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Evidence Based Integrative Treatments for Headache

Deena Kuruvilla, MD and

Department of Neurology, Yale School of Medicine, New Haven, CT

Rebecca Erwin Wells, MD, MPH, FAHS [Founder & Director, Comprehensive Headache Program, Associate Director of Clinical Research Center for Integrative Medicine, Associate Professor]

Department of Neurology, Wake Forest Baptist, Winston Salem, NC

Integrative Medicine brings mainstream and complementary treatments together and emphasizes a patient-focused approach to wellness. While 28–82% of headache sufferers use integrative approaches, over half do not discuss their use with their provider. Many turn to integrative medicine when mainstream treatments are ineffective, cause side effects, or when natural approaches are preferred. The most commonly used integrative modalities in headache include dietary supplements, mind/body therapies, and manipulation therapies.

Dietary Supplements & Herbs

Magnesium is an abundant mineral in the body, and is important for protein synthesis, energy production, muscle/nerve function, and may play a role in cortical spreading depression, an underlying migraine mechanism. Two large randomized controlled trials found 600 mg/day beneficial for migraine prevention. Magnesium may cause soft stools/diarrhea, but may help constipation. The magnesium citrate formulation is better absorbed than oxide or sulfate, but if diarrhea occurs, magnesium glycinate may help. Magnesium is not safe in kidney failure.

Riboflavin (Vitamin B2) is involved in energy production, and its deficiency can cause mitochondrial dysfunction, which may play a role in migraine. Of 11 clinical trials, five showed a positive effect, including a large randomized controlled trial of 400 mg/day that resulted in at least a 50% improvement in 60% of patients. Riboflavin turns urine bright yellow/orange and may cause diarrhea. Riboflavin is safe during pregnancy; riboflavin deficiency may increase the risk of pre-eclampsia (especially in a diet without meat/dairy).

Coenzyme Q10 (CoQ10) is also involved in energy production and helps maintain mitochondrial integrity. As an anti-oxidant, it stimulates endothelial release of nitric oxide. Two randomized controlled trials showed benefit over placebo, with mild side effects (insomnia, fatigue, nausea, or diarrhea) and rare increases in liver function tests. CoQ10 should not be taken with warfarin (makes it less effective).

Corresponding author : deena.kuruvilla@yale.edu.

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Feverfew is a daisy-like plant used by the Greeks in the first century for inflammatory disorders. The dried leaves are an herbal supplement. Parthenolide, the active ingredient, may prevent migraine through its vascular smooth muscle relaxation and anti-inflammatory properties. Of six studies, four had positive outcomes (including the largest study with 170 patients), and two were negative. The most common side effects were nausea, bloating, and mouth ulcers (if dried leaves chewed). Feverfew should not be discontinued abruptly, or withdrawal symptoms could occur (difficulty sleeping, anxiety, and stiff/painful muscles). Feverfew can cause uterine contractions and is not recommended during pregnancy.

Omega 3 fish oil is anti-inflammatory, and thus there has been hope for benefit in migraine. A recent systematic review of 13 studies for migraine showed no overall benefit. A recent 2018 study showed benefit over placebo in those also on amitriptyline for chronic migraine.

Butterbur (*Petasites hybridus*) is a shrub with anti-inflammatory properties and is involved in calcium regulation. Two large randomized controlled studies demonstrated benefit for migraine. However, preparations may contain pyrrolizidine alkaloids (PA), which are toxic to the liver. Due to safety concerns, butterbur was removed from the market in the UK and Europe. Butterbur should only be taken if labeled and certified as PA-free and even then, liver function tests should be monitored.

Several other supplements have been studied but need more research. A recent study showed 4000 IU Vitamin D 3/day reduced migraine days, even if baseline vitamin D3 levels were not low. Melatonin has mixed results for improvement (one positive/one negative study for migraine; one positive study for cluster headache). The combination of folic acid/B6/B12 has one positive study and one negative study.

