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Complementary and Integrative Health Treatments for Migraine

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Abstract

Migraine is a chronic disabling neurologic condition that can be treated with a combination of both pharmacologic and complementary and integrative health options. With the growing interest in the US population in the use of nonpharmacologic treatments, we reviewed the evidence for supplements and behavioral interventions used for migraine prevention. Supplements reviewed included vitamins, minerals and certain herbal preparations. Behavioral interventions reviewed included cognitive behavioral therapy (CBT), biofeedback, relaxation, the third wave therapies, acupuncture, hypnosis, and aerobic exercise. This article should provide an appreciation for the wide range of nonpharmacologic therapies that might be offered to patients in place of or in addition to migraine preventive medications.

Keywords

Behavioral Treatments; Supplements; Vitamins; Minerals; Hypnosis; Mindfulness

INTRODUCTION

Migraine affects over 36 million Americans and is the second most disabling condition worldwide in disability adjusted life years.^{1,2} With the increasing interest in complementary and alternative medicine (at least one third of Americans use complementary treatments³), it should be no surprise that people with migraine also try these treatments to treat migraine. Research has shown that up to 50% of those with severe headaches/migraine use complementary and alternative medicine (CAM) and integrative medicine treatment options⁴. However, CAM treatments are costly. In the US in one year alone, >\$30 billion was spent out of pocket on visits to complementary and alternative medicine (CAM) practitioners and on CAM purchases⁵⁻⁷. About one third (\$11.9 billion) was spent on visits to practitioners⁷. Nearly 85% of providers report that they lack the knowledge to properly inform their patients about CAM treatments⁸. Thus, we seek to review which CAM treatments are evidence based and might be helpful to people with migraine. CAM therapies consist of supplements and behavioral interventions. In this article we will focus on the more

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commonly studied CAM treatments. Of note, evidence-based guidelines from the American Academy of Neurology and American Headache Society on NSAIDs and other complementary treatments for episodic migraine prevention in adults were published in 2012⁹. However, they were retired¹⁰ and new guidelines are in development.

Neuro-ophthalmologists should be aware of the literature on complementary and integrative treatments for migraine given the high prevalence of migraine and the fact that many patients present with eye complaints that are really part of migraine. For example, people with migraine may think that they have a visual acuity issue because of blurred vision but really they are experiencing photophobia, they may have visual disturbances meeting criteria for aura, they may complain of eye sensitivity which can be allodynia or eye pain from the pain of migraine itself. When patients present with these symptoms, and a diagnosis of migraine is made, many patients also want treatment for their migraine.

SUPPLEMENTS

Supplements include vitamins, minerals, and certain herbal preparations. Their use among people with migraine is on the rise despite lack of adequate FDA regulation regarding their safety and efficacy in humans studies^{11–14}. Also, despite touted as safe, there is a lack of data regarding their safety in pregnancy and lactation¹⁵.

Magnesium

Magnesium use has been studied for both the management and prevention of acute migraine attacks. Magnesium is the second most common intracellular cation in the body. It plays a salient role in glucose metabolism, nucleic acid synthesis, muscle activity and cell membrane stabilization. About 67% of magnesium in human bodies is stored in bones and rest intracellularly¹⁶ Only 1–2% is available extracellularly; thus, measured serum levels are a poor indicator of true total body stores. Low magnesium levels in the serum and low intracellular concentrations in various cells and the brain have been linked to migraine both ictally and interictally^{17–22}. It is postulated that people with migraine secrete excessive amounts of magnesium due to stress leading to hypomagnesemia which in turn potentiates cortically spreading depression, neurotransmitter release including substance P, platelet aggregation, and vasoconstriction²³.

A recent meta-analysis of five double blind, placebo controlled randomized trials showed a reduction in the number of migraine attacks by 22–43% with oral magnesium treatment²⁴. The study by Piekart et al 1996 (included in the above meta-analysis), provides the best evidence regarding the efficacy of oral magnesium²⁵. In this study, trimagnesium dicitrate 600 mg, administered to 81 subjects with migraine over a period of 12 weeks was compared to placebo. People with migraine treated with magnesium had a 41.6% reduction in the number of attacks compared to 15% in the placebo group. Based on this, the American Academy of Neurology (AAN)-American Headache Society (AHS) gave oral magnesium a level of evidence B for the prevention of episodic migraine.⁹ In practice, it is recommended to take 400 mg of magnesium oxide or chelated magnesium (eg, magnesium gluconate, glycinate, aspartate) daily with food²⁶. Stomach ache, nausea and diarrhea are possible adverse effects that may occur with the use due to poor absorption but if tolerated, it should

be used at least for a month before benefits are observed. If no benefits are noticed after one month and it is well tolerated, the dose can be raised to 400 mg 2 or 3 times a day.

