



# Migraine Syndrome in Ayurveda

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### Abstract

This article outlines my experience of migraine syndrome and eventual self-healing with Ayurveda. I had experienced my mother's genetic profile until discovering and implementing Ayurveda health principles, and hope this information will convey simple and effective ways of self-healing to the reader. You will learn how practical teachings on eating habits and lifestyle choices can help free you from pain, while gaining unexpected benefits.

### Keywords

Ayurveda; Migraine syndrome; Lifestyle

### About Ayurveda

Ayurveda, the world's oldest holistic health science, holds that a human being is precipitated from a higher, subtler consciousness, and has taken on 'coverings', called 'koshas' from Sanskrit, such as the human body. It is said to be composed of progressively denser elements: Ether (Space, Freedom), Air (Movement, Communication), Fire (Luster, Transformation), Water (Plasma, Cytoplasm) and Earth (Solidity, Manifestation).

Ayurveda describes the tripod of life as the unity of body, mind and consciousness. Ayurveda is an individualized science more than a standardized one, so migraine pain patterns and symptoms call for unique management according to the particular individual circumstances.

In the classical medical scriptures of Ayurveda, detailed descriptions are given of how the body's metabolic process of tissue building occurs, first from the superficial level of plasma to the deep reproductive tissues. But before studying the relevant psycho-biology according to ancient medical thinking, let me first introduce myself.

### My Story

From the age of 17, I began experiencing regular, painful migraine headaches, just as my mother had. She had a drawer full of pills from the pharmacist and no relief after decades of 'treatment'. I was told that 'genetics' were responsible, which implied there was no cure. Yes, I followed in her footsteps with pain killers, vaso-constrictors and caffeine-based pills. Meanwhile, I continued a diet rich in white sugar, refined foods and some whole foods. Our milk was processed with synthetic hormones, though no link was made to these substances at the time. At about age 22, I became vegetarian and my health improved marginally, but the painful bouts still came several times monthly, accompanied by nausea and intense photosensitivity. A

clear hormonal pattern existed, though no self-care was offered from any public or private health care source to address my concerns. Xenoestrogens, caffeine, and stress were not discussed at the time. I began an increasing pattern of using over the counter painkillers, silently depleting my liver function, the very organ I later learned, I needed to be healthy to restore my systems.

While raising my children, I spent about ten years of self-study in naturopathy, western herbology and dietary science with a view to understanding and eradicating my headache/nausea/moodiness patterns. Yet, no adequate explanation or management strategy for migraine syndrome to end my suffering was found. I explored homeopathy, naturopathy, past-life regression and consulted many healers and practitioners.

At age 35, when I came to understand the Ayurvedic concept: that our physiology flows from our psycho-emotional and psycho-spiritual habits, my world began to shift. I began to understand about alkalinity and acidity as functions of 'ushna' (heating) or 'shitali' (cooling) or 'virya' (thermal effect) from Sanskrit. In addition, the concept of 'vipak' (post-digestion) further revolutionized my thinking. At last I could begin my journey of self-healing in earnest.

About two years were needed for my body and mind to adjust to the new food choices and scheduling, as I'd been ill with migraine syndrome for about 20 years at that time. Taking regular meals became an important key to unlocking my door to pain-free living and balanced blood sugar levels. This process involved a re-creation of my lifestyle and values, now putting my health first over work and the care of others, a revelation and revolution!

Perhaps this article will help you, dear reader, to avoid such a long healing curve. Along the way, I discovered that self-care is indeed my first responsibility, though I'd developed a distorted, externally-based value system of perceived 'shoulds', 'can'ts' and 'musts'. These concepts constrained my thinking, resulting in headaches, as mirrored in the battle of vaso-constriction and vaso-dilation pattern of vascular migraine. Think about your typical stress patterns with objectivity, and meditate on how you would like life to be. To change the effects calls for changing their causes. Focus on the solution, not the problem.

### Part I

#### The doshas: vata (air & ether), pitta (fire & water) and kapha (earth & water)

Migraine is a pervasive imbalance involving all bodily systems, notably the nervous and vascular systems. Though mainly digestive in origin and cure, the structural, glandular/hormonal, nervous, excretory, and respiratory systems all need strengthening, according to Ayurveda.

Migraine syndrome is considered primarily a fault of pitta dosha, with vata dosha as a concurrent primary or secondary root cause. In some cases, kapha dosha is also involved as thicker blood viscosity and/or 'ama' (toxicity) dosha, from poor digestion. Therefore, burning of toxins ('ama pachan') and implementing pitta-pacifying food and lifestyle choices is a necessary first step for self-healing.

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## Tissue formation according to ayurveda

Returning to the discussion of the 'dhatu' (tissue) formation process, Ayurveda offers great insights into self-healing. I learned that what we ate or experienced psycho-emotionally about 35 days ago, is today assimilating its qualitative essence into our aura or immune field, having influenced in turn, each of the seven main tissues levels of 'rasa' (plasma), 'rakta' (blood), 'mamsa' (muscle), 'meda' (fat), 'asthi' (bone), 'majja' (nerve), 'shukra' (male), and 'artava' (female) hormonal tissues. Thus, time is considered a causative factor in the disease and wellness processes in ancient Ayurvedic thinking.

Specifically, the food we eat and the thoughts, feelings and emotions circulating in the blood, form our primal human tissue, called plasma. In Sanskrit, the term 'rasa' conveys plasma and other meanings such as flavor, essence, enjoyment, and much more. Rasa is a term descriptive of our human experience, whether sweet, bitter or otherwise. The plasma, I learned from my main teacher of Ayurveda, Vaidya Vasant D. Lad, precipitates into a heavier substance, 'rakta', the blood. Rakta contains the heavier blood components, such as red and white cells, T-cells, fibrin and hemoglobin, etc. This metabolic maturation process from intake to assimilation takes about five days on average to metabolize from food and thoughts into plasma, toward metabolizing or precipitating to become the subsequent tissues.

This wonderful insight from Ayurveda of 'kala' or time, shows that herbal supplements, foods, and thoughts take a specific and predictable timeframe to repair their target tissues. For example, to begin to help heal the stomach lining (skin), at least five days is required once the cause is removed, to alkalize and begin to repair itself. To begin to heal nerve linings, at least 30 days of nutritional irrigation is required to begin the healing process.

## Structural system

The body's bony structure is specialized for the protection of the central nervous system, including the brain, peripheral, autonomic, parasympathetic, sensory and motor systems. Thus, postural habits directly affect nerve function and therefore migraine syndrome, according to ease of circulation of 'prana' or life force.

Gentle daily stretching helps the spine and central nervous system to gradually align to center for flexibility. Abhyanga, or Ayurveda self-massage, using sunflower oil (cooling) or sesame oil (warming) helps to nourish and rejuvenate the body, strengthens the digestive, structural, and other systems. External application of oils rubbed into the skin with upward strokes along the muscles refreshes and energizes the whole body, including the head and feet. After applying warm oil to the entire body, one stands taller and breathes more deeply, thus better oxygenates the cells, resulting in an emotional, energetic and physical sense of well-being. Lymph is circulated in upward strokes, moving against the hair growth to help the oil penetrate the pores to the deeper skin layers. In Ayurveda, the skin's seven layers have functional affinity with each of the seven tissue levels, or 'dhatu'. So, when the skin is massaged externally, the oil's properties and benefits penetrate deeply to the bones, nervous, and glandular systems conveying their restorative attributes to the deeper tissues. After 20 or 30 minutes of gentle stretching and self-massage in a warm place, shower without soap (except perhaps shampoo), and towel off with an old towel you can wash separately and throw away earlier than non-oil towels.

Now your body will begin to feel stronger and to build immunity. However, according to Ayurveda, it's best to save half your newly

found energy. The tendency to overextend oneself is associated with the manic tendencies of migraine sufferers. The middle path suggests maintaining a steady daily routine of morning exercise, breakfast and lunch on time, and evening meditation to prepare for daily deep rest.

## Part II

### Yoga therapy

After self-massage in the morning (except during menses for women), do gentle stretching and deep breathing to gradually bring awareness to your postural and circulatory needs. Give emphasis to bringing a cooling breath to your liver, brain and hormonal systems when rest is suggested, and a warming breath to your colon, kidneys and heart. Begin with about twenty minutes of stretching alignments, interspersed with periods of rest. Left nostril breathing is more cooling and right nostril breathing is more warming. After resting, the body and the mind will more easily become quiet for meditation and de-stressing. Do deep, full, silent, conscious breathing throughout, relaxing deeper and deeper with each silent inhale and exhale.

### Meditation

Meditation facing east towards the sunrise is considered helpful and auspicious for spiritual progress. Remain in a comfortable posture for about twenty minutes or more with the back straight and the spine engaged. Allow the hands to fall symmetrically where they feel most natural. Empty the mind by watching it to express as it wishes, naturally inducing rest and rejuvenation. Worries and compulsions can thief away inner peace and haven't helped so far. So let them go now and let your mind rest. Your mind is yours and must obey its owner.

Meditation is always suggested as the first and last medicine in Ayurveda. Meditation leads to awareness of the root causes of suffering in the subtle mind and unresolved memory, while strengthening all bodily systems. You can buy relaxation but you cannot buy meditation, so begin to explore your inner landscape with curiosity and compassion.

### Digestive system, appetite and assimilation

Migraine is mostly a pitta (excess fiery, hot, sour qualities) disorder, originating primarily in the small intestine and liver, where sour quality tends to accumulate. Excess sour taste can post-digestively corrode the nerve endings, weakening their sensory and motor functions. The pitta-soothing food choices, taken at a right time in right combinations, will help alkalize the cells in due course [1].

A shift in food choices takes about six weeks to transit all the tissue levels from plasma to blood, to muscle, then fat, bone, marrow/nerves and finally, to the hormonal or reproductive tissue. The process of irrigation of the tissues with supportive food choices begins to take effect in about five weeks on average (perhaps a little faster for those with vata type metabolism which tends to be more rapid and irregular, or slower for those with more kapha-type metabolism).

Each cycle of six weeks allows time for the deepening of the cellular repair. Detoxification from prior food habits (choices, timing, etc.) is relative to their prior duration. Cells now detoxify by themselves, but are not yet ready for "cleansing" which can trigger a setback. I learned when to consult a professional.

Blood sugar fluctuations accompany migraine syndrome, due to taking insufficient bitter taste in the diet and irregular daily habits. Often astringent and pungent tastes are also insufficient in the food/

herbal program. Bitter taste pacifies pitta, cleanses the liver, and helps regulate Ph cycles. There are many delicious choices of bitter taste other than coffee, which disturbs all three doshas [2].

Food choices are governed by the principle of 'shadrasaor' six tastes (sweet, sour, salty, bitter, pungent, and astringent), with the bitter taste emphasized, in the main meal of the day, to meet the main hunger of the day, at lunch or brunch, when digestion is at its most efficient. The bitter taste will help balance the blood sugar and support tissue efficiency. Lighter supper taken before 6pm, with all six taste represented, will also contribute to restored digestion and assimilation overnight.

Avoid eating after 6pm, or perhaps as late as 7pm for vata-secondary individuals. If you have emotional hunger, choose fruits such as purple grapes, sweet cherries, or blueberries, or tea of C.C.F. (equal parts or 1/3 tsp. each cumin, coriander, and fennel seed per cup of hot water). These will also help alkalize the nerve cells, and help support regular elimination. Bowel movements must be regular and complete, with no undigested food particles. Any constipation can trigger the migraine onset due to accumulation of toxins assimilating into the circulation. At your first opportunity, leave aside coffee, which is a vaso-constrictor and nerve irritant.

Other meals are best taken according to hunger up to about 6pm. Brunch and 'linner' are individually designed to regularize pancreatic function, emphasizing bitter taste. Taking a savory breakfast and light 'linner' will help balance blood sugar cycles. Of course, this calls for meal planning including shopping. Linner' is my word meaning early dinner. Linner is a smaller version of lunch, with all six tastes represented in the ingredients, some perhaps as healing spices.

Some kapha-secondary individuals will likely be hungry for only two meals a day, with perhaps the addition of a fruit snack to satisfy evening emotional hunger. If you have slower metabolism and report insufficient balance and satisfaction of digestive needs with two meals of six tastes daily, typically 10-11am and 5- 6pm., then you may be a Kapha secondary individual, and find that this rhythm supports regular elimination, an important and critical key to good metabolism.

I learned to take fruits and fruit juices strictly separately from other foods, to help avoid fermentation in the small intestine - one of the important causes of migraine. Excess fermentation in the small intestine can lead to erosion, ulceration, and bleeding of the delicate tissue wall and villi, and can lead to chronic absorption of acidic particles into the blood, which then irrigates, informs and irritates the deeper tissue formation process. Excess fermentation in the gut can cause irritable bowel syndrome, colitis, and parasitic overgrowth. Body and mind function together according to Ayurveda. Unresolved psycho-emotional states are causes that may become effects, perpetuating the syndrome.

Food of course can only satisfy physical hunger and cannot satisfy emotional hunger, whereas right understanding of our human emotional longings does perhaps more for inner. Meditation is the introversion of attention to quiet the mind, develop compassion, and clarify our perceptions and experiences.

## Elimination

The daily elimination is very indicative of the entire digestive intelligence behind it. Color, consistency, regularity, and ease indicate well-coordinated vital enzymatic processes. Any irregularity such as

constipation, loose stool, undigested food particles or irregular form reveals a need for implementing re-balancing measures. Amalaki (dried, powdered Indian gooseberry) taken 1/2-1 teaspoons at bedtime (9pm or so) away from food with sufficient warm water, will gradually help normalize the G.I. tract's acid/alkaline balance, stool consistency and transit time, if taken while also following the pitta-soothing food choices. Normal elimination is passing a timely bowel movement on rising with no pain, strain, undue gasses or undigested food particles. Also, passing a second bowel movement after lunch, the main meal of the day, indicates good digestive health, according to Ayurveda. Ideally, the bowel movement floats, indicating vegetarianism.

## Nervous, endocrine, and hormonal systems

Physiology according to Ayurveda provides great insight into the functions of 'majja dhatu'. Majja comprises all the nervous systems (central nervous system, sensory and motor systems, sympathetic and parasympathetic systems) - and also is inclusive of the marrow system, endocrine/hormonal system, the (fascial) system of connective tissue and the entire optic system. These specialized types of majja dhatu are governed by particular types of intelligence responsible for vata functions such as sensory communication and coordination. Specialized pitta functions such as recognition, luminosity, maintenance of color and temperature, are governed by majja dhatu 'agni' (metabolic intelligence).