The Food and Drug Administration (FDA) oversees supplements according to the Dietary Supplement Health and Education Act of 1994 by reviewing complaints from voluntary adverse event reporting. However, unlike drugs, the FDA does not conduct pre-market approval or assess supplements for efficacy, safety, or quality. Several independent organizations offer quality testing. Supplement bottles with seals of approval from organizations such as the National Science Foundation NSF, Consumer Lab Testing, or US Pharmacopoeia (USP) have received quality testing to confirm the product was properly manufactured, contains the ingredients listed on the label, and does not contain harmful contaminants.

Mind/Body

Mind/Body treatments enhance health by focusing on the connection between the mind and the body and often target stress; up to 60% of migraineurs report stress as a trigger.

Mindfulness meditation has been defined by Dr. Jon Kabat-Zinn as “paying attention in a particular way, on purpose, in the present moment, non-judgmentally.” Mindfulness meditation has been shown to improve overall well-being, decrease perceived stress and anxiety, reduce the recurrence of depression, and may benefit those with chronic pain conditions. Mindfulness may work beyond pure relaxation, by improving attention regulation, body awareness, emotion regulation, non-reactivity, and meta-cognition

(awareness of thoughts as separate from self). A few small studies have demonstrated that mindfulness meditation may improve migraine outcomes, quality of life, and disability. A non-randomized study in adults with chronic migraine-medication overuse headache (MOH) found that after withdrawal of the offending medication, mindfulness meditation was as effective as daily migraine prevention medication. Several studies are ongoing to assess further its benefit in migraine.

Yoga combines physical postures (“asanas”) with breathing (“pranayama”) and deep relaxation (“shavasana”) to create a physically engaging meditative experience. Yoga may be helpful for many health conditions and symptoms. One randomized controlled trial found that three months of five days/week, 60-minute yoga sessions decreased the frequency and severity of migraine, as well as associated anxiety, and depression.

Tai Chi is part of traditional Chinese Medicine and as a “moving meditation,” its goal is to rebalance the body’s own healing capacity. Tai chi can improve balance, prevent falls, and is helpful for many chronic musculoskeletal pain conditions. One small study showed benefit in headache disability in tension-type headache. A 2018 abstract of a randomized controlled trial in Chinese women found that 12 weeks decreased migraine frequency, improved blood pressure, and resulted in weight loss compared to a wait-list control group.

Certain yoga or tai chi postures may cause or exacerbate musculoskeletal injuries, and those with a history of headache should inform their instructors. No major side effects or risks were reported in the studies described.

Manipulation Based Therapies

Acupuncture is also part of Traditional Chinese medicine (TCM) and involves placing hair-thin needles at specific points along TCM energy pathways to balance life energy or “qi” for the condition being treated. However, many have debated this mechanism. One of the challenges of researching acupuncture is having an effective control or “sham acupuncture” group, with some studies using non-penetrating needles as the “sham” group while others place needles at sites not specific to migraine. There have been conflicting neuroimaging studies in comparing true acupuncture to sham acupuncture and whether the brain areas involved in pain are similarly involved in both types of acupuncture. However, one must always be cautious of the power of placebo (such as with sham acupuncture) when considering any procedural treatment. Despite the debate over its mechanism, there are respected literature reviews summarizing research done on up to 5000 patients that support acupuncture use and its effectiveness in episodic and chronic headache conditions when compared to sham, usual care, or medications, with few side effects. Time and cost are often limiting, although many insurance companies may provide coverage.

Chiropractic manipulation seeks to realign the physical body to improve healing. Evidence favoring chiropractic manipulation for cervicogenic and chronic tension-type headaches is weak, although there are some less rigorous studies supporting it. However, high velocity techniques have a risk of damaging arteries in the neck and should be avoided. A 2017 review of records from one hospital over 4 years found that of the 141 patients with

this form of neck artery damage (vertebral or carotid artery dissection), 12 patients and 16 dissections (with one death) had documented chiropractic manipulation immediately prior to onset of symptoms.

Massage manipulates tissue and muscles to promote healing and can be very relaxing. Massage may be helpful in migraine, tension-type, and cervicogenic headache, but there are only a few small studies limited by small sample sizes, the variety of types of massages, and proper control groups. Massage can be cost-prohibitive, although some insurances may provide some coverage.

Summary Integrative Medicine treatment approaches may be an excellent option to augment mainstream treatments for those with headache.

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