In contrast, IV magnesium is commonly used in combination with other agents for the treatment of acute migraine in the emergency department. Administration of 1 g of IV magnesium provided relief of >50% in pain intensity in about half of the patients who had low serum ionized magnesium levels in one study¹⁹. However, a meta-analysis of 5 randomized controlled trials showed no benefit of IV magnesium in the acute treatment of migraine in comparison to other drugs including placebo²⁷. Thus, there is a lack of sufficient evidence to recommend the use of IV magnesium alone in migraine attacks as noted in the AHS Emergency Department Management of Migraine Guidelines²⁸.

It is important to note that magnesium should be avoided in renal failure. It is secreted in urine and in renal failure it can cause risk of toxicity (arrhythmias, hypotension, confusion, coma and death).

Riboflavin

Riboflavin or vitamin B2 is an important cofactor for enzymes involved in energy production in mitochondria via the Krebs's cycle and electron transport chain. It is one of safest and least expensive migraine prophylactic treatments²⁹. The basis for use of riboflavin comes from the theory of mitochondrial dysfunction in the brain leading to reduced energy production and an imbalance in cortical excitability³⁰. In support of this theory, a pharmacogenetic study showed an effective clinical response in patient with migraine who were non-H mitochondrial DNA haplotypes³¹. A recent meta-analysis of 11 clinical trials in adults and children showed mixed results regarding the efficacy of riboflavin in migraine prevention^{32,33} and Schoenen and colleagues conducted a class 1 randomized trial comparing riboflavin 400 mg to placebo in 55 patients with migraine. There was a significant reduction in the attack frequency and days with migraine after 3 months as compared to the placebo. The retired AAN/AHS guidelines give level of evidence B to riboflavin use in the prevention of migraine. The recommended regimen is 400 mg daily of riboflavin orally for at least 3 months to notice any effect. Side effects are minimal and include diarrhea, polyuria and yellowish discoloration of urine.

Co-enzyme Q 10 (Co-Q10)

Co-enzyme Q 10 is a cofactor in mitochondrial electron transport chain. Its action as an antioxidant and anti-inflammatory by reducing production of H₂O₂ and matrix metalloproteinases, is thought to be the likely anti-migraine mechanism. The first randomized controlled trial of Co-Q10 was conducted in 42 patients. A Co-Q10 dose of 100 mg 3 times a day was administered in the active treatment group. A response rate (>50% reduction in attack frequency) of 48% was observed in the active group versus 14% in the placebo group and there were no significant side effects reported³⁴. In another study with a larger study population of 1550 patients, about 33% of the subjects were found to have low Co-enzyme Q10 levels. This subgroup was administered Co-Q10 1–3mg/kg per day with improvement in levels at follow up and a reduction in attack frequency and headache disability³⁵. More recently, coQ10 at doses of 100–150mg day in combination with magnesium, riboflavin and

feverfew was quite effective in reducing intensity and days with headache compared to the placebo^{36,37}. In the US, Co-Q10 is available over the counter and is well-tolerated. The old AAN/AHS guidelines consider Co-Q10 as possibly effective (level of evidence C) in migraine prevention. The recommended dose per guidelines is 1–3 mg/kg/day³⁸.

Butterbur

Butterbur, also known as *Petasites hybridus*, is a perennial shrub that contain chemotypes “petasins” which are believed to anti-inflammatory³⁹. It is an herbal product available in over-the-counter preparations for use in migraine and allergic rhinitis. The leaves, rhizomes and roots of the plant are used to make solid extracts that are commercially marketed for migraine prophylaxis. Recent research has shown that the butterbur constituent isopetasin is a transient receptor potential Ankyrin (TRPA)-1 tropic agent that stimulates the channel causing desensitization of peptidergic trigeminal nerve terminals. This in turn was found to attenuate the terminals’ abilities to release CGRP and to signal pain⁴⁰. Several class I studies have reported effectiveness of butterbur in decreasing headache attack frequency. Of these, the most cited one is by Lipton et al where 100 mg and 150 mg twice daily of butterbur was compared to placebo in a 16-week trial following a 4-week baseline period in 233 subjects with migraine⁴¹. Subjects who took the 150 mg dose of butterbur showed a significantly higher response rate at 4 months and a greater reduction (by 45%) in attack frequency from baseline compared to the 100 mg dose (32%) and placebo (28%). A prior study⁴² showing an increased responder rate with 100 mg of butterbur compared to placebo in 120 subjects was re-analyzed by Diener and colleagues in light of several drawbacks in the original protocol and analysis⁴³. Compared to a baseline 4-week period, patients in the butterbur group showed a decrease in mean attack frequency with a high responder rate (45% vs 15%) compared to placebo. A similar trend was observed in randomized trials in the pediatric population^{44,45}. Based on available evidence, the retired AAN/AHS guidelines gave butterbur use a Level A indication as an effective therapy for migraine prevention.