Many migraine symptoms are optical, ophthalmic or visual in nature, involving photosensitivity and a nauseating type of pain pulsating from behind the eyes, from interactions of the functions of migraine syndrome. It's no wonder that the sufferer often retreats to a dark, quiet place to endure the pain alone, like I used to and avoid hostility to others. Anger management is a central goal of the migraine management program, to do self realization of unhealthy patterns. Meditation helps to find acceptance and harmony with the many situations we cannot control in life.

During acute episodes of migraine, the appetite may diminish. The body is trying to repair the nerve endings and may have aversion to digesting new food. Nausea can occur because of excess sour taste can accumulate into the lower stomach. Are there indigested thoughts, feelings and emotions? The liver and gallbladder may be producing excess bile, and will benefit from gradual detoxification and re-building, based in daily food and herb choices. Migraine is also associated with estrogen fluctuations in women, testosterone fluctuations in men and progesterone insufficiency in both. Progesterone-precursor rich foods such as yams and herbs such as 'Vidhari' are helpful to support normal hormone function. Note: Herbal supplementation is best done with professional supervision due to the complex nature of migraine and its healing stages.

## Respiratory system

The simple inhalation and exhalation process that takes place during everyday living is often shallow and unconscious in the migraine patient. Deep, full, silent breathing through the left (cooling) nostril can often avert a migraine in the early stages. Oxygen deficiency is associated with migraine syndrome. Low oxygen can make the person feel sluggish and can trigger an event. Chronic low-grade iron deficiency anemia can be a factor in oxygen deficiency, especially where liver function is weak, as liver is the main site of new red blood cell production. Iron is required for healthy respiration.

Breathing exercises foster fuller oxygenation and circulation. Begin with deep, full, silent, mindful breathing with the intention

that healthy cells prevail. ‘Yakrut’ (liver) has accumulated excessive pitta toxins in migraine, according to Ayurveda. Thus, deep breathing and fuller oxygenation of the digestive organs is a most helpful habit to develop for refreshing the circulation. Practice deep, full, silent breathing with awareness of inner and outer relationships as a time-tested way to support longevity and quality of life. TIP: Keep your attention in the breath if stress occurs, for quick relaxation.

### Sleep

The daily clock can be seen Ayurvedically. For example, in the early morning kapha qualities of dampness and coolness dominate until about 10am, when the warmth and hunger of pitta increases. After about 3pm, wind arises and people move about, resonating with the airy, changeable and expansive nature of vata. Similarly, in the evening, kapha brings the heaviness of sleep. If we miss the 10pm sleep cue, pitta can become over-stimulated, perhaps leading to burnout in due course. In deep sleep, the neurons and other cells undergo repair.

By following a natural diurnal cycle of awakening about dawn and winding down about dusk, the cardinal metabolic functions of appetite, elimination and sleep are most efficient. Adjusting my daily habits accordingly, helped me become more resilient to migraine.

Sleeping by about 9-10 pm helps avoid the neuro-stimulation that can occur any later. Meditation for 20-40-60 minutes before sleep will help wind down an active mind. Deep, full, silent breathing will help usher mental relaxation. Enjoy the deep benefits of an empty mind or the meditative state of pure being. Please remember, your mind is yours to maintain and refresh – no one else has this responsibility. Be willing to let go of your concerns, your attachment to demands and commands of carousel thoughts - the same thoughts going around and around in the mind. People somehow always say that worry, stressful thoughts have not helped them so far. Quiet mind brings restored mental clarity by itself.

Sleep taken before midnight is said to be worth two hours of after-midnight sleep. Deep restoration and repair of tissue is accomplished during deep sleep. By habituating to early sleep, one develops early rising without the jolt of an alarm clock. Upon early rising, one feels refreshed and enthusiastic. Early rising also supports patience and tolerance during the day. Impatience, frustration, and intolerance are both causes and effects of migraine. To break the cycle, at least regularly go to bed early, meditate to empty the mind, and enjoy deep restoration. Sleep is most effective when the stomach is empty and when the crown of the head faces eastward at night, provided this is not towards a toilet or drain.

### Self-massage

Use an inexpensive oil such as warmed sunflower oil, apply all over the body from feet to the head, with upward strokes. This ‘abhyanga’ (self-massage therapy) practice is perhaps the most useful for westerners to adopt from Ayurveda to help rebuild health and immunity.

Keep rubbing in the oil during 20-40 minutes of stretching and intermittent resting. Give emphasis to the crown, spine, soles, navel and joints, using upward circular strokes. Abhyanga is nourishing, protective, restorative and rejuvenate. It bestows increased endurance, energy, immune power, and flexibility.

For bathing after, avoid the use of soap, except perhaps shampoo, to facilitate absorption going deeper during the day. Wash your oil

towel separately from other laundry, using a phosphate-free product specialized to remove oils.

### Herbal supplementation

Herbs must be carefully chosen to address the individual symptom picture and history. When migraines are not resolved by the dietary and lifestyle adaptations discussed above, the temporary use of herbs as whole plants may benefit the sufferer [3].

Laboratory- isolated active ingredients and substances such as curcumin are not suggested in classical Ayurvedic management. Rather whole plants deliver the active ingredients safely and without side effects to the consumer. Plants have consciousness and affect the individual according to their qualitative characteristics, attributes and actions. Quantity or dosage is individualized according to weight, metabolic power, age, etc.

Herbal formulations are created according to individual pulse readings, and are not standardized in Ayurveda.

Note: Consult an experienced Ayurveda practitioner to help individualize your herbal supplement and food program.

### Conclusion

Healing from Migraine Syndrome involves a deeper understanding of anatomy and physiology according to Ayurveda. Of no small importance is the willingness to shift many long-standing habits and beliefs. Appropriate food choices and timing, sufficient sleep taken at a right time (not daytime), and awareness of the psycho-emotional ‘digestion’ are critical to alleviating the symptoms of Migraine Syndrome. This involves resolving the metabolic tendency to produce excess sour taste in the body and mind. Life becomes a path of self-awareness and dedication to wellness, putting one’s own health first.

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# **Ayurvedic approaches to treatment of migraine headache**

**By: Maryam Arabpour Dahooei**

A literature Review

## **Abstract:**

Migraine headache is one of the most severe types of headaches. A large percentage of patients fail pharmaceutical treatments for acute migraine attacks or preventing measures. Migraine sufferers can benefit from alternative therapies (biofeedback, acupuncture, supplements, massage therapy, relaxation therapy) if they do not respond to conventional therapy, develop unwanted side effects or are reluctant to take allopathic medications. Unlike the Western allopathic approach of one-size-fits-all, Ayurveda treats the root cause of imbalances by addressing each patient's unique constitution and illness. Headaches in Ayurveda are classified based on doshic involvement (body-mind-spirit). Migraine is mostly a vata-pitta dosha or tridoshic condition but it can also be triggered by any one of the individual doshas. Ayurveda believes in treating the disease at its root cause from within. Therefore, treatments focus on balancing the vitiated dosha (s) in the digestive and nervous systems. This can be achieved by avoiding triggers and prescribing doshic-specific diet, stress management (meditation, relaxation techniques, breathing exercises, yoga and mantra), herbal formulas, lifestyle modification, panchakarma and other holistic modalities to create a balanced physiology. This state of complete balanced in healing the body and mind, can allow the illness to resolve and symptoms disappear.

## **Introduction**

According to the American Migraine Foundation, migraines cost the United States more than \$20 billion each year. The World Health Organization (WHO) consider migraine one of the 20 most disabling health conditions in the world. Migraine sufferers have a higher chance of having depression, anxiety, sleep disorders, other pain conditions and fatigue.<sup>1</sup>

Migraine is a genetic neurological disease which affects 36 million Americans. Migraines are powerful headaches that often are characterized by severe throbbing head pain on one side of the head that can last from 4 to 72 hours. At least 2 to 3 of the following symptoms may co-occur: nausea, vomiting, loss of appetite, blurred vision, sensitivity to light, noise and smells, lightheadedness, diarrhea and scalp tenderness. Currently, migraines are primarily managed by avoiding triggers, taking preventive medications or aborting acute attacks with the use of prescribed medications. Non-drug alternative therapies are also prescribed.<sup>2</sup>

Western drug treatment options have multiple side effects and are largely unsuccessful in managing migraine headaches. Therefore, it is absolutely necessary to explore alternative therapies such as Ayurveda to manage migraines. The Ayurvedic approach offers options in addition to the allopathic model.

## Western classification of migraine headaches

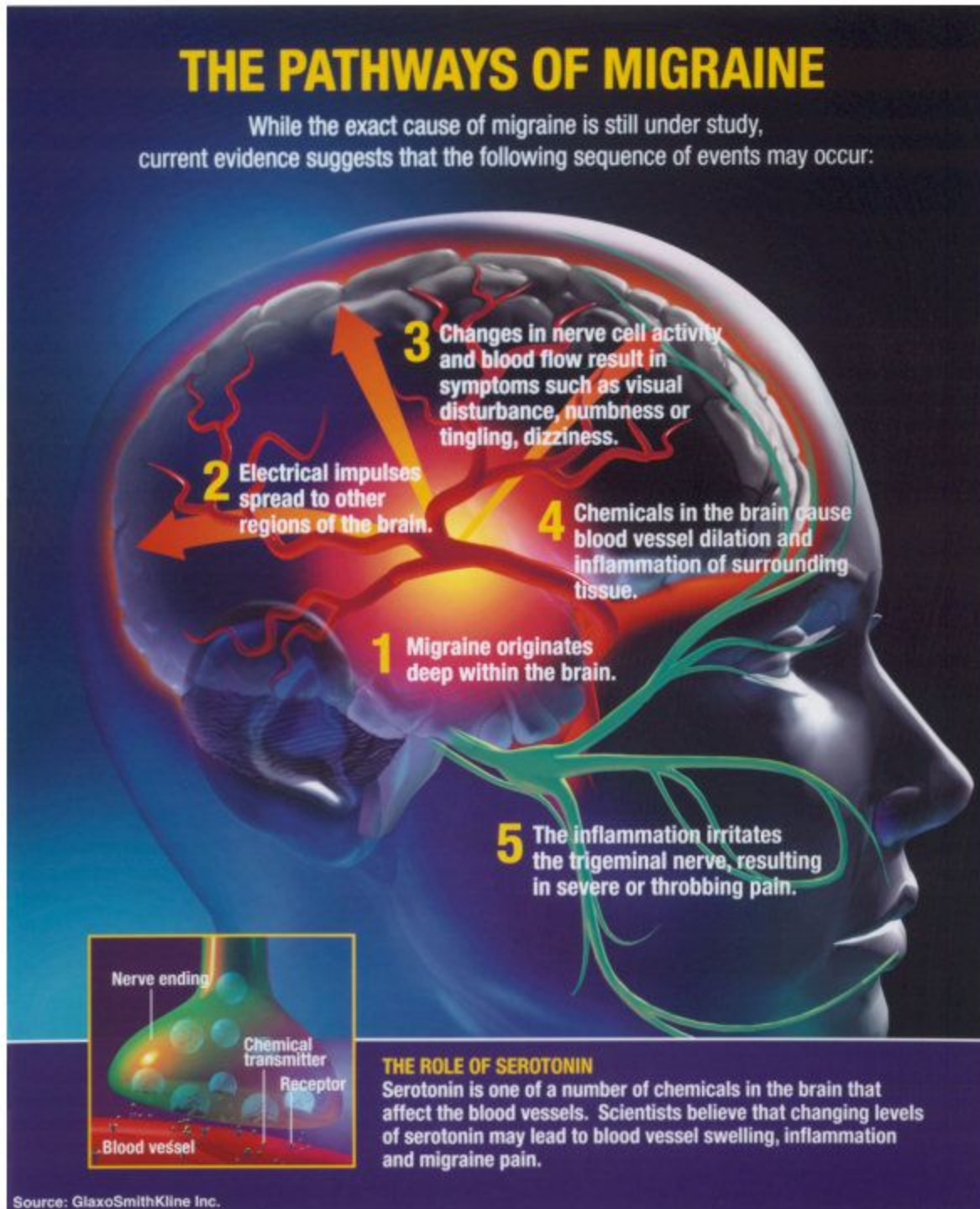
Migraine headaches can be classified into several types but the most common types are migraine with aura (classic migraine) and migraine without aura (common migraine).

- 1) Migraine with aura: Aura is a combination of sensations that occur before and sometimes during the pain of migraine. Aura means “wind” and just as the wind often is a sign of an approaching storm, an aura serves as a warning of an approaching migraine. Auras may include blurry vision blind spots, bright flashing lights, temporary vision loss, wavy or jagged lines, numbing or tingling of the skin and/or muscle weakness.
- 2) Migraine without aura: This type of migraine does not have any warning signs but some people may still feel some symptoms that indicate a migraine is coming. The pain of the migraine attack is still severe and nausea or vomiting might happen. This type of migraine is more common.
- 3) Other rare forms of migraine disease:
  - a) Basilar type migraine: This migraine is with aura and rises from the base of the brain (brain stem). The aura includes dizziness, visual symptoms such as double vision, ringing in the ears (tinnitus), nausea or vomiting, difficulty speaking, decreased level of consciousness and unsteady body movements.
  - b) Confusional migraine: This is a migraine with aura that affects the brain’s centers of consciousness in the cerebrum. Persons with confusional migraine may also have memory loss, confusion, speech impairment and disorientation.
  - c) Retinal migraine: This type of migraine has an aura that includes blind spots and visual problems that originate from the retina. The visual aura of retinal migraines usually last several minutes and can occur in one only eye.
  - d) Hemiplegic migraine: Hemiplegia means paralysis in one half of the body and it occurs in childhood. It has a gradual onset of stroke-like symptoms with paralysis or weakness of one side of the body. It includes symptoms like speech problems, confusion, dizziness and ringing in the ear.
  - e) Status migrainosus: This migraine can be either with or without aura and is very painful. It can last more than 72 hours and even up to one week. Most of the time patients experience severe pain and nausea and require hospitalization.
  - f) Ophthalmoplegic migraine: This kind of migraine-like headache is now considered an inflammatory cranial neuropathy.
  - g) Late-life migraine: This type of migraine has the visual problems of an aura but the patient has no head pain. It develops in older adults who may have had a history of migraine or who may never have had migraine before. The person will have blind spots that slowly appear in the field of vision in addition to having some tingling or numbness and other motor or sensory problems.<sup>3</sup>
  - h) Menstrual migraine: This type is due to drop in estrogen level before menses which causes a loss of serotonergic tone. They are more painful, less responsive

to treatment and last longer compared to other headaches that occur during the cycle.<sup>4</sup>

### The cause of migraine headache

Illustration-1: <http://www.iajpr.com/archive/volume-5/sepember-2015/15october13.html><sup>5</sup>



The exact cause of migraine is not well-known but genetic and environmental causes play an important role. Recent studies suggest that the following pathways and changes in the brain may take place during a migraine attack ( see illustration-1):  
“ First: migraines originate deep within the brain. Second: Electrical impulses spread to other regions of the brain. Third: Changes in nerve cell activity and blood flow may cause symptoms such as visual disturbance, numbness or tingling sensations and dizziness. Fourth: Chemicals in the brain cause blood vessel dilation and inflammation of the surrounding tissue. Fifth: The inflammation spreads across nerves supplied by the trigeminal nerve causing pain.”<sup>6</sup>

According to Mayo Clinic on Headache, researchers are uncertain about all factors involved in migraine. Illustration-2 shows how a migraine headache develops:

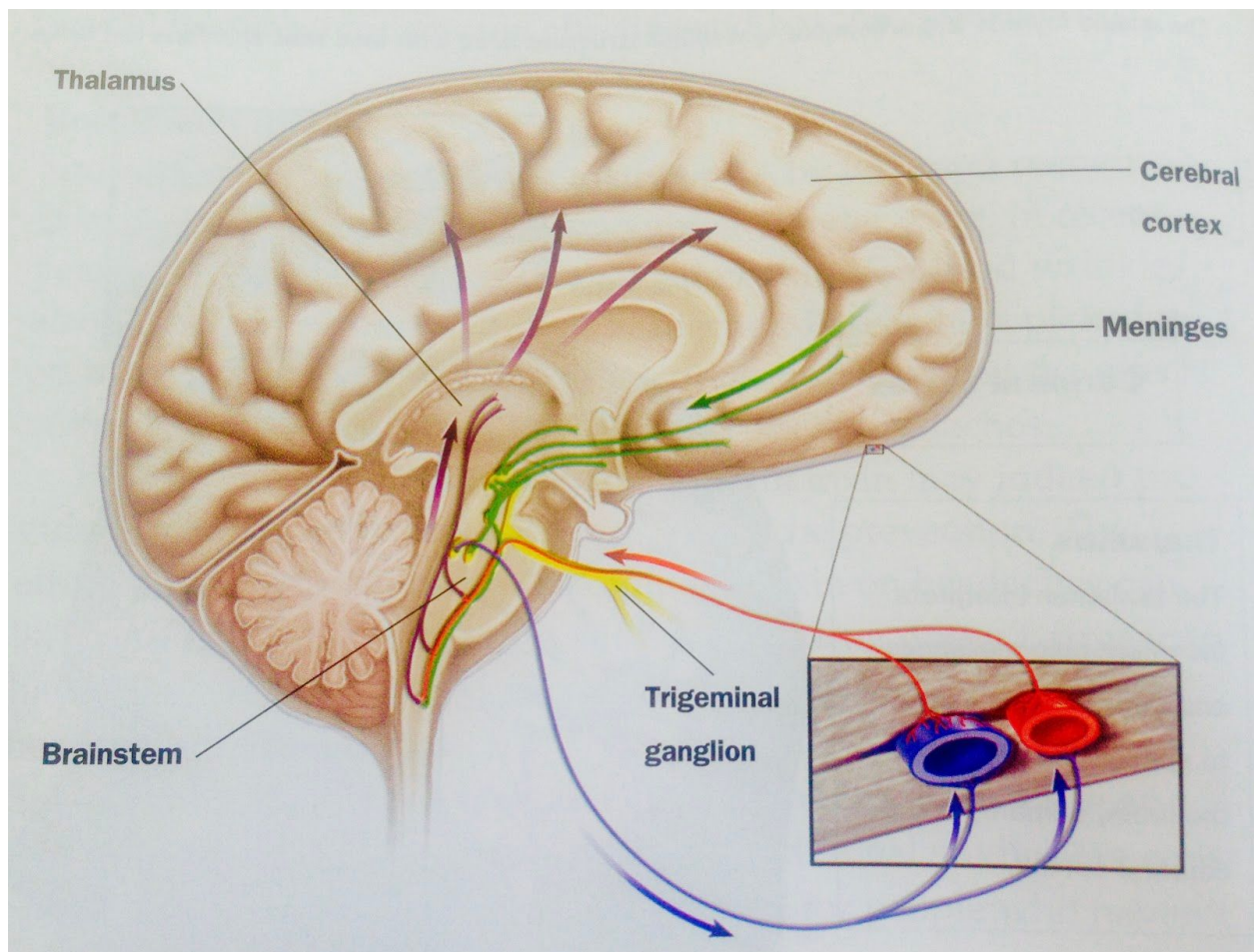


Illustration-2: Migraine development mechanism (Taken from Mayo Clinic on Headache)<sup>6</sup>

“A migraine is thought to occur when the brain’s neural pathways for pain are activated abnormally--meaning pain messages are registered in the brain despite the



fact that there is no external source for the pain. They hypothesize that migraine may develop in this pattern:

Pain messages travel along neural pathways (red arrow) leading from the meninges, the outer covering of the brain, to the trigeminal ganglion. From there, the messages follow the main pathway of the trigeminal nerve into the brainstem and circulate among different nuclei there. From the brainstem, many of the messages are sent to the thalamus (purple arrow), which, in turn, relays information to locations in the cerebral cortex. At this point in the process, headache pain registers in the sufferer's consciousness. The various cortical locations communicate back to the brainstem (green arrow). The brainstem nuclei attempt to modulate or diminish the incoming pain messages in a reflex action. Neural signals travel back along various pathways to blood vessels in the meninges (blue arrow), causing the vessels to dilate. As the pain messages diminish, head pain disappears."<sup>6</sup>

In general, changes in the cerebral circulation are the key elements in migraine causation. Migraine sufferers have blood vessels that respond more strongly to stimuli and triggers.<sup>7</sup>

### **Migraine triggers**

Avoiding migraine triggers is one of the best ways to prevent headaches. A migraine trigger is something that can initiate or set off a migraine attack. Each individual may react differently to triggers. Some common triggers include:

a. Lifestyle triggers:

- i. **Sleep:** Adults need to get 7-8 hours of sleep each night and children and teens at least 9 hours. Migraine patients who get 6 hours of sleep or less have more frequent headaches. In addition, one should have a regular sleep schedule. If there are numerous changes in sleep hours and bedtime routine, sleeping in on the weekend or even taking an afternoon nap can trigger a headache in migraine sufferers.
- ii. **Stress:** Stress is one of the most common migraine triggers. Biological changes and hormonal fluctuations during stress can make migraine patients more sensitive to other triggers.
- iii. **Meals:** Skipping meals ( low blood sugar) or not having a regular meal schedule can be a problem for migraineurs. Stress hormones are released during fasting may also be an important factor in causing migraine.

b. Food triggers: Some foods and drinks (alcohol, caffeine, vitamin waters, energy drinks) can trigger a migraine attack. Tyramine-containing foods

(hard cheeses, fermented or pickled foods, smoked meats, chocolate, soy sauce, onions, nuts), phenylethylamine (chocolate), histamine (eggplant, spinach, certain fish species), drinks that ferment (vinegar, wine, beer, sauerkraut). Many food additives, preservatives and color can also trigger migraines. There is monosodium glutamate (MSG) in Chinese food, seasonings, sauces, parmesan cheese and meat tenderizers, sodium nitrite (sausage, hot dogs, deli meat, canned and packaged meat, smoked and dehydrated food products); FD&C yellow #5 (tartrazine) in soft drinks, cosmetics, many medicines and ice cream.

- c. Weather Triggers: Any changes in temperature, barometric pressure and humidity can trigger migraine.
- d. Seasonal triggers: April showers, May flowers and hot and bright summer sun can all trigger headaches. Fall and winter can also trigger headaches (back-to-school and the holiday season)
- e. Travel triggers: Traveling can create irregular sleep and meal schedule and the stress of keeping track of budget and itinerary.
- f. Sensory triggers: Sight (sensitivity to bright or flickering lights, certain colors, pattern glare, fluorescent lights), sound (loud noises), smell (certain chemicals in fumes, perfumes, smoke, pollution, automobile exhaust and odors) can cause migraine.
- g. Hormonal triggers: Some women have migraine due to hormonal changes (mainly estrogen) during their monthly menstrual cycle.<sup>8</sup>

### **Western approaches to migraine prevention and treatment**

#### **A. Migraine prevention:**

- a. Avoiding triggers (see above)
- b. Prophylactic medications: Antiepileptic drugs (Topiramate, Divalproex Sodium, Gabapentin), Antidepressants (Amitriptyline, Nortriptyline), Beta-Blockers (Atenolol, propranolol), Calcium Channel Blockers (Verapamil, Nifedipine), Nonsteroidal Antiinflammatory drugs (Aspirin, Naproxen), Angiotensin Receptor Blockers (Candesartan), Angiotensin II Receptor Antagonists (Olmesartan), Botulinum Toxin A (Botox) injection, Double Duty Drugs (NSAIDs, Methysergide)
- c. Biofeedback: Using relaxation and visualization techniques, deep breathing and mindfulness meditation to monitor and regulate the body's biological signals. (slow down the heart rate, lower blood pressure and ease muscle tension).<sup>9</sup>

## B. Migraine treatment:

- a. Acute treatment options: Non-opioid pain relievers (Non-steroidal anti-inflammatory drugs such as Aspirin, Acetaminophen, Excedrin), Opioid pain relievers (Butorphanol, Oxycodone, Morphine, Meperidine), Ergot derivatives (Ergotamine, Dihydroergotamine), Triptans (Sumatriptan, Zolmitriptan, Naratriptan,...), bed rest, compresses, cold packs, biofeedback.<sup>10</sup>
- b. Alternative and complementary medicine: Vitamin B2 (Riboflavin), niacin (vitamin B3), magnesium, coenzyme Q10, fish oil, melatonin, herbal supplements (Feverfew, Butterbur) and acupuncture.<sup>11</sup>
- c. Manual therapy: Physical therapy (helps to stretch body muscles, adjust postures, improve muscle strength and regulate joint movements), massage (helps to invigorate sensory pathways and improve blood and lymph flow) and chiropractic adjustment (employs massage, spinal manipulation and adjustment of the joints and soft tissue).
- d. Electrical approaches: TENS (Transcutaneous Electrical Nerve Stimulation unit device) sends mild electrical stimulation across the skin which reduces the frequency of migraine attacks. Implanted Occipital Nerve Stimulator (IONS) sends an electric current from a pacemaker to electrodes that deadens the activity of the trigeminal nerve and reduces migraine pain. Transcranial Magnetic Stimulation (TMS) produces a focused, single magnetic pulse which creates a mild electric current in the back of the skull. Vagus Nerve Stimulation and Deep Brain Stimulation are also employed.
- e. Acupuncture: Fine needles are inserted into specific parts of the body according to traditional Chinese medicine meridians. When small vessels around the needle dilate, more blood reaches the tissue and relieves inflammation and pain.
- f. Energy therapies: Homeopathy is a system of treatment that employs diluted substances to trigger the patient's own healing powers by engaging body's energy fields. Reiki is a Japanese technique for reducing stress and enhancing relaxation by laying on hands to move energy. Qigong coordinates slow movement with breathing to enhance energy flow.<sup>12</sup>

### **Ayurvedic classification of headaches (Shirah Shula)**

Headaches in Ayurveda are called Shirah Shula, Shiro Roga or Shiro tapa (shula, roga and tapa mean pain and shirah or shiro mean head). In classical texts headaches are classified into different categories based on the dosha involved.

1. Vata type (vatika) headaches are usually in the cervical/occipital regions of the head and have a throbbing/pulsating quality to them with severe pain and ache. These headaches are mostly caused by stress, fear/worry, constipation and vata provoking habits such as lack of regular daily routine of sleep and eating habits and physical overactivity.

2. Pitta type (Pattika) type headaches are located in the retro-orbital/temple regions of head and the pain is sharp and intense. This type of headache is associated with nausea, vomiting and sensitivity to light. The eyes are red and may feel like they're burning and nosebleed is possible.

3. Kapha type (Kaphaja) headaches are usually located in the frontal areas of the head. They are commonly associated with sinus congestion, heaviness and runny nose. These headaches can get worse with seasonal changes especially during the spring season.

4. Sannipatika type headaches are caused by the concurrent aggravation of three doshas (vata, pitta, kapha). Symptoms of aggravation of all three doshas are present.

5. Kimija Shira Roga are headaches caused by parasitic infection which can manifest as itching, fever, pricking and smarting sensation and pain in the head.<sup>13,14</sup>

“The blood and muscles in the head become moisture laden, leading to aggravation of the doshas and to the growth of worms that begin to drink the blood, producing very severe pain. This causes disorders of the mind, fever, cough, and loss of strength; the palate and scalp are dry and swollen, the pain is as if being cut (or) burnt, (it is) throbbing, emits (a) bad smell and it may be accompanied by itching, swelling, stupor (and) the nasal discharge is copper colored, thin and clear. There is ringing in the ears.”<sup>15</sup>

Ashtang Samgraha

In Vaghabata's Ashtanga Hridayam, classification of headaches are as follow:

“1. Sirastapa (headache) of vata origin: when vata is aggravated the symptoms appears as severe pricking pain in the two temples, feeling of severe pain as though the ghata (the area above the temples) gets open, the center of the brows and forehead fall out; ears are plucked out, the head reels and feels loose in all its joints, there is severe pulsations in the network of veins (blood vessels) rigidity of the lower jaw and the shoulders, intolerance to light, running in the nose, relief of pain (headache) without any reason occasionally and reduction in its severity by massaging, anointing with oil and fomentation.

Ardhavabheda (migraine): If the headache appears in half of the head it is called Ardhavabhedaka. It occurs either by fortnight (bimonthly) or monthly and subsides of its own accord; when greatly aggravated it destroys either the eye (sight) or ears (hearing).

2. Sirasstapa of pitta origin there is a feeling of hot fumes coming out from the head, fever, profuse sweating, burning sensation in the eyes, fainting, pain becomes less at night and by cold things.



3. Sirastapa of kapha origin is of taste, heaviness of the head, rigidity and cold, veins not pulsating, lassitude, pain is mild during the day and severe at nights; stupor, swelling of the eye sockets, itching inside the ears and vomiting are present.

4. Sannipattika, in that is born from rakta, the pain is similar to that of pitta origin but more severe and in that caused by all the doshas, features of all of them will be present simultaneously. By indulgence in incompatible foods, the blood and muscles become more overhydrated and become vitiated by all the doshas and lead to growth of worms in the head. These, drinking blood from the head cause severe pain, disorders of the mind, fever, cough, loss of strength, dryness, swelling pricking and cutting types of pain, burning sensation, throbbing and bad smell in the scalp, itching, dryness in the palate and head, lassitude, copper-red and thin nasal discharge and noise in the ears. Doshas with the predominance of vata produce shaking of the head known by the term Sirahkampa.

5. Sankhaka: vata and other doshas with the predominance of pitta associated with sonita (blood) produce swelling in the sankha (temples) accompanied with severe burning sensation, pain, redness, delirium, fever, thirst, giddiness, bitter taste in the mouth, yellowish face and producing quick effect, kills the patient within three days.

6. Suryavarta: vata (maruta) followed by pitta produces severe throbbing pain in the temples, eyebrows and forehead, commencing with the rise of the sun, increases in severity in the midday with hungers; of uncertain comfort to hot or cold and subsides later (after the sun sets).<sup>16</sup>

### **Ayurvedic causes of headache (Nidana)**

Vata-type headache is caused by vata-provoking practices (too much cold, dry foods, exposure to cold dry air/wind, suppression of natural urges, irregular sleeping and eating routine, worry/fear/stress, etc.)

Pitta-type headache is caused by pitta-inducing habits (too much hot/spicy/fried foods, exposure to sunlight/heat, profuse sweating, intensity/anger, etc.)

Kapha-type headache is brought by kapha-provoking practices (cold/heavy/oily foods, lethargy, lack of exercise, too much sleep, etc.)

Sannipattika-type headache is due to vitiation of all three doshas due to the ingestion of toxins.

Anantavata-type headache is the result of a combination of vata and pitta provoking practices as mentioned above.

Suryavarta-type headache is brought on by vata-pitta vitiating factors (pitta vitiation causes are more prominent) such as exposure to sun (heat), hot spicy food and leading an overly stressful and/or intense life. This type of headache can also be initiated by unpredictable and sudden changes in life.

Krimija-type headache is due to infection caused by parasites. This is mainly due to consumption of unhealthy foods infected by these parasites in addition to inappropriate food combining.

Shankhaka-type headache caused by having a low ojas and pitta aggravating habits. This is a type of infectious headache caused by bacterial infection such as meningitis.

Ardhavabhedaka-type (migraine) headache is mostly due to vata-pitta vitiation.<sup>17</sup> Ardhavabhedaka Shiroroga is the Ayurvedic name for the migraine headache. It is considered mostly a vata-pitta imbalance. The vata part of it is due to stress and lack of regular routine. The vata imbalance can lead to pitta imbalance if vata is not pacified. The pitta side of this condition is observed by dilation of blood vessels, sensitivity to the sun and heat and inflammation of the nerves (vata). Ayurveda considers physical, spiritual and mind/soul related causes responsible for this condition.<sup>18</sup>

### **Ayurvedic treatment options (Chikitsa) for headache**

A. Vataja sirasula chikitsa (vata-type headache treatment): According to Vaghabhata's Astanga Hrdayam, for treatment of vata-type headache, ghee should be applied to the head and should also be ingested with warm water. Warm milk boiled with dashmula and other drugs that reduce vata dosha can be poured on the head. Herbs of varanadi gana are boiled in milk and water (50:50) until only milk remains. The butter of this mixture is taken out by churning and herbs of sweet taste are cooked in this butter (ghee). This ghee can be used as nasya. This ghee can also be taken by adding it to milk and some sugar. The herbs (karpasamajja, tvak, musta and buds sumana) can be steeped in hot water and instilled in the nose.<sup>19</sup>

It is important to re-establish the downward movements of apana vayu to its normal state. This can be done by using laxatives and purgatives. In addition, anuvasana basti can be used on a regular basis to nourish the patient and treat chronic headaches. An herbal paste made of a mixture of cinnamon, garlic and ginger can be applied to the forehead, temples and neck. Shirodhara (gently pouring medicated oil or milk) and shirobasti (holding medicated oil on top of the head in a leather cap for a period of time in a way that the oil does not leak) may be employed. Nasya is the best way of alleviating any condition affecting above the neck. Chronic headaches are a sign of low ojas. Therefore, a rasayana program should be followed for six months to one year.<sup>20</sup>

B. Pitta sirasula chikitsa (pitta-type headache treatment): In pitta-induced headaches, oleation and then venesection can be done. The patient can apply cold compress to the face and wash the head (not with hot water). Purifying enema therapy can be beneficial. Medicated milk or ghee with jivaniya gana herbs are helpful either internally or nasally.<sup>21</sup> In case of constipation, purgative herbs such as cascara sagrada, aloe vera, avipattikar churna or rhubarb root should be given. Nasya therapy with a medicated ghee prepared with chrysanthemum and brahmi can be applied. To help with anger, intensity and emotional symptoms, cool nervine sedatives such as gotu kola and skullcap can be given. For redness of the eyes, a preparation of chrysanthemum and rose can help clear the heat from the eyes.

Medicated oil made with sandalwood and brahmi can be used in Ayurvedic massage, shirodhara or shirobasti.<sup>22</sup>

C. Kaphaja sirasula chikitsa (Kapha-type headache treatment): According to Vagbhata's Ashtanga Hridayam, oleation therapy can be done by drinking old ghee and then inducing vomiting. Nasal application of herbs with dry, hot and penetrating qualities and avoiding food (fasting) are beneficial. Fomentation (sweating) and external application of herbal pastes are also recommended.<sup>23</sup>

Clearing the sinuses of any congestion and stuffiness is important in treating kapha-induced headaches. This can be done through nasya therapy or consuming the herbs internally. A paste of herbs such as clove, garlic and cinnamon may be applied to the head to help with blood circulation and relief from congestion. Application of niruha basti (a decoction of herbs administered rectally) made with ginger and honey in water is recommended.

D. Sannipattika sirasula chikitsa (Sannipattika-type headache): A combination treatment of all above three doshas should be done. If the patient is strong enough, purification therapies such as panchakarma are recommended. Other purification therapies such as palliation therapy (or mono-dieting with kitcheri) can be used.<sup>24</sup>

E. Anantavata-type (tension) headache chikitsa: Massaging the neck, spinal manipulation and yoga are all of benefit for this type of headache. The patient should be advised to manage stress.

F. Suryavarta chikitsa: This condition can be treated the same way as pitta-type headache. Blood letting can be done by using leeches or venesection techniques (drawing blood from a vein). The purpose of this practice is to remove the affected dosha and blood.<sup>25</sup>

G. Krimija sirasula chikitsa: According to Ashtanga Hridayam, when the headache is caused by Krimi (worm, bacteria, parasites), the blood of an animal should be placed in the nose. By doing so, the worms get intoxicated. They can then be removed by using strong nasal medications or inhalation of smoke.<sup>26</sup>

Sebastian Pole summarized the treatment of headaches as clearing the pain, preventing any spasms, clearing any dullness in the head and getting rid of inflammation. He categorizes headaches into wet type (kapha), nervous type (vata) and heat type (pitta). The herbs used for the wet type are vacha, trikatu, cinnamon, eucalyptus oil, camphor oil and guggulu. For the nervous type, tagarah, jatamamsi and nutmeg are recommended. For the heat type, herbs such as aloe vera, chrysanthemum, brahmi and bhringaraja are recommended.<sup>27</sup>

One clinical study evaluated the role of Nasya karma and shirodhara in the treatment of migraine. In this study patients were administered dashmool shruta ksheera shirodhara and kumkunadi ghrita nasya. Subjects did not experience adverse effects during the study. It was concluded that kumkunadi ghrita nasya was more effective than dashmool shruta ksheer

shirodhara in alleviating migraine headache. Nasya therapy proved very effective in reducing the intensity of pain, phonophobia and interval and duration of headache. The authors suggest this may be true because the drug administered through the nose can reach the Shringataka marma more easily.<sup>28</sup> In another study, laghu sutashekhara rasa and brihat dashamoola taila nasya were found to improve all symptoms of migraine such as headache, nausea, vomiting and other symptoms. When used together, they have an augmented effect.<sup>29</sup>

### **Other Ayurvedic treatment modalities for migraine headache**

There are a number of ways that Ayurveda can bring balance to life and treat the root cause of headaches and migraine in particular. In addition to specific treatment options for each type of headache, we can use other modalities to treat migraine headaches.

#### 1. Diet modifications:

- a. Dosh specific nutrition: Depending on the dosha(s) involved in headache and also the patient's constitution, the patient must be instructed to eat a diet that pacifies the aggravated dosha.

Table-1: Dosh pacifying nutrition for vata, pitta, kapha<sup>30</sup>

Food list	Vata Pacifying diet	Pitta pacifying diet	Kapha pacifying diet
Fruits	Have more: sweet fruits, avocado, melons, dates, apricot, figs, grapes, peaches. Have less: dried fruits, raw fruits, persimmon, watermelon, cranberry	Have more: sweet fruits, dark grapes, melons, pears, figs. Have less: sour fruits, berries, cherries, citrus, papaya, pineapples, apricots	Have more: apples, berries, cranberries, pomegranate, raisin, apricot, fig (dry), peaches, prunes, persimmon. Have less: sweet & sour fruits, grapes, melon, pineapples, avocado, grapefruit, lemon, plum, lemon
Vegetables	More: cooked vegetables, beets ( root vegetables), cucumber, leafy greens, butternut squash, okra, sweet potatoes. Less: raw vegetables, sprouts, cruciferous vegetables (like broccoli, cauliflower, cabbage), mushroom,	Have more: sweet or bitter vegetables, okra, asparagus, lettuce, cucumber, peppers. Have less: pungent vegetables, hot peppers, raw onions and garlic, tomatoes	Have more: pungent and bitter vegetables, brussel sprouts, carrot, celery, garlic, lettuce, okra, cabbage cauliflower. Have less: sweet and juicy vegetables, sweet potatoes, cucumber, tomatoes



	parsley		
Grains	More: barley, rice (white), wheat, oats (cooked), amaranth, quinoa. Have less: bread with yeast, buckwheat, millet, corn, muesli, rye, dry crackers	Have more: barley, rice (basmati), oats (cooked), wheat. Have less: buckwheat, millet, corn, rye	Have more: barley wheat, oats, rice(brown). Have less: buckwheat, millet, rice (white), corn
Animal foods	More: beef, eggs, salmon, white fish, chicken, duck, turkey Less: lamb, rabbit, pork, venison	More: chicken or turkey (white meat), rabbit, venison, eggs (white), white fish. Less: beef, lamb, seafood, eggs (yolk)	More: chicken or turkey, prawn, rabbit, venison Less: beef, pork, lamb, seafood
Legumes	No legumes except mung beans, tofu, urad dhal, red lentils	All legumes except coconut	All legumes except kidney beans, soy beans, black lentils and mung beans
Nuts	All nuts in moderation	No nuts except coconut	No nuts at all
Seeds	All seeds in moderation	No seeds except sunflower and pumpkins	No seeds except sunflower and pumpkin
Sweeteners	All sweeteners except white sugar and aspartame	All sweeteners except molasses, honey, aspartame	No sweeteners except raw honey
condiments	All spices are good except the hot ones like chili, dried ginger, horseradish	No spices except coriander, cardamom, fennel, turmeric, long pepper, fresh ginger	All spices are good except salt
Dairy foods	All dairy products in moderations	More: butter, ghee, cottage cheese, milk Less: buttermilk, sour cream, cheese, yogurt	No dairy products except ghee and goat milk
Oils	All oils are good particularly sesame, olive, ghee	More: coconut, sunflower, olive, soy. Less: almond, safflower, corn, sesame	No oils except almond, corn, sunflower in small amounts

b. Avoiding or minimizing migraine trigger foods: Migraine trigger foods can be different in every individual and finding these trigger foods can help to minimize migraine headaches. This confirms the Ayurvedic perspective of dosha specific diet for each individual.

Some common trigger foods include dairy products ( skim/whole cow’s milk, goat’s milk, cheese, yogurt, etc.), chocolate, eggs, meat, citrus fruits, wheat, nuts, tomatoes, onions, corn, apples, banana, alcoholic beverages (especially red wine), caffeinated drinks, beta--phenylethylamine (e.g. chocolate), monosodium glutamate (MSG), aspartame sweeteners, nitrites (cured meats), tyramine containing foods.<sup>31</sup>

By paying special attention to diet and identifying food triggers, a migraineur can understand the concept of healthy diet and regular meal schedules. Using a headache diary on a regular basis with the emphasis on eating/activity patterns can help with assessing headache occurrence. Usually eating a particular food can trigger a migraine within 12-24 hours. Limiting a trigger food for 4 weeks and monitoring the frequency and severity of headaches by using a headache diary can be very beneficial.

Tyramine containing foods are one of the most common triggers for migraineurs. Therefore, it makes sense to follow a low tyramine food diet. Tyramine is not added to food and food products. Instead tyramine is produced in foods from the breakdown of the amino acid tyrosine. Tyramine is not added to food and food products. Tyramine levels in food can gradually increase as they are aged, kept for long periods of time, fermented or if not fresh.<sup>32</sup>

Table-2: Low Tyramine Headache Diet:<sup>33</sup>

Food group	Allowed	Use with caution	Avoid
Meat, fish, poultry, eggs	Freshly purchased and prepared meats, fish and poultry, eggs, tuna fish	Bacon, sausage, hot dogs, corned beef, bologna, ham, luncheon meats, Meats with added tenderizer, caviar	Aged, dried, fermented, salted, smoked or pickled products, pepperoni, salami and liverwurst, non-fresh meat or liver, pickled herring
Dairy	Milk (whole or 2%, skim), cheese (American, cottage, farmer, ricotta, cream cheese	Yogurt, buttermilk, sour cream, parmesan or Romano	Aged cheese: blue, brie, cheddar, Swiss, Roquefort, stilton, mozzarella, provolone
Desserts and sweets	Any dessert made with allowed foods and ingredients (sugar, jelly, jam honey, hard candies, cakes)	Chocolate based products: ice cream, pudding, cookies, cakes, chocolate candies	Mincemeat pie
Fats, oils, miscellaneous	All cooking oils and fats, white vinegar, commercial salad dressing with allowed	Wine, apple or other fermented vinegars	

	ingredients, all species not listed in restricted ingredients		
Soups	Sources made from allowed ingredient broths	Canned soups, meat extracts	

## 2. Lifestyle modification:

Migraine (Ardhavabhedaka) and other type headaches can be prevented by following a healthy lifestyle. Maintaining a regular sleep schedule, eating routine and working habits and avoiding migraine triggers can reduce the frequency and severity of migraine headaches. Some of these healthy lifestyle include:

A. Proper morning routine: Daily elimination to empty bowels, inspecting tongue for any coating, brushing/flossing teeth, massaging gums, cleaning nasal passages (neti pot), self-abhyanga (daily oil application on skin and massaging), massaging ears with oils, practicing meditation, washing eyes at least once per week.

B. Proper sleep routine: Proper sleep pattern means that one must go to bed and rise according to the rhythms of nature. Vata nature people must wake up with the sun and pitta wake up half an hour before the sun and kapha one hour before the sun. It is suggested that one go to bed by 10pm for all constitutions.<sup>34</sup>

C. Follow healthy eating guidelines: There are 8 factors that affect the quality of food (nature, processing, combination, quantity, habitat, time, rules of intake, responsibility). The general guidelines for healthy eating include eating food in the proper place, preparing food with loving hands in a loving way, saying Grace before meals, eating without distraction, eating with a proper frame of mind, chewing until it is an even consistency, making sure food is warm oily/moist. Food should not have opposite potencies. Drink only a small amount of fluids with meals and avoid cold drinks. Eat food with confidence and eat until 75% full. Always take some time to rest after meals and allow 3 hours between meals for foods to get digested.<sup>35</sup>

D. Stress (Sahasa) management: One must both avoid factors that induce stress and vitiate doshas and also learn coping mechanisms for life stressors. Stress inducing factors can include: 1) Physical stress such as strenuous exercise, fasting, exhaustion, improper body postures, injury/trauma. 2) Psychological stress such as anger, anxiety/nervousness, excitement, confusion, grief, fear. 3) Environmental stress like high altitudes and prolonged exposure to the sun or heat. Stress avoidance is the best approach. However, some rasayana herbs which improve longevity along with physical/mental strength and immunity can be helpful. Several rasayana herbs show antioxidant, immunomodulator, hepatoprotective, antidepressant and anxiolytic effects. A few example of such herbs are shatavari (*Asparagus racemosus*), brahmi (*Bacopa monnieri*), punarnava (*Boerhavia diffusa*), centella (*Centella asiatica*), shankha pushpi (*Convolvulus pluricaulis*), amla (*Emblica officinalis*), long pepper (*Piper longum*), kutki (*Picrorrhiza kurroa*), turmeric (*Curcuma longa*) and ashwagandha (*Withania somnifera*).<sup>36</sup>

E. Regular exercise: Several epidemiological studies have proven the effectiveness of regular daily exercise in reducing the intensity of migraine pain. This gives patients an opportunity to take an active role in their own treatment. Recent studies show that cardiovascular exercise can play a significant role in the modulation of pain through the activation of endogenous cannabinoid and opioid receptors.<sup>37</sup> However, exercise intensity, frequency, duration and type as well as warm up time are important factors that need to be monitored to prevent injuries and preclude the susceptibility of exertional headache. Isometric neck exercise is very beneficial to the type of migraine which is associated with neck pain.<sup>38</sup>

### 3. Yoga for headaches:

Since stress is an important factor in creating both migraine and tension headaches, yoga can without doubt help in preventing these types of headaches. Yoga can also help with tension in the muscles of the neck, back and head which contribute to headaches. Yoga helps to release tight muscles and improve blood circulation in that region. Yoga helps relax the mind as well. Rodney Yee recommends a sequence of practices and instructions as follows: Legs-up-the-wall pose (Viparita karani) for five minutes or longer, supported cobbler's pose, half plow pose (Ardha Halasana), one-legged forward bend (Janu Sirasasana) with head support, seated forward bend (Paschimottanasana) with head support.<sup>39</sup>

Other yoga asanas helpful in migraine and tension headache prevention include standing cat stretch, circle of joy, eagle arms, hold elbows overhead, neck rechargers, 6-way neck stretches, hare pose, front-stretching pose, child pose, bridge pose, fish pose, supine twist, ear-closing pose, deep relaxation in the corpse pose.<sup>40</sup> Relaxation poses are of great importance in preventing migraine headaches. They can be done at the beginning or at the end of a yoga session or at any time of the day when the body feels stressed or tired. Flapping fish pose (Matsya kridasana) is a great relaxation pose. We may naturally sleep in a variation of this pose due to our body's intuitive need for deep rest and relaxation. Pose of the monre or hare pose (Shashanhasana) can calm an overactive mind which is common among migraine sufferers. This pose brings fresh blood and oxygen to the head and calms and soothes the nerves. Double angel pose (Dwikonasana) is highly recommended for both tension and migraine headache. By making the arms act as a lever, this pose stretches the shoulders and chest and reduces the tension beneath the shoulder blades. Palming eye exercise (rubbing the palms of both hands together until they feel warm and gently placing them on both eyes is also advisable.<sup>41</sup>

### 4. Meditation:

Stress is a major contributor to both tension and migraine headaches. AH-OM Breath meditation can reduce stress. In this meditation, sit in a comfortable position. There are many types of meditations available. One can focus on the mantra and/or awareness of breath and let thoughts fade away. With exhalation, silently say or hear AAAAHHHHH and take a deep long inhalation filling your lungs and abdomen. When you exhale which is longer than inhalation, say/hear in your mind OOOOMMMM while exhaling all the air and pull the navel in towards the



spine. Walking meditation, zen breathing exercises, yoga complete breath (Ujjayi), pebble meditation, music meditation, well-being meditation are other options. In addition, keeping a proper posture and alignment of the head and neck during breathing meditation can help reduce tension and migraine headaches. Massage therapy, topical heat or cold and stretching exercises can also help minimize the severity and frequency of migraine headaches. It is very important that migraineurs get the proper amount of sleep.<sup>42</sup>

#### 5. Balms/herbal pastes for headaches:

A mixture of herbal essential oils can help to alleviate headache. Peppermint essential oil in massage oils and balm can with help with migraine. Combine the following essential oils in a base oil (almond, coconut or sesame oil) for quick relief of headache: 5 parts eucalyptus oil, 1 part anise oil, 1 part menthol crystals, 1 part camphor.<sup>43</sup> Dr Lad in the book *The Complete Book of Ayurvedic Remedies*, suggests making a paste by adding ¼ teaspoon nutmeg powder to some water and applying it to the forehead and leaving it for 30 minutes. For pitta-type headache a cooling paste can be made by mixing sandalwood powder with water. One can apply this paste to the forehead and temples and leave it on the skin for half to one hour before rinsing.<sup>44</sup>

#### 6. Aromatherapy:

Essential oils can enter the body through the skin, nasal passages, bronchioles, lungs and gastrointestinal tract.

I. Vata-type headaches require essential oils which have the qualities of wet, heavy, calming and warming. This is due to the light, dry, mobile and cold nature of the vata dosha. If vata is due to obstruction of channels of the body, pungent essential oils can help. These include: A) Heating alteratives to remove the accumulations of toxins and purify blood. (e.g. clary sage, sandalwood, etc.). B) Heating carminatives help to normalize and move the obstructed vata in the digestive tract.. (cumin, cinnamon, ginger). C) Mild warming diaphoretics induce sweating, eliminating toxins, increasing circulation and reducing muscle tension and aching joints (camphor, oregano, eucalyptus). D) Heating nervines to strengthen the nervous system and improve mental health (lemon balm, myrrh, nutmeg, etc.). E) If vata is caused by deficiency, nutritive herbs need to be given to build tissues such as emmenagogues (pennyroyal) and nutritive aphrodisiacs (aloe).

II. Pitta-type headaches: Due to the hot and wet nature of pitta, it can be treated with cooling, heat dispelling, drying, nutritive and calming oils. These include A) Cooling diaphoretic oils to dispel heat and inflammation (chrysanthemum, yarrow). B) Astringent oils reduce discharge and tighten the tissues or stop bleeding (calendula, yarrow). C) Cooling alteratives purify the blood and fight infections (spearmint immortelle). D) Bitter tonics destroy toxins (aloe vera, neem). E) Cooling carminatives are aromatic spices (fennel, peppermint). F) Cooling emmenagogues to regulate female cycle (carrot seed, jasmine). G) Cooling nervines

are calming to the mind (gotu kola, sandalwood). H) Nutritive tonics (neroli, spikenard). I) Rejuvenatives renew the body and mind (brahmi, rose). J) Antipyretics reduce pitta's fire (neem).

III. Kapha-type headaches: They can be treated with warming, drying, lightening and stimulating therapy. A) Diuretics to reduce water (coriander, parsley). B) Diaphoretic oils to eliminate water through sweating (eucalyptus, cloves). C) Cooling diaphoretics (peppermint, spearmint). D) Heating nervines (basil, calamus) E) Astringent oils to reduce water and congestion (sage) F) Expectorant to clear out bronchioles (bay, camphor).<sup>45</sup>

#### 7. Pranayama (breathing exercises):

Different types of breathing exercises have different effects on the body, mind and spirit. Breathing practices purify nadis (subtle channels that carry prana through the field of mind). If the headache is due to vata vitiation, one can benefit from alternate nostril breathing (Anuloma Viloma). If the headache is due to pitta vitiation, doing lunar and shitali pranayama can help and if due to kapha dosha vitiation, solar and kapalabhati pranayama can be beneficial.<sup>46</sup>

#### 8. Soothing nose drops (Nasya):

Putting about 5 drops of brahmi ghee in each nostril can alleviate the pain of migraine headache. In vata-type headaches, placing 3-5 drops of warm ghee in each nostril can help to calm down the headache.<sup>47</sup>

#### 9. Color and gem therapy:

In Ayurveda, the energetic qualities of colors can be used in healing headaches. Therefore, one with vata-type headache can use more orange, yellow, green, gold, brown and purple. The person with pitta-type headache can focus more on using blue, white, brown and violet. Kapha-type headache patients can add more yellow, green, gold, blue, white and violet. Gems and precious stones have healing properties as well. Vata dosha can be balanced by yellow sapphire, ruby emerald, pearl. Pitta is pacified by blue sapphire and emerald and pearl. Ruby and blue sapphire can pacify kapha.<sup>48</sup>

### **Conclusion:**

Migraine is a disabling disease. Migraineurs are usually prescribed multiple preventive and acute therapy medications to deal with recurrent headaches. Migraine sufferers are seeking alternative (nonpharmacologic) therapies to alleviate migraine headaches. The healing science of Ayurveda opens new doors for treatment of migraine and other type of headaches. Ayurvedic treatments are holistic therapies that are tailored to the individual since according to Ayurvedic medicine, everyone is a unique combination of five elements and three life source energies (vata, pitta, kapha). Ayurveda uses different modalities such as nutrition (based on individual

constitution), lifestyle modifications, herbs, panchakarma, yoga, meditation, relaxation techniques, pranayama (breathing exercises), aromatherapy, marma points, color therapy and gem therapy to help treat migraine headaches. These treatment approaches create a balanced physiology. This state of complete balance in healing the body and mind can allow the illness to resolve and symptoms to disappear.

# A CRITICAL REVIEW ON ARDHAVABHEDAKA SHIRAHSULA (MIGRAINE HEADACHE)

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## BACKGROUND

The disease *Ardhavabhedaka*, a variety of *shirahsula* was described about 2000 years back. The Acharyas had attempted to study the *shirahsula* on *dosha* basis and included this disease under the heading of *shiroroga*. According to *Shareera tantra*, the human body is broadly divided in to six parts, which includes *siras*, the *chatuskas* and *madhyamanga*. Among these six *angas*, *siras* has been considered as the *pradhananga* or *uttamanga* as it is the seat of many vital organs. The *nasa*, *karna*, *netra*, *jihwa*, *oshta*, etc., are considered as *upangas* of *siras*.

Majority of our Acharyas have described *shiroroga* in relation to “*Shiras*” rather than the *rogas* related to *nasadi upangas* and they classified *Shirorogas* under different headings. This type of classification is beneficial in ascertaining the *adhistana* and also useful in *chikitsa yojana*.

In the present era, few of us are spared the experience of head-pain, as many as 90% of individuals have at least one attack of headache every year. Several disabling headaches are reported to occur at least annually by 40% of individuals worldwide. Headache is usually a benign symptom, but occasionally it is the manifestation of a serious illness such as brain tumor, subarachnoid hemorrhage, meningitis, or giant cell arteritis. In emergency settings, approximately 5% of patients with headache are found to have a serious underlying neurological disorder. Therefore, it is imperative that the serious causes of headache be diagnosed rapidly and accurately.

## INTRODUCTION

*Ardhavabhedaka*, named after its classical symptom, the severe pain in the half of the frontal region, due to various similarities in the clinical features is usually compared with Migraine headache.

Migraine, the most common cause of vascular headache, affects approximately 15% of women and 6% of men. A useful definition of migraine is ‘a benign and recurrent syndrome of headache, nausea, vomiting, and/or other symptoms of neurologic dysfunction in varying admixtures’. Migraine can often be recognized by its activators (red wine, menses, hunger, lack of sleep, glare, estrogen, worry, perfumes, let-down periods) and its deactivators (sleep, pregnancy, exhilaration, sumatriptan).

Severe headache attacks, regardless of cause are more likely to be described as throbbing and associated with vomiting and scalp tenderness. Milder headaches tend to be nondescript - tight, band like discomfort often involving the entire head – the profile of tension-type headache.

## THE ETIOPATHOGENESIS OF ARDHAVABHEDAKA (MIGRAINE HEADACHE)

### *Nidana & Samprapti*

*Aaharaja* - *Ruksha annasevana, ati bhojana, adhyasana*

*Viharaja* - *Poorva vayu sevana, ati maithuna, vega dharana, atisrama & vyayama*

These features aggravates *vayu* alone or along with *kapha* will gives rise to “*ardhavabhedaka*” after the *adhistana* of aggravated *doshas* being the *siras*.

### **Predominant doshas in Ardhavabhedaka according to different Acharyas**

Acharya Charaka mentioned the cause as the vitiation of *vata* or *vatakapha*. Acharya Vagbhata opines it is due to the vitiation of *vata* alone. Acharya Sushruta considered this disease as due to the vitiation of *tridosha* because, when *prakopita vayu* is obstructed by the *kapha*, the *vata dosha* dries

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the *kapha* present in the cervical, supra orbital, temporal & frontal regions and produces a penetrating kind of pain in the head. Here as the combination of *pitta dosha* is necessary to bring about the dryness of *kapha*, Acharya Sushruta mentioned it as a *tridoshatmaka* disease.

### Samprapti Ghatakas of Ardhavabhedaka

#### Pathological factors Factors

- |                         |                                 |
|-------------------------|---------------------------------|
| 1. <i>Dosha</i>         | <i>Vata kapha</i>               |
| 2. <i>Dushya</i>        | <i>Majja</i>                    |
| 3. <i>Adhistana</i>     | <i>Shiras (ardha mastishka)</i> |
| 4. <i>Srotas</i>        | <i>Majjavaha srotas</i>         |
| 5. <i>Dusti prakara</i> | <i>Sanga (obstruction)</i>      |

### Genetic basis of migraine

Migraine has a definite genetic predisposition. Specific mutations leading to rare causes of vascular headache have been identified.

paresthesia, hemianopic visual field disturbances, dysphasia and variable degree of drowsiness, confusion, and/or coma. In severe attacks, these symptoms can be quite prolonged and persists for days or weeks, but characteristically they last for only 30 to 60 min and are followed by a unilateral throbbing headache. Approximately 50% of cases of FHM appear to be caused by mutations within the CACNL1A4 gene on chromosome 19, which encodes a P/Q type calcium channel subunit expressed only in the central nervous system. The gene is very large (>300kb in length) and consists of 47 exons. Four distinct point mutations have been identified within the gene (in five different families) that co segregates with the clinical diagnosis of FHM. Analysis of haplotypes in the two families with the same mutation suggests that each mutation arose independently rather than representing a founder

Gene (Locus)	Function of Gene	Clinical Syndrome	Comment
tRNA <sup>Leu(UUR)</sup> (Mitochondrial)	Unknown	MELAS syndrome	Extremely rare
CACNL1A4 Mutation (19p13)	P/Q calcium channel regulating neurotransmitter release	Familial hemiplegic	Accounts for approximately 50% of FHM cases
DRD2 (11q23)	G protein – coupled D2 association		Positive receptor for dopamine

For example, the MELAS syndrome consists of a mitochondrial encephalomyopathy, lactic acidosis, and stroke-like episodes and is caused by an A→G point mutation in the mitochondrial gene encoding for tRNA<sup>Leu(UUR)</sup> at nucleotide position 3243. Episodic migraine-like headache is another common clinical feature of this syndrome, especially early in the course of the disease. The genetic pattern of mitochondrial disorders is unique, since only mothers transmit mitochondrial DNA. Thus, all children of mothers with MELAS syndrome are affected with the disorder.

Familial hemiplegic migraine (FHM) is characterized by episodes of recurrent hemiparesis or hemiplegia during the aura phase of a migraine headache. Other associated symptoms may include hemianesthesia or

effect. Thus certain subtypes of FHM are caused by mutations in the CACNL1A4 gene. The function of the CACNL1A4 gene remains unknown, but it is likely to play a role in calcium-induced neurotransmitter release and/or contraction of smooth muscle. Different mutations within this gene are the cause of another neurogenetic disorder, episodic ataxia type 2.

In a genetic association study, a Neo I polymorphism in the gene encoding the D<sub>2</sub> dopamine receptor (DRD2) was over represented in a population of patients with migraine with aura compared to a control group of non migraineurs, suggesting that susceptibility to migraine with aura is modified by certain DRD2 alleles. In a Sardinian population, an association between different DRD2 alleles and

migraine also demonstrated. Therefore, these initial studies suggest that variations in dopamine receptor regulation and/or function may alter susceptibility to migraine since molecular variations within the DRD2 gene have been associated with variations in dopaminergic function. However, since not all individuals with certain DRD2 genotypes suffer from migraine with aura, additional genes or factors must also be involved. Migraine is likely to be a complex disorder with polygenic inheritance and a strong environmental component.

### **The Vascular Theory of Migraine**

It was widely held for many years that the headache phase of migraine attacks was caused by extra cranial vasodilatation and that the neurologic symptoms were produced by intracranial vasoconstriction (i.e., the “vascular” hypothesis of migraine). Regional cerebral blood flow studies have shown that in patients with classic migraine there is during attacks, a modest cortical hypo-perfusion that begins in the visual cortex and spreads forward at a rate of 2 to 3 mm/min. The decrease in blood flow averages 25 to 30% (insufficient to explain symptoms on the basis of ischemia) and progresses anteriorly in a wave like fashion independent of the topography of cerebral arteries. The wave of hypo-perfusion persists for 4 to 6 hrs, appears to follow the convulsions of the cortex, and does not cross the central or lateral sulcus, progressing to the frontal lobe via the insula. Perfusion of subcortical structures is normal. Contralateral neurologic symptoms appear during temporoparietal hypo-perfusion; at times, hypo-perfusion persists in these regions after symptoms cease. More often, frontal spread continues as the headache phase begins. A few patients with classic migraine show no flow abnormalities; an occasional patient has developed focal ischemia sufficient to cause symptoms. However, focal ischemia does not appear to be necessary for focal symptoms to occur.

The ability of these changes to induce the symptoms of migraine has been questioned. Primarily, the decrease in blood flow that is observed does not appear to be significant enough to cause focal neurologic symptoms. Second, the increase in blood flow per se is not painful, and vasodilatation alone

cannot account for the local edema and focal tenderness often observed in migraine. Moreover, in migraine without aura, no flow abnormalities are usually seen. Thus, it is unlikely that simple vasoconstriction and vasodilatation are the fundamental pathophysiologic abnormalities in migraine. However, it is clear that cerebral blood flow is altered during certain migraine attacks, and these changes may explain some, but clearly not all, of the clinical syndrome of migraine.

### **The Neuronal Theory of Migraine**

In 1941, the Psychologist K. S. Lashley charted his own fortification spectrum, which is a migraine aura characterized by a slowly enlarging visual scotoma with luminous edges. He was able to estimate that the evaluation of his own - scotoma proceeded across the occipital cortex at a rate of 3mm/min. He speculated that a wave front of intense excitation followed by a wave of complete inhibition of activity was propagated across the visual cortex. In 1944, the phenomenon that has come to be known as spreading depression was described by the Brazilian Physiologist, Leao, in the cerebral cortex of laboratory animals. It is a slowly moving (2to3 mm/min), potassium-liberating depression of cortical activity, preceded by a wave front of increased metabolic activity that can be produced by a variety of experimental stimuli, including hypoxia, mechanical trauma, and the topical application of potassium. These observations suggest that neuronal abnormalities, most likely initiated in the brainstem, could be the cause of a migraine attack. More recently, both cortical and brainstem changes have been observed in Positron Emission Tomography (PET) scan studies of migraine. Thus, the existence of a specific ‘brainstem generator’ for migraine remains an intriguing possibility that might represent the pathophysiologic basis of migraine.

### **The Trigeminovascular system in Migraine**

Activation of cells in the trigeminal nucleus caudalis in the medulla (a pain-processing center for head and face region) results in the release of vasoactive neuropeptides, including substance P and Calcitonin Gene-related Peptide (CGRP), at vascular



terminations of the trigeminal nerve. These peptide neurotransmitters have been proposed to induce a sterile inflammation that activates trigeminal nociceptive afferents originating on the vessel wall, further contributing to the production of pain. This mechanism also provides a potential mechanism for the soft tissue swelling and tenderness of blood vessels that attend migraine attacks. However, numerous pharmacologic agents that are effective in preventing or reducing inflammation in this animal model (e.g., selective 5-HT<sub>1D</sub> agonists, NK-1 antagonists, endothelin antagonists) have failed to demonstrate any clinical efficacy in recent migraine trials.

### 5-Hydroxytryptamine in migraine

Pharmacologic and other data points to the involvement of the neurotransmitter 5-hydroxytryptamine (5-Ht; also known as serotonin) in migraine. Approximately 40 years ago, methysergide was found to antagonize certain peripheral actions of 5-HT and was introduced as the first drug capable of preventing migraine attacks. Subsequently it was found that platelet levels of 5-HT fall consistently at the onset of headache and that drugs that cause 5-HT to be released may trigger migrainous episodes. Such changes in circulating 5-HT levels proved to be pharmacologically trivial, however, and interest in the humoral role of 5-HT in migraine declined.

More recently, interest in the role of 5-HT in migraine has been renewed due to the introduction of the triptan class of antimigraine drugs. The triptans are designed to stimulate selectively a particular subpopulation of 5-HT receptors. Molecular cloning studies have demonstrated that at least 14 specific 5-HT receptors exist in humans. The triptans (e.g., naratriptan, rizatriptan, sumatriptan and Zolmitriptan) are potent agonists of 5-HT<sub>1B</sub>, 5-HT<sub>1D</sub>, and 5-HT<sub>1F</sub> receptors and are less potent at 5-HT<sub>1A</sub> and 5-HT<sub>1E</sub> receptors. A growing body of data indicates that the antimigraine efficacy of the triptans related to their ability to stimulate 5-HT<sub>1B</sub> receptors, which are located both on blood vessels and nerve terminals. Selective 5-HT<sub>1D</sub> receptor agonists have, thus far, failed to demonstrate clinical efficacy in migraine.

Triptans that are weak 5-HT<sub>1F</sub> agonists are also effective in migraine; however, only 5-HT<sub>1B</sub> efficacy is currently thought to be essential for anti-migraine efficacy.

Physiologically, electrical stimulation near dorsal raphe neurons can result in migraine like headaches. Blood flow in the pons and midbrain increases focally during migraine headache episodes; this alteration probably results from increased activity of cells in the dorsal raphe and locus coeruleus. There are projections from the dorsal raphe that terminate on cerebral arteries and alter cerebral blood flow. There are also major projections from the dorsal raphe to important visual centers, including the lateral geniculate body, superior colliculus, retina, and visual cortex. These various serotonergic projections may represent the neural substrate for the circulatory and visual characteristics of migraine. The dorsal raphe cells stop firing during deep sleep, and sleep is known to ameliorate migraine; the anti-migraine prophylactic drugs also inhibit activity of the dorsal raphe cells through a direct or indirect agonist effect.

Recent PET scan studies have demonstrated that midbrain structures near the dorsal raphe are differentially activated during a migraine attack. In one study of acute migraine, an injection of sumatriptan relieved the headache, but did not alter the brainstem changes noted on the PET scan. These data suggests that a 'brain stem generator' may be cause of migraine and that certain antimigraine medications may not interfere with the underlying pathologic process in migraine.

### Dopamine in Migraine

A growing body of biologic, pharmacologic and genetic data supports a role for dopamine in pathophysiology of certain subtypes of migraine. Most migraine symptoms can be induced by dopaminergic stimulation. Moreover, there is dopaminergic hypersensitivity in migraineurs, as demonstrated by the induction of yawning, nausea, vomiting, hypotension and other symptoms of a migraine attack by dopaminergic agonists at doses that do not affect nonmigraineurs. Conversely, dopamine receptor antagonists are effective therapeutic agents in migraine, especially when given

parenterally or concurrently with other anti-migraine agents. As noted above, recent genetic data also suggest that molecular variations within dopamine receptor genes play a modifying role in the pathophysiology of migraine with aura. Therefore, modulation of dopaminergic neurotransmission should be considered in the therapeutic management of migraine.

### The Sympathetic Nervous System in Migraine

Biochemical changes occur within the sympathetic nervous system (SNS) of migraineurs before, during, and between migraine attacks. Factors that activate the SNS are all trigger factors for migraine. Specific examples include environmental changes (e.g., stress, sleep patterns, hormonal shifts, and hypoglycemia) and agents that cause release and a secondary depletion of peripheral catecholamines (e.g., tyramine, phenylethylamine, fenfluramine, m-chlorophenylpiperazine (mCPP) and reserpine). By contrast, effective therapeutic approaches to migraine share an ability to mimic and/or enhance

the effects of norepinephrine in the peripheral SNS. For example, norepinephrine itself, sympathomimetics (e.g. isomethaptene), monoamine oxidase inhibitors (MAOIs) and reuptake blockers alleviate migraine. Dopamine antagonists, prostaglandin synthesis inhibitors, and adenosine antagonists are pharmacologic agents effective in the acute treatment of migraine. These drugs block the negative feedback inhibition or norepinephrine release induced by endogenous dopamine, prostaglandins, and adenosine. Therefore, migraine susceptibility may relate to genetically based variations in the ability to maintain adequate concentrations of certain neurotransmitters within postganglionic sympathetic nerve terminals. This hypothesis has been called the 'Empty neuron theory' of migraine.

### CLINICAL FEATURES OF ARDHAVABHEDAKA

Based on different Ayurvedic classics the clinical features of *Ardhavabhedaka* are as in the table below

Sl.No.	LAKSHNAS	CS	SS	AS	AH	MN
1.	Severe pain in the cervical region	+	+	+	-	-
2.	Severe pain in supra orbital region	+	+	-	-	+
3.	Severe pain in the temporal region	+	+	-	-	+
4.	Ear ache	+	+	-	-	+
5.	Paining of the eyes	+	+	-	-	+
6.	Severe pain in the half of the frontal region	+	+	-	-	+
7.	Pain in the temporal region	+	-	-	-	+
8.	Manthana vat pida	-	-	-	-	+
9.	Burning pain	+	-	-	-	+
10.	Netrandriya nasha	+	-	+	+	+
11.	Karendriya nasha	+	-	+	+	+
12.	Penetrating pain the half region of the cranium	-	+	-	-	-
13.	Bhrama	-	+	-	-	-
14.	Pakshatah akarmanyam	-	+	-	+	-
15.	Swayam pida shamanam	-	-	-	+	-

### Clinical features

**Migraine without aura (common migraine):** In this syndrome no focal neurologic disturbance precedes the recurrent headaches. Migraine without aura is by far the more frequent type of vascular headache. The International Headache Society criteria for migraine include moderate to severe head

pain, pulsating quality, unilateral location, aggravation by walking stairs or similar routine activity, attendant nausea and/or vomiting, photophobia & phonophobia, and multiple attacks, each lasting 4 to 72 hours.

**Migraine with aura (classic migraine):** In this syndrome headache is associated with characteristic

premonitory sensory, motor or visual symptoms. Focal neurologic disturbances are more common during headache attacks than as prodromal symptoms. Focal neurologic disturbances without headache or vomiting have come to be known as migraine equivalents or migraine accompaniments and appear to occur more commonly in patients between the ages of 40 and 70 years. The term 'complicated migraine' has generally been used to describe migraine with dramatic transient focal neurologic features or a migraine attack that leaves a persisting residual neurological deficit.

The most common premonitory symptoms reported by migraineurs are visual, arising from dysfunction of occipital lobe neurons. Scotomas and/or hallucinations occur in about one-third of migraineurs and usually appear in the central portions of the visual fields. A highly characteristic syndrome occurs in about 10% of patients; it usually begins as a small paracentral scotoma, which slowly expands in to a "C" shape. Luminous angles appear at the enlarging outer edge, becoming colored as the scintillating scotoma expands and moves towards the periphery of the involved half of the visual field, eventually disappearing over the horizon of peripheral vision. The entire process lasts 20 to 25 min. This phenomenon is pathognomonic for migraine, and has never been described in association with a cerebral structural anomaly. It is commonly referred to as a 'fortification spectrum' because the serrated edges of the hallucinated "C" seemed to resemble a 'fortified town with bastions all round it'. 'Spectrum' is used in the sense of an apparition or specter.

**Basilar migraine:** Symptoms referable to a disturbance in brain stem function, such as vertigo, dysarthria, or diplopia, occur as the only neurologic symptoms of the attack in about 25% of the patients. A dramatic form of basilar migraine (Bickerstaff's migraine) occurs primarily in adolescent females. Episodes begin with total blindness accompanied or followed by admixtures of vertigo, ataxia, dysarthria, tinnitus, and distal and perioral paresthesia. In about one quarter of patients, a confusion state supervenes. The neurologic symptoms usually persist for 20 to 30 min. and are generally followed by a throbbing occipital headache. This basilar migraine syndrome is now known also to occur in children and in adults

over age 50. An altered sensorium may persist for as long as 5 days and may take the form of state of confusion superficially resembling psychotic reactions. Full recovery after the episode is the rule.

**Carotidynia:** The Carotidynia syndrome, sometimes called lower half headache or facial migraine, is most common among older patients, with the incidence peaking in the fourth through sixth decades. Pain is usually located at the jaw or neck, although sometimes periorbital or maxillary pain occurs; it may be continuous, deep, dull, and aching, and it becomes pounding or throbbing episodically. There are often superimposed sharp, ice pick-like jabs. Attacks occur one to several times per week, each lasting several minutes to hours. Tenderness and prominent pulsations of the cervical carotid artery and soft tissue swelling overlying the carotid are usually present ipsilateral to the pain; many patients also report throbbing ipsilateral headache concurrent with Carotidynia attacks as well as between attacks. Dental trauma is a common precipitant of this syndrome. Carotid artery involvement also appears to be common in the more traditional forms of migraine; over 50% of patients with frequent migraine attacks are found to have carotid tenderness at several points on the side most often involved during hemicranial migraine attacks.

### Symptoms Accompanying Severe Migraine Attacks (in a group of 500 Patients)

SOURCE: From Raskin, 1988.

Symptom	Patients Affected (in %)
Nausea	87
Photophobia	82
Light headedness	72
Scalp tenderness	65
Vomiting	56
Visual disturbances	
Photopsia	26
Fortification spectra	10
Paresthesias	33
Vertigo	33
Alteration of consciousness	
Syncope	10
Seizure	04
Confusional state	04
Diarrhoea	16

## AYURVEDIC MANAGEMENT OF ARDHAVABHEDAKA

According to Acharya Vagbhata, the line of treatment of *Ardhavabhedaka* must be done same as the treatment of *vataja shirashula* and also the treatment of *suryavarta* is preferred in this.

Acharya Charaka and some others have mentioned the following remedies for *Ardhavabhedaka*.

### Chikitsa krama – Line of treatment

Charaka	Susruta	Vagbhata	Yogaratanakara
<i>Snehapana</i>	<i>Nasya</i>	<i>Nasya</i>	<i>Snehapana</i>
<i>Kaayavirechana</i>	<i>Jangal mamsa</i>	<i>Lepa</i>	<i>Swedana</i>
<i>Naadisweda</i>	<i>Kshir vikara</i>	<i>Snehana</i>	<i>Virechana</i>
<i>Puranaghrita</i>	<i>Ghritapaan</i>	<i>Swedana</i>	<i>Nasya</i>
<i>Vasti (Niruha)</i>			<i>Astapana</i>
<i>Upanaha</i>			<i>Anuvasana</i>
<i>Shirovasti</i>			<i>Dhumapana</i>
<i>Agnidaha</i>			Oily and hot food
			<i>Lepa</i>

**Snehana:** *Snehanam* is the very best treatment mentioned in *Ardhavabhedaka*. The symptoms are disappeared by consuming *Ghrita* every day, because the *rookshata* (dryness) in the intracranial region decreases due to *snehapana*. For *snehana*, *Gunja taila*, *Devadarvyadi ghrita*, *Rudra taila*, etc. are used.

**Swedana:** *Swedana* is done after *snehana*. *Naadi sweda* or *Upanaha sweda* is used. Doshas are then expelled by *virechana* or by *shirovirechana*.

**Nasyakarma:** *Bhrumhana nasya* is mainly used in *Ardhavabhedaka*. Some combinations are as follows:

- *Bid lavan* + *shirisha* seed + *apamarga* roots
- *Nirgundi swarasa* + *ghrita* + *saindhav*
- Roots of *shirish* + seed of *shirish* + *kalka* as *avapidana nasya*
- *Vamshamul* + *karpoor* + water are together prepared into *kalka* as *avapidana nasya*
- *Vacha* + *pippalichurna* as *pradhaman nasya*
- *Arkapatraswarasa nasya*

- *Madhukadi avapida nasya* (*Yastimadhuka* and *Madhuka* used together)
- *Madhuradi nasya* (*Kalka* and decoction of the *dravyas* of *kakolyadi gana* are cooked in *ghrita* as *avapida nasya*)
- *Vidangadi nasya* (*Vidanga*, *Krishna taila* and *ajadugda* are pounded together)
- *Katphaladi nasya* (*Katphal*, *elachurna*, *shaileya* and *shunti churna* together)
- *Ksheerini* seeds are pounded in water and this mixture is inhaled by the opposite nostril of the side with pain, before sunrise
- *Manashiladi avapida nasya* (*Manashila* and *chandan* are pounded, added to water)

**Basti:** After purification of head by *nasya*, *asthapana* and *anuvasana bastis* are used. After the purification of whole body for the appeasement of *vatakaphadi doshas* of nasal and oral cavity *dhumapaan* is done.

**Lepa:** Different combinations are used as follows:

- *Chakramarda* with *kanji* as *kalka* used on head as *lepa*
- *Sariva*, *kamala*, *kusta*, *vacha*, *yastimadhu*, *pippali*, oil and *kanji* are pounded
- *Sariva*, *kamal*, *kusta*, *yastimadhu* are pounded in *kanji* and *ghrita* or *taila* added to it
- *Vidanga* with *krishna tila* as *kalka* in *ajadugda* and applied warm
- *Ajadugdha* treatment – A strip of *ajadugda* is placed on the head relieves head ache
- *Krishnatiladi lepa* – *Krishna tila*, *jatamamsi* and *saindhava* made *kalka* and added with honey
- *Panchamulaka taila* is used as *lepa*
- *Thymol*, *camphor*, *peppermint*, *clove oil*, *dalchini taila* are equally mixed and inhaled and is used as *lepa* on the head
- *Chandanadi lepa* – *Sweta chandan* 1.5 gms, *Kushmanda* seeds 5 gms, *Raktachandan* 1 gm, *Babul niryas* 50 gm, *Ajamoda* 5 gm, *Rasanjan* 3 gm, *Ahiphena* 3 gm and *Keshar* 3 gm. All drugs are mixed together and *bhavana*



in *kakamachi swaras* or *dhanyakadi hima* are given and strip is prepared. This strip is levigated as necessary and is placed on head in form of *lepa*

### **Rasoushadi Chikitsa:**

- *Godanti bhasma* 250 mg taken along with sugar and *ghrita* early in the morning
- *Tribhuvanakirti* 125 mg, *Sutashekar* 125 mg and *Vatavidwamsa rasa* 125 mg taken twice or thrice a day along with *goghrita* and sugar
- *Sarpagandha churna* 250 mg and *Vasantamalati rasa* 125 mg taken twice a day with *ghrita* as *anupana*
- *Chintamani rasa* 250 mg, *Kamadudha ras* 250 mg twice or thrice a day with *badam pak*
- *Ustakhuddus* (Unani drug) 10 gm taken twice a day with *shankapushpi* as *anupan*
- *Saptamrita louha* 250 mg, *Laghu suta shekara*, 125 mg and *Godanti bhasma* 125 mg taken twice or thrice a day with *Bhakllataka avaleha*
- For consumption and *anupana* in *Ardhavabheda – Chinnadi kwatha* (*Brihat bhaishajya ratnavali*), *Devadarvyadi kwata*, *Dhatryadikwatha*, *Bhallatakaksheera* and *Pathyadi shadanga kwatha* are used

### **Summary on Ardhavabhedaka Chikitsa**

*Shodana upakram - Snehana, virechana, vasti, nasya, upanaha, dhumapan* and *lepa*

Single drug used for *shamana - Sirisha, vacha, pippali, nirgundi, arka, gairika, milk, chandan, manshila, vidanga, sariva, godanti, yastimadhu, sarpagandha, bhallataka, and devadaru.*

Compounds for *shamana - Rudra taila, devadarvyadi kwata, dipika taila, vasantamalati rasa, shadbindu taila, saribadi lepa, dhatryadi kwata, laghusutashekara, sutashekara, saptamrita louha, kamadudha rasa, vatavidwamsa rasa, chintamani rasa, avipattikara churna, vatavidwamsa rasa, badam milk, chinnadi kwatha, nirgundi taila, tribhuvan kriti rasa, gunja taila* and *godanti bhasma*

*Pathya -Hot, oily, sweet meals, coconut water,*

*ghritapakwa kundalika, milk, sugar, jangal mamsa, ghrithapan, dugdapana* and *Shavasana* to be done in the morning

*Apathya - Langanam* and *aatapa sevanam*

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## **Prevention of Ardhavabhedaka (Migraine) by means of diet and lifestyle modification**

**Singh Shani, Singh Vineeta and Bhushan Shakti**

#### **Abstract**

In the current scenario the burden of Ardhavabhedaka continues to increase gradually, due to rapidly changing disturbances in the living style and behavior pattern of people. It is described under shiroroga which occurs due to vitiation of all the three doshas. According to contemporary perspective Ardhavabhedaka can be correlated with Migraine. This condition is characterized by the unilateral headache with paroxysmal nature and associated with symptoms like photophobia, nausea, vomiting, and sensory abnormalities. Migraine accounts for 16% of the primary headache and affects 10-20% of the general population as listed by IHS. It has negative impact on quality of life and economy of individual & family. In spite of advanced technology and researches, the advanced medication is failing to give the best outcome over the Ardhavabhedaka. Thus there is dire need of multidimensional non pharmacological methods for precluding of it. By wholesome diet, regular exercises, apt sleep and certain yogic practices like Asanas, Pranayama, and Meditation play significant role in management as well as further progress of Ardhavabhedaka.

**Keywords:** Ardhavabhedaka, Migraine, Pathya-aphya, Yoga

#### **Introduction**

In Ayurveda 'Ardhavabhedaka' is depicted as a sadhya kind of shiroroga. This is characterized by severe pricking and tearing pain in half portion of head with dizziness, abruptly after a fortnight or ten days<sup>[1]</sup>. This ailment mainly arises due to vitiation of tridosha. Pathya Ahara (Wholesome diet) and Pathya Vihara (Wholesome lifestyle) are considered to be the primary reasons to sustain homeostasis of all doshas. If an individual does not regulate his daily regimen, undoubtedly he/she suffers from diseases. In modern perspectives it is correlated with 'Migraine', characterized as recurrent headache and varied range of symptoms seen during an attack. Mild to severe migraine might accompany with nausea, vomiting, sensitivity to bright light (photophobia) and noise (phonophobia). Assault of Migraine appears to result from patho-physiological mechanisms triggered by specific eliciting factors. Genetic and environmental factors, irregular lifestyle also plays a significant role in precipitation of malady. This disease significantly influences the quality of life. Various researches shown that the prevalence of Migraine significantly increases due to various triggering factors and most of them are related with variety of dietary stuffs, daily routine and emotional factors etc.

#### **Etymology**

The word Ardhavabhedaka has two components viz. Ardha and Avabhedaka. Ardha implies half or half side, Ava- bad prognosis, and Bhedaka- breaking through, perforating, or bursting out kind of pain. Hence literal meaning of Ardhavabhedaka is perforating or bursting type of pain in one half of the head either left or right. According to Chakrapani, Ardhavabhedaka means "Ardha Mastaka Vedana" (headache on half part of head)

#### **Definition of Ardhavabhedaka**

As per Acharya Sushruta, Ardhavabhedaka denotes pain in half of the head which is splitting, pricking, churning, piercing nature develop at interval of either fortnight or ten days due to vitiation of all the three doshas.

#### **Nidana (Etiology) of Ardhavabhedaka<sup>[2]</sup>**

The etiological factors of Ardhavabhedaka may be classified on the basis of vitiating of Doshas as given as:

**Vata vitiating factors:** Ruksha ahara (unctuous diet), Purvi and sheeta vayu (expose to eastern wind and frost), Vegadharana (Suppression of natural urges)

**Pitta vitiating factors:** Atapa sevana (Exposure to sun)

**Kapha vitiating factors** Day sleep, Intake of cold food

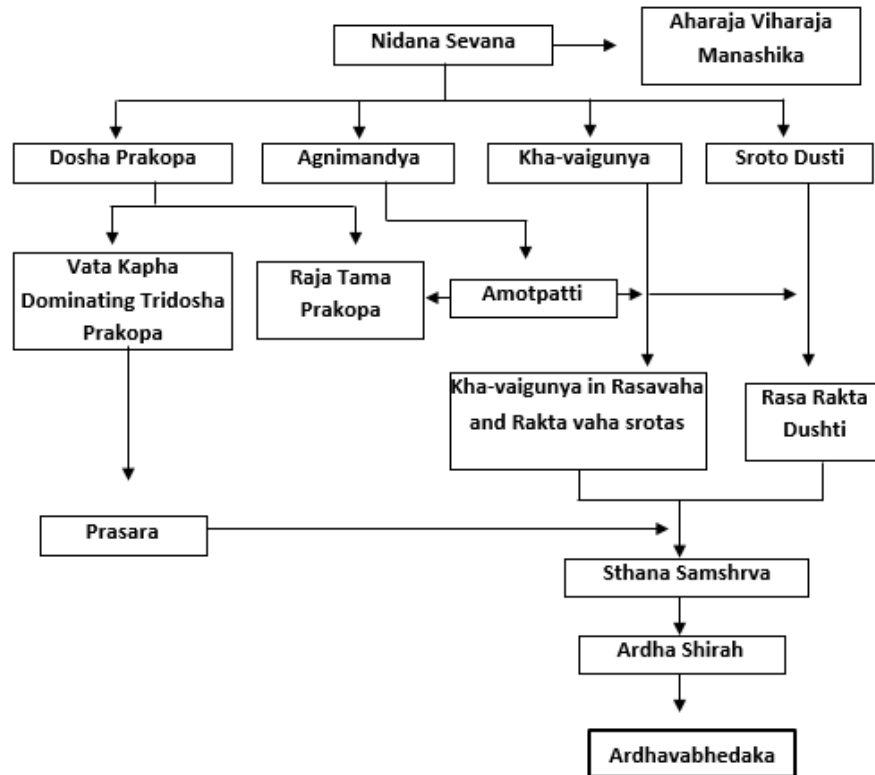
**Manashika Nidana** - Manasa Santapa

### Rupa (Symptoms) of Ardhavabhedaka

Acharya Charaka states that Ardhavabhedaka is one sort of shirah shoola where arani manthanavat shola (Churning type of pain) is experienced in unilateral part of the head involving

bhru, akshi, lalata etc. triggered by vata alone or in combination with kapha [3]. Vagbhata has said Ghata (occipital region according to Indu and Parietal region according to Arundatta) and all the Shirogata Sandhis in addition where the pain arises.

**Samprapti (Pathogenesis) of Ardhavabhedaka (Migraine):** Numerous Nidana factors vitiate either Vata alone or associated with Kapha invades the half portion of the head and causes ardhavabhedaka



### Samprapti Ghataka of Ardhavabhedaka (Migraine)

**Dosha** - Tridoshaja (Su.U.25), Vata Kaphaja (Ch. Si. 9)

**Dushya** - Rasa, Rakta

**Agni** – Mandagni

**Srotas** - Rasavaha, Raktavaha srotasa

**Srotasdusti** – Sanga, Vimargagamana

**Adhithana** – Shirah (Head)

**Udhhavasthana** – Amashaya, Pakvasaya

**Marga** - Abhyantara

**Svabhava** - Ashukari

**Sadhyata-Asadthyata** – Sadhya

**Adhithana** – Shirah (Head)

• **Vyaktisthana** - Shirah and its appendages

Shirah (head) and its appendages like Manya, Bhru, Shankha, Karna, Akshi, Lalata, Ghata, Hanu and Shirogata Sandhi can be considered as Vyakti sthana of Ardhavabhedaka

### Contemporary Perspective of Ardhavabhedaka (Migraine)

Migraine is well-defined as a disorder characterized by intermittent headache episodes, accompanied with nausea, photophobia and/or phonophobia [4]. It exists as the second most basic reason for vascular headache which influences almost 15% or approximately one billion individuals around the world. It occurs more commonly in female (19%) than men (11%) [5]. In the United States, near by 6% of male and

18% of female get a headache in a given year, with life time risk about 18% and 43% respectively [6]. Ordinarily the headache is one-sided (influencing one portion of the head) and throbbing in character, enduring from 2 to 72 hours. Nausea, vomiting, photophobia, phonophobia are associated symptoms and pain is aggravated by physical activities. Up to one-third of individuals with migraine acknowledge an aura: a transient visual, language, sensory, or motor disturbance influence which flags that the headache will soon take place [7]. Occasionally an aura can arise with little or no headache. Migraine Headache assaults appears to result from pathophysiological mechanism actuated by explicit trigger factors. Migraine recurrence bouts may rely either upon on a lessen threshold or on especially strong or continuous trigger elements or both [8]. Biochemical research has given proof to certain physiologic attributes in migraineurs, which have been suggest as inclining factors for migraine. These incorporate platelet activation, platelet serotonin (5-HT) metabolism, and expanded sensitivity to nitric oxide (NO) donors, diminished levels of metabolic proteins, anomalous opiate receptor work, and electro-encephalographic (EEG) irregularities [9].

### Phases of Migraine [10]

Migraines usually accounts with self-limited, intermittent severe headache accompanying with autonomic symptoms [11].

Around 15-30% of people having migraines involve migraines with an aura along with those who have migraines with aura also often have migraines in absence of aura [12]. The severity of the pain, period of the headache, and occurrence of attacks is different in level. A migraine enduring more than 72 hours is named status migrainous [13]. There are four potential phases to a migraine, in spite of the fact that not all the stages are essentially experienced [14]:

1. The prodromal, which arises hours or days before the headache
2. The aura, which instantly rises the migraine
3. The pain phase, also well-known as headache phase
4. The post-dromal, the impacts experienced after the end of a migraine attack

### Etiology of Migraine

Factors which trigger the migraine headache are as follows [15]:

#### Physical Factors

Lassitude, vigorous physically activities, too ample or too little sleep, sitting in front of the TV, staring at the PC screen or other illuminated substances, travelling

#### Dietetic Factors

Long interval between meals, dehydration, fasting, chocolate, cheese and other dairy items, liquor predominantly red wine, coffee, tea, ice cream, cold drink, nut, citrus fruits, onion, sea food, fast food, spicy food, monosodium glutamate (utilized as an additive in many prepared food), Nitrates or Tyramine comprising food stuffs, Aspartame (dietary sweetener)

#### Environmental factors

Bright light, flickering/ flashing light, uproarious noise, intense or powerful smells, smoking, warm atmosphere, and change of weather / climate

#### Emotional factors

Anxiety, strain, depression, shock, excitement, stress, and drastic changes in daily schedule.

#### Hormonal factors [16]

Puberty, menstruation and the premenstrual period, pregnancy, contraceptive pill, menopause / Hormone replacement therapy

#### Medications

Anti-hypertensive (nifedipine, prazosin, captopril, minoxidil, reserpine), Vasodilators (nitroglycerin, isosorbide dinitrate), Selective Serotonin Reuptake Inhibitors, Antibiotics (trimethoprim-sulfa, griseofulvin)

**Other Factors** - Reduced magnesium levels, female hormones progesterone and estrogens, stress, hypertension

#### Classification of Migraine [17]

IHS classification system identifies several subtypes of migraine with aura and several other specific types of migraine, which are as below:

#### International Headache Society (IHS) Classification of Migraine:

1. Migraine without aura
2. Migraine with aura
  - (a) Migraine with typical aura
  - (b) Migraine with prolonged aura

- (c) Familial hemiplegic migraine
- (d) Basilar migraine
- (e) Migraine aura without headache
- (f) Migraine with acute onset aura

3. Ophthalmoplegic migraine
4. Retinal migraine
5. Childhood periodic syndrome that may be precursors to or associated with migraine
  - (a) Benign paroxysmal vertigo of childhood
  - (b) Alternating hemiplegia of childhood
6. Complications of migraine
  - (a) Status migrainous
  - (b) Migrainous infarction
7. Migrainous disorders not fulfilling above criteria

#### Clinical Features of Migraine [18]

##### 1) Migraine with Aura (Classical Migraine):

- In this syndrome, Headache is linked with characteristic premonitory, sensory, motor, or visual symptoms. The most common premonitory symptoms reported are Visual, arising from dysfunction of occipital lobe. Sensory Symptoms are numbness, tingling sensation, speech or language disturbances, vertigo, photophobia etc. Motor Symptoms include mood changes and vegetative changes. Headache in Classical Migraine may be hemi cranial or soon becomes generalized. It starts as vague pain and builds up to a throbbing intensity associated with pallor, anorexia, nausea, vomiting, and photophobia. This may last for several hours and after vomiting has occurred, may decrease in intensity and be followed by sleep. In some, headache persists for 48 hours or more.

##### 2) Migraine without Aura (Common Migraine):

- In this syndrome, no focal neurological disturbance leads up to the recurrent headaches. It is by far the more frequent type of vascular headache. Characterized by moderate to severe headaches, pulsating quality, unilateral location, aggravation by menstruation, stress, walking stairs and similarly routine activities, attendant nausea and/or vomiting, photophobia and phonophobia and multiple attacks, each lasting 4 to 12 hours.

##### 3) Basilar Migraine:

- Symptoms referable to a disturbance in brainstem function, such as vertigo, dysarthria or diplopia, take place as the only neurological symptoms of the attack in about 25% of the patients. A dramatic form of basilar migraine also known as Bickerstaff's Migraine occurs primarily in adolescent females. Episodes begin with total blindness accompanied or followed by admixtures of Vertigo, Ataxia, dysarthria, Tinnitus and distal and perioral paresthesia. In about one quarter of the patients, a confessional state supervenes. The neurological symptoms usually persist for 20 to 30 minutes and are generally followed by a throbbing occipital headache. This basilar migraine syndrome is now known to also occur in children and in adults over age 50.

##### 4) Carotidynia

It is occasionally called as lower half headache or facial migraine, and most commonly seen among older patients,



with the peak incidence in the 4<sup>th</sup>-6<sup>th</sup> decades. Pain is generally found at the Jaw and neck, while sometimes periorbital or maxillary pain occurs, it might be continuous, deep, dull, aching and converts pounding or throbbing episodically. Over 50% of patients along with frequent migraine strikes are found to have carotid tenderness of several points on the side most commonly involved during hemicrania migraine attacks. Dental trauma is a common cause and aggravating factor of this syndrome.

### 5. Ophthalmoplegic Migraine

In this type, recurrent attacks of headache is present which is accompanying with paralysis of one or more oculomotor nerves, frequently persisting for days or weeks after the attack and sometimes tending to become permanent.

### 6. Retinal Migraine

Retinal vascular lesions in migraine are fortunately rare. Thrombosis of the central retinal artery and of single branches may occur and recurrent attacks of retinal ischaemia may lead to bilateral optic atrophy due to ischaemic papillopathy.

Retinal and vitreous hemorrhages may also occur.

### 7. Hemiplegic and Facioplegic Migraine

This is very rare. It occurs probably due to ischaemia of the nerve trunk or compression of it by a dilated artery as in ophthalmoplegic migraine.

### 8. Childhood Periodic Syndromes

Childhood periodic syndromes may be predecessors to or associated with migraine – benign paroxysmal vertigo of childhood, alternating hemiplegia of childhood.

### Principles for Prevention of Ardhavabhedaka (Migraine):

It includes:

1. Nidana parivarjana
2. Pathya Ahara-Vihara
3. Yogic Practices

Ayurveda emphasizes more on the importance of Diet and Lifestyle in the maintenance of health and prevention of lifestyle diseases. The main principles are as follows:

- 1) Pathya- Apathya (Dietary Regimen) <sup>[19]</sup>

S. No.	Classes of Diet	Pathya (Do's)	Apathya (Dont's)
1	Cereals	Rice of Old Shali, Shathi variety	Godhuma (Wheat)
2	Pulses	Mudga (Green gram), Masa (Black gram), Kulattha (Horse gram)	Adhaki (Red gram)
3	Vegetables	Patola (Pointed Guard) , Shigru (Drumstick), Bathua (Green leafy brigade), Karvellaka (Bitter guard)	Jambir (Lemon), Palandu (Onion)
4	Fruits	Amra(Mango), Amalaki (Indian gooseberry), Dadima (Pomegranate), Drakshaphala (Grapes) , Narikela(Coconut)	Apple Kadaliphala(Banana), Peanut
5	Milk and milk products	Goghrita (Cowghrita), Godugdha (Cowmilk)	Dadhi (Curd)
6	Sugarcane and its products	Sugar, Honey	-
7	Drinks	Water, Takra (Butter milk), Kanji, Yusha (Soup)	Liquor
8	Spices	Rasona (Garlic), Jiraka (Cumin), Shringerver (Ginger), Haridra (Turmeric), Clove, Peppermint	Hingu (Asafoetida), chilli, Sarsapa(Mustard Seeds)
9	Oils	Sunflower, Coconut oil	Mustard oil, Sesame oil
10	Others	Coconut water, Kushta (Indian Costus root), Bhringaraj (False daisy), Kumari (Aloe Vera), Musta (Nut Grass), Ushira (Vetiver), Karpura (Camphor)	Cold drinks, Coffee, Tea, Ice-cream, Chocolate, Alcoholic beverage, Red Wine, buttermilk and cream, processed cheeses

### 2) Physical Regimen

**Pathya** – Brahamuhurta Jagarana (Early morning awaking), Samyaka Nidra (Proper sleep), Nitya Bhramana(Daily walking), Upvasa (Fasting), Nasyakