom, the migraine, and also some of the triggers. Curatron has very effective treatments to relieve anxiety and stress, as well as treat post-traumatic stress. The anti-stress protocols have been noted to reduce hypertension, a doctor reported the following success regarding a patient:

“Blood pressure was 148/93. The patient was anxious looking, he is known hypertensive with sub optimal control. We put him on PEMF (anti-anxiety) for 30 min. His blood pressure dropped to 132/78, he says he felt calmer than when he got to the clinic.” (Dr. L. A.)

Bringing the patient's blood pressure from "high" to an "ideal/pre-high" blood pressure was very beneficial to the patient, and reduced his anxiety significantly. Anxiety is a trigger for migraines, so both the trigger (cause) and the migraine (effect) can be treated.

Sources:

⁽¹⁾ *Elizabeth Leroux MD, FRCPC, Migraines, more than a Headache, Dundurn Books. Canada, 2016.*

⁽²⁾ *Andrew A Marino, "Frequency-specific responses in the human brain caused by electromagnetic fields," Journal of the Neurological Sciences, June 1994.*

⁽³⁾ *RB Pelka, "Impulse magnetic-field therapy for migraine and other headaches: A double-blind, placebo-controlled study," Advances in Therapy 18(3):101-109, January 2001.*

⁽⁴⁾ *RA Sherman, "Treatment of Migraine With Pulsing Electromagnetic Fields: A Double-Blind, Placebo-Controlled Study," Headache The Journal of Head and Face Pain 39, (8):567-75, October 1999*

⁽⁵⁾ *Boshra Hatef, Fahime Hashemirad, Gholam Hossein Meftahi, Leila Simorgh, Soodeh Razeghi Jahromi, Forough Rahimi, Mansoureh Togha, "The efficiency of pulsed electromagnetic field in refractory migraine headaches: a randomized, single-blinded, placebo-controlled, parallel group," International Journal of Clinical Trials, 2016.*