More recently, however, its use has been surrounded in controversy due to several reports from various countries of liver toxicity ranging from reversible hepatitis to fulminant liver failure requiring liver transplants^{38,46}. It is believed that liver injury occurs with a higher and long-term use of butterbur and is secondary to the pyrrolidine alkaloids found in the extracts^{38,47}. The original formulation of butterbur, Petadolex (which was studied in various trials) was marketed by a German company, Weber & Weber using methylene chloride solvent extraction process that removed these alkaloids. However, this method of removal was changed in 1988 leading to revocation of the production license by the German regulatory agencies in 2009¹⁴. Subsequently, several countries including the European union rescinded the registration of commercially available butterbur in light of safety concerns due to alkaloid impurities^{14,48}. In the US, recent testing of commercially available butterbur supplements demonstrated that seven dietary supplements had pyrrolizidine alkaloids, which are considered to be toxic to the liver⁴⁹. Due to the absence of FDA regulation and in the light of these recent findings, the AAN/AHS retired its recommendation regarding the use of butterbur in migraine prevention¹⁰. Thus, the authors of this article would not recommend prescribing butterbur at this time.

Melatonin

Melatonin, an endogenous hormone secreted by the pineal gland, plays an important role in the regulation of circadian rhythm. It is used for various clinical conditions but recently proposed for migraine prevention due to its anti-inflammatory effects against calcitonin gene-related peptide and other proinflammatory mediators in vitro, pro-regulatory effect in the circadian rhythm and low melatonin levels in serum and urine due to hypothalamic dysfunction in patients with migraine^{50–54} The first open label study of melatonin 3 mg in 32 patients with migraine showed a 78% responder rate with reduction in overall frequency, intensity, duration of headache days at 1 and 3 months as compared to baseline⁵⁵. Subsequently, 3 randomized controlled trials have been performed for migraine with two studies showing negative results^{56,57} and one study with positive results⁵⁸. In the latter one, melatonin was found to be more tolerable than amitriptyline. Its tolerability was similar to that of placebo. A recent systemic review was unable to pool the data on the melatonin studies due to significant methodological differences, small sample sizes and some uncertainties regarding randomization. The authors concluded that the quality of evidence for outcomes was very low and is not currently sufficient to support use of melatonin in clinical practice⁵⁹.

BEHAVIORAL INTERVENTIONS

With the realization that migraine is a chronic disabling neurologic condition that is often comorbid with various psychiatric conditions such as depression and anxiety, and triggered by stress, several behavioral treatments were extended in the management of migraine with the primary aim of prevention. Most of the interventions described below have been extensively studied in clinical trials, and often used an adjunct to with pharmacotherapy. However, studies have also shown that they are effective even without preventive medications/supplements.^{60,61} Based on the research data, the AAN in 2000 endorsed relaxation training, thermal biofeedback combined with relaxation training, EMG biofeedback, and cognitive-behavioral therapy as Grade A level evidence for migraine prevention and its use with preventive drug therapy as Grade B (AAN 2000)⁶². These treatments are cost-effective and have minimal risk of adverse effects in comparison to the drug therapy⁶³. They are suitable for patients who are drug-resistant, at high risk of adverse effects such as children and have preference for non-drug treatment or contra-indications as in pregnancy. In practice, these treatments are under-utilized because of a shortage of qualified therapists and limited insurance coverage.^{64–66} Table 1 lists some sample resources physicians might provide to their patients.

Cognitive Behavioral Therapy

Cognitive Behavioral Therapy (CBT) is a psychotherapeutic approach, originally developed by A aron Beck for the treatment of various mental health disorders. It is based on the premise that our thoughts influence how we feel and behave⁶⁷. CBT targets the dysfunctional thoughts (e.g. “My headache will never get better,” “I will never be able to perform, ” and “My wife will leave me”) by challenging them or using certain behavioral techniques (e.g. problem-solving skills, relaxation) leading to positive behavior and improved function that in turn will reduce the intensity of the negative thoughts and

eventually replace them with positive ones ²⁶. CBT increases self-efficacy and thus functional outcomes in patients with migraine, thereby, reducing stress, anxiety, depression and improving quality of life ⁶³. In a recent systematic review of studies, CBT showed a reduction in headache intensity in the range of 16.2% to 71.9%, reduction of medication intake by 20–25%, as well as a reduced depression, anxiety, and pain catastrophizing while improving pain acceptance and coping ⁶⁸. CBT programs often incorporates components of biofeedback and relaxation and can also be combined with pharmacological treatment, in which case it is found to be superior to mono-therapies ^{69,70}. Well-designed clinical trials in both pediatrics ⁶⁰ and in adults ⁶¹ showed that CBT optimized with abortive migraine medication works effectively. This is important because medications for preventing migraine, especially in pediatrics, may not always be ideal. In a well-designed trial comparing amitriptyline, topiramate and placebo, there were no significant differences in reduction in headache frequency or headache-related disability in childhood and adolescent migraine in the various arms at 24 weeks. However, the amitriptyline and topiramate groups had higher rates of adverse events. ⁷¹ Thus, in the case of pediatric migraine, behavioral therapy such as CBT is considered first-line.

Biofeedback

Biofeedback is a behavioral technique wherein information learned about involuntary body functions as measured by external devices is manipulated to achieve desired physiological response ⁷². The goal is to have patients learn to develop awareness and control of various physiological parameters such as heart rate, breathing, muscle tension through relaxation techniques. Once learned, these behavioral methods can be used in disease conditions even without the requirement of sensors or external devices. In migraine management, biofeedback enables patients to become aware of the physiological changes during relaxation training, and improvement in disability and function ⁶³. Biofeedback can be applied through various modalities such as blood volume pulse (BVP) feedback, thermal biofeedback and EMG feedback, and the response is presented either in the form of audio or visual images ⁷³. In Neurofeedback, patients observe real-time displays of EEG waves and learn to change them to achieve a calmer state. In various meta-analyses, biofeedback produced medium effect sizes in headache parameters and associated psychological symptoms ^{63,74}. BVP feedback, which can also be administered during acute attacks, produced stronger effects than thermal and EMG feedback in these studies. Level of evidence for neurofeedback in migraine is lacking due to absence of rigorous studies ⁷⁵.

Relaxation

Relaxation training (RT), often, used in combination with CBT, works by decreasing sympathetic activation and central pain processing ^{63,73}. Various forms of relaxation techniques are employed in migraine prevention, for example, autogenic training, progressive muscle relaxation training (PMRT), diaphragmatic breathing, guided imagery, meditation and hypnosis. PMRT is one of the popular methods which incorporates alternative activation and relaxation of decreasing number of muscles during progressive sessions. Patients learn to differentiate the contrasting sensations and employ these exercises during periods of stress. These techniques can be self-taught through print, audio or online (e.g. Apps, YouTube) materials. Relaxation techniques should be practiced regularly to be effective. In a

meta-analysis of clinical trials of migraine prevention, RT produced medium size effects and is compared to that produced by CBT and BF⁷⁶.

Third wave therapies

Meditation/Mindfulness—Meditation is a form of mental technique aimed at improving attentional capacity, self-awareness and emotional regulation. Based on how the attention is focused, two types of meditational styles are identified in scientific research: Concentrative type and Mindfulness types (MM)⁷⁷. Concentrative style involves focused attention on a given object such as an image or a mantra (also known as transcendental meditation), while mindfulness meditation is characterized by nonjudgmental moment-to-moment awareness of one's internal and external stimuli including thoughts and feelings⁷⁷. These practices are well-tolerated and suitable for pregnant women, adolescents and other patients who may have contraindication to medications, are limited by medication side effects or medication overuse issues⁶⁸. Mindfulness-based stress reduction (MBSR), Mindfulness-based cognitive therapy (MBCT) and Acceptance and Commitment therapy (ACT) are three major MMs based interventions well studied in mental and physical disorders.

MBSR is a secular intervention developed from Buddhist philosophy by Kabat-Zinn that is found to be effective in management of chronic pain related to several medical conditions⁷⁸. Standard MBSR is carried out in eight weekly two-hour groups sessions with a concluding day “mindfulness retreat” of about 6 hours duration⁷⁹. Wells et al. conducted one of first randomized controlled trial of MBSR in 25 people with episodic migraine. Patients were assigned to either usual care (pharmacological prophylaxis) or usual care combined with MBSR⁸⁰. One month post-MBSR, the MBSR group had reduced headache duration and disability and improved self-efficacy. There have been at least two subsequent MBSR studies to date examining patients with migraine or tension type headache^{81,82}. The first study consisted of 37 adult participants with 15 or more headache days who were randomized to MBSR and usual medication treatment. The MBSR group showed less pain intensity and improved quality of life as compared to usual treatment⁸¹. The second was an online MBSR program compared to usual medical treatment in patients with migraine or tension type headache⁸³. The MBSR group did not have improvements in sensory pain sensation but did have improvements in the emotional dimension of pain, disability, mindfulness and distress. Both of these studies had small sample sizes. Despite small sample sizes of studies, a recent meta-analysis showed improvement in headache intensity with MBSR⁸⁴.

Spiritual meditation, a form of transcendental meditation, showed improvement in headache frequency, intensity and anxiety in several randomized trials^{85–87}. Mindfulness based cognitive therapy (MBCT) is another integrative approach that was originally developed for the prevention of depression relapse⁸⁸. Day and colleagues conducted a pilot study which showed that MBCT was feasible and acceptable to headache patients and was effective in improving self-efficacy and pain acceptance but did not significantly change daily headache outcomes⁸⁹ Seng and colleagues have subsequently conducted a RCT in a larger group of migraine patients. In this study, MBCT effectively reduced perceived headache-related disability and day-level migraine-related disability⁹⁰.

Acceptance and Commitment Therapy (ACT-pronounced as “act”) is another mindfulness-based approach shown to be effective in the treatment of mental health disorders and chronic pain ^{91,92}. Based on this success, its use has been extended in treatment of headaches. Developed by Steven C. Hayes, it integrates both cognitive and behavioral therapy to improve the psychological inflexibility caused by avoidance behavior and cognitive fusion that supports these behaviors. Major processes involved in ACT include noticing and acceptance of unwanted private events such as pain without considering them as barriers to action, while observing these in self-as-context and acting in direction of personally valued goals to improving overall functioning ⁹³. Three RCTs of ACT in people with migraine have shown ACT as effective in improving symptoms of depression, anxiety, disability, general function and affective dimensions of pain compared to wait-list or usual care ^{93–95}.

Hypnosis

Hypnosis is a state of consciousness wherein there is a heightened focus with reduced peripheral awareness and an enhanced capacity to respond to suggestion. The use of hypnosis for therapeutic purposes is referred to as hypnotherapy. Hypnosis has been utilized since the 18th century for the treatment of pain ⁹⁶ and efficacy for therapeutic purposes was established by recommendations from The National Institute of Health Technology Assessment Panel ^{97,98} and the American Psychological Association ^{99,100}. Beginning in the 1970s, several studies showed the effectiveness of hypnotherapy in migraine ^{101,102}. A recent systematic review identified 8 randomized controlled trials of hypnosis in primary headaches including migraine which showed a positive effect on reduction of headache activity, medication usage and quality of life in adults without any adverse effects ¹⁰³. It is an alternative form of therapy that can be used for patients who have poorly responded to pharmacotherapy or have contraindications to it. Hypnosis has most frequently been used in conjunction with visual imagery and relaxation techniques and can also be self-administered after training with other means such as audiotapes ¹⁰³.

Yoga

Yoga is a form of mind-body intervention targeting different physical and mental health conditions. The conceptual framework of Yoga is derived from Indian philosophy and involves a combination of specific physical postures (termed “asanas” of Hatha Yoga), breathing techniques (pranayama), and meditations ¹⁰⁴. There are different schools of Yoga based on the priority of the spiritual or physical practices. The usual duration of a session is between 1 and 2 hours. It is a secular form of intervention aimed at increasing physical flexibility, coordination, strength and achieving mental calmness and awareness ¹⁰⁵.

Yoga has been studied in a number of pain related conditions ¹⁰⁶ and a recent meta-analysis showed an overall positive effect on pain disorders including headache ¹⁰⁷. John et al conducted a randomized trial to assess the effect of Yoga in 65 patients with migraine. Patients were randomized to Yoga intervention or self-care. After 3 months of intervention, the Yoga group showed statistically significant reductions in frequency, intensity, duration of attacks, overall intensity and anxiety/depression scores compared to the self-care group ¹⁰⁸. In another study, in addition to improvements in headache intensity and frequency, Yoga had added benefits in modulating autonomic function by increasing vagal tone in combination

with conventional therapy vs conventional therapy alone ¹⁰⁹. It is theorized that Yoga also helps relieve stress (thought to be one of the triggers of migraine) by decreasing sympathetic activity via inhibitory effects on angiotensin II and NO ¹⁰⁹. A recent study also showed that Yoga in combination with Ayurveda (Indian traditional medicine system) showed ~ >75% reduction in the number of participants with severe headache, nausea, vomiting, analgesic requirement, duration of headache and number of headaches in the last 3 months as compared to symptomatic treatment with NSAIDs ¹¹⁰. Advantages of Yoga therapy are its cost-effectiveness, added effects on flexibility, stress/depression/anxiety and quality of life without many side effects. However, most of these studies were conducted in India (limiting generalizability), had small sample sizes, were short-term in duration (up to 3 months) and were variable in the types of Yoga practices.

Acupuncture

Acupuncture is an ancient Chinese therapy based on the theory of disease causation secondary to energy imbalance in the body. Acupuncture involves inserting needles at acupoints (specific points along the energy meridians) in the body leading to the release of the obstructed energy (referred to as “Qi” in Chinese) thus bringing the body in balance and curing the disease ¹¹¹. Despite recent debates about the validity and placebo effects of acupuncture ^{112,113}, several studies argue that it may have a scientific basis in the treatment of migraine ^{114–119}. A meta-analysis of 22 trials that included 4985 patients showed that acupuncture lead to a 50% reduction in headache frequency in 41% of the patients compared with the no acupuncture group, 50% compared to sham acupuncture group and 57% compared to prophylactic medication therapy suggesting that acupuncture is slightly more effective than sham and as effective as medication prophylaxis. Subsequent trials showed a similar trend towards the effectiveness of acupuncture in migraine prevention though the quality of evidence is low ^{120,121}.

Like Yoga, there are different styles of acupuncture. Acupuncture generally requires a minimum of 6–8 sessions to see a decrease in symptoms. Adverse effects range from serious such as pneumothorax, infection, bleeding, bruising, nerve injury to minimal such as a change or increase in pain intensity or failure of therapy. It is contraindicated where there is skin and soft tissue infection. It can be recommended for patients who have failed other forms of pharmacological therapy.

Aerobic exercise

Exercise is often recommended in prophylaxis of migraine attacks ¹²². The effect of aerobic exercise may be mediated by a decrease in the neurovascular inflammation and improvement in self-efficacy for migraine management after the achievement of aerobic fitness ¹²³. In a recent systematic review of studies, aerobic exercise was associated with an improvement in headache parameters when used as an adjunct to other behavioral therapies ¹²⁴. To be effective, an endurance exercise program (eg. cycling, jogging, rowing) of at least 30–60 minutes three times a week for 8 weeks is recommended from various studies ^{124,125}. This regimen is also associated with a low likelihood to trigger migraine attacks that can occur in patients with migraine ¹²⁶. Despite certain studies showing the benefits of aerobic exercise

127–130, the overall data is still insufficient to recommend aerobic exercise as a single therapy for migraine prevention due to methodological limitations¹²².

Education

Finally, education regarding key lifestyle factors is also very helpful and important in reducing migraine. A simple session could consist of educating patients about the importance of the following: a) limiting pain medication to no more than 2–3 days per week because frequent medication use can actually worsen headache; (2) taking the medication right away at the start of the headache can lead to a shortened time to pain relief and less medication in the long-run; c) sleep hygiene (maintaining the same bedtime and time of awakening during the week and during the weekend; and d) exercise as aerobic exercise has been effective in reducing migraine.⁶⁴

CONCLUSION

In conclusion, there are a multitude of nonpharmacologic treatment options for migraine, ranging from supplements to many types of behavioral interventions. Traditionally, they were called complementary and alternative treatments. Now, they are better known as complementary and integrative health treatments. They can be beneficial to patients alone and in conjunction with medications. Future guidelines will be produced by the American Academy of Neurology and the American Headache Society on their use.

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Table 1:

Complementary Integrative Health Migraine Resources

Headache Toolbox (Patient Handout) on Evidence Based Integrative Health Treatments: https://onlinelibrary-wiley-com.ezproxy.med.nyu.edu/doi/full/10.1111/head.13555
Free relaxation audios on websites like DawnBuse.com
Additional reading material: https://americanmigrainefoundation.org/resource-library/?search=mindfulness

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