ORIGINAL RESEARCH PAPER

Pharmacology

ROLE OF YOGA THERAPY IN MIGRAINE – A BRIEF REVIEW

KEY WORDS: Migraine, Headache, Yoga, Exercise, Meditation, Alternative Medicine

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ABSTRACT

Migraine is a periodic and debilitating disorder which can affect the whole body. Migraine headache is mostly unilateral and pulsating in nature and it lasts from 4 to 72 hours. The other symptoms include nausea, vomiting, increased sensitivity to light, sound and pain. The common prescribed drugs are beta blockers, antidepressants, anticonvulsants and calcium channel blockers. Majority of the patients are dissatisfied with their current treatment regimens. Moreover, excessive use of these medications can cause refractory condition of medication overuse headache. The drawbacks of existing treatment substantiate the need for additional migraine treatment strategies and protocols. In recent times large number of studies have come up supporting the role of Yoga in providing pain relief in migraine headaches. These Yoga exercises act by down-regulating hypothalamic-pituitary-adrenal axis and also the sympathetic nervous system. It can be safely concluded that regular practice of Yoga along with the convention pharmacological modalities provide not only symptomatic relief but also aids in overall holistic well being of migraine patients.

Introduction-

The World Health Organization (WHO) declared severe migraine as one of the most debilitating diseases with the nineteenth rank(6).International Headache Society diagnostic criteria suggested that the adult population with an active headache disorder constitutes about 46% for general headache and 42% for tension type headache.(4) It is further estimated that about 12 to 18 percent of the people are suffering from migraines which is 11 out of 100 people are suffering from it .(5) The headaches tends to starts in the age group of 10 and 46 and has a tendency to run in families. Prevalence of migraine is about 6% for men and 18% for women. (1)Scientists believe that the attack initiates in the brain itself and involves various nerve pathways and chemicals in the brain.

Table 1. International Headache Society Diagnostic Criteria for Migraine Headache With and Without Aura (3)

Migraine attack can be triggered by stress, food, environmental changes and other factors. Prevention of attack can be achieved by avoiding smoking, caffeine, alcohol, by exercise regularly, having adequate sleep, meditation and doing anything which prevents the trigger factors.

Table 2: Potential triggers of migraine headache (level III evidence,class A recommendation)(7)

However only half of the people suffering from migraine have clinically responses to preventive drug treatments and more than 10% of the patients discontinue their medicines due to various side effects.(2)

The available treatment options include-:

Patient Awareness

Patients should be informed about the triggering factors of so they can identify these factors and avoid migraine episodes. Patient must be educated regarding the risks of self-medication and on the risk of overuse of abortive medications (8). Comorbidities must be addressed and the patient should be referred specialized doctors as per their needs. It is also advisable to maintain a logbook or a diary to record the attacks to judge the exact frequency, intensity and duration of migraine episodes. Patients and their relatives must be explained in simple language about the neurobiological and genetic nature of the disease. (9)

Pharmacological Treatment

Treatment of acute migraine is challenging because of nonresponse to medications and also as individual response varies to a specific agent or dose.

Drugs must be selected considering the detailed history of each patient. The prescription must contain full information as to when to use, doses, etc.

Table 3. Pharmacological treatment to Abort Acute Migraine Attack. (10-16)

Non Pharmacological / Alternative Treatment

As current medical interventions fail to provide complete relief for the patients, there arises a need to look for other treatment modalities. Alternative medicine is being explored and is becoming a common practice for the management of headaches (17-21). Yoga exercises are considered as alternative medicine by approximately 5% of the adults in the United States and 12% of Australians for treating their headaches(22). Yoga is an amalgamation of physical postures and breathing exercises. It is considered to be one of the safest as well as cost-effective intervention for the pain management(23). It benefits physical and psychosocial health by down-regulation of the hypothalamic-pituitary-adrenal axis and the sympathetic nervous system(24-26). Thus it plays a vital role in reducing sympathetic activity, increasing parasympathetic activity, improving quality of life, and reduction of pain(27,28). Autonomic nervous system imbalance is the reason behind most of the clinical manifestations of migraine like nausea, vomiting, diarrhoea, flushing, piloerection etc. [29]

The motive of this review was to assess if yoga exercises are useful in the treatment of primary headaches specifically migraine.

Table4: Commonly advised Yoga Asanas for migraine patients(30)

Mechanism of action

Yoga exercises help in reducing not only frequency and intensity of migraine but also the duration of the attacks (31,32). Modification in beta endorphin and hormonal secretion levels is considered to be responsible for pain reduction in migraine patients(33,34). Studies have showed that Yoga helps in reducing the episodes of headache attack and medication score in migraine(35,36). Sleep is believed to provide pain relief in migraine patients as the sympathetic system drive decreases during sleep. Relaxation techniques adopted during Yoga also decreases the sympathetic system drive producing the same effect as that of sleep thus causing pain relief in migraine headaches. Hence modulation of ANS by either pharmacotherapy or non-pharmacotherapy causes pain relief in migraine patients. According to studies, yoga reduces stress arousal patterns, reduce stress hormones (37) and is also responsible for the maintaining the stability of autonomic balance (38). Vascular headache like migraine tends to get worsen by

emotional stress. Blood vessels gets constricted in the scalp which in turn leads to more dilatation in order to transport lactic acid formed in blood during stress. Researchers have cited the possible predisposing factors for Migraine as platelet serotonin metabolism, activation of platelet and increased sensitivity to nitric oxide donors and reduced metabolic enzymes. The effect of Yoga on ANS is explained by two theories. As per one of the hypothesis, yoga exercise improves vagal tone by reduction of angiotensin II. Angiotensin II inhibits cardiac vagal activity (39)Yoga exercises suppresses the action of Angiotensin II (40) .Nitric oxide also has significant role as it causes increase in cardiac vagal control and can inhibit sympathetic activity (41) Yoga exercise improves NO bioavailability thereby indirectly reducing sympathetic activity(42,43). As per another theory, voluntary slow deep breathing during Yoga exercises causes stretching of lung tissue which produces inhibitory signals and hyperpolarization. Together these inhibitory impulses and hyperpolarization leads to modulation of the central nervous system and reduction of metabolic activity (parasympathetic state) (44). During yogic exercises there is alteration at cortical level in the hypothalamus and limbic system which in turn results in modulation of ANS and hypothalamo-pituitary axis (45,46). According to clinical scales and HRV analysis, Yoga definitely has a positive effect on treatment of migraine along with the pharmacological therapies. Many studies have supported and accepted the role Yoga in reducing pain in migraine patients(47). Reduced pain inturn reduces grading of anxiety scale with less no. of attacks of smaller duration.

Conclusion

According to various findings it can be safely assumed that Yoga is indeed effective in improving the quality of life of patients with chronic headache particularly migraine and tension type of headaches. Thus integrating of Yoga exercises with conventional pharmacological therapies in the treatment can be prescribed as a routine protocol for patients with chronic headache. However there exist a need for more trials to further establish and comprehend the positive role of yoga in reducing the pain intensity, frequency and in providing symptomatic relief for migraine patients.

Table 1. International Headache Society Diagnostic Criteria for Migraine Headache With and Without Aura (3)

Migraine without aura	Migraine with aura
A. At least five attacks fulfilling B-D B. Attacks lasting 4-72 hours if untreated or unsuccessfully treated C. Headache has at least two of the following characteristics Ÿ Unilateral location Ÿ Pulsating quality Ÿ Moderate or severe pain intensity Ÿ Aggravation by or causing avoidance of routine physical activity D. During headache, at least one of the following Ÿ Nausea and / or vomiting Ÿ Photophobia / Phonophobia E. Headache not attributable to any other disorder	A. At least two attacks fulfilling criteria B-D B. Aura consisting of at least one of the following, but no motor weakness: Ÿ Fully reversible visual symptoms including positive features (e.g. flickering lights, spots or lines) and /or negative features (i.e. loss of vision) Ÿ Fully reversible sensory symptoms including positive features (i.e. pins and needles) and / or negative features (i.e. numbness) Ÿ Fully reversible dysphasic speech disturbance C. At least two of the following: Ÿ Homonymous visual symptoms and / or unilateral sensory symptoms Ÿ At least one aura symptom develops gradually over ≥5 minutes and / or different aura symptoms occur in succession over ≥5 minutes. D. Headache fulfilling criteria B-D for Migraine without Aura begins during the aura or follows aura within 60 minutes E. Headache not attributed to another disorder

Table 2: Potential triggers of migraine headache (level III evidence,class A recommendation)(7)

Drugs like Atenolol,Caffeine (and caffeine withdrawal) Cimetidine, OCPs, etc	Monosodium glutamate (MSG, natural flavour, hydrolysed vegetable protein)
Changes in behaviour	Benzene
Missing a meal; hypoglycemia	Insecticides
Sleeping more or less than usual	Nitrites (as in preserved meats)
Environmental factors	Emotional stress
Bright or flickering light	Foods and beverages
Loud noise	Chocolate
Weather changes	Cheese
Strong odours	Cured meats (e.g., hot dogs, bacon)
Allergens	Caffeine-containing beverages
Foods and beverages	Alcoholic beverages, especially red wine
Chocolate	Others, individually recognized
Cheese	Chemicals
Cured meats (e.g., hot dogs, bacon)	Alcoholic beverages, especially red wine
Caffeine-containing beverages	Others, individually recognized

Table 3. Pharmacological treatment to Abort Acute Migraine Attack. (10-16)

First-line therapies	Simple analgesics/ NSAIDs or their combinations/ Ergot alkaloids/ Sumatriptan, rizatriptan.
Other effective therapies	Meyoclopramide, Prochlorperazine, Amitriptyline, propranolol, flunarizine, cyproheptadine.

Table4: Commonly advised Yoga Asanas for migraine patients(30)

Practices
Sookshma Vyayama (loosening exercises)
Fingers, wrist, elbows, shoulder rotation
Neck flexion/extension
Neck rotation
Padasanchalana
Hand stretch breathing
Sashankasana breathing
Shavasana with breath awareness
Yogasanas
Suryanamaskar-2 rounds
Padahasthasana, Ardha chakrasana, Trikonasana, Bhujangasana,
Vakrasana, Ustrasana
Shavasana-Yoga Nidra or deep relaxation technique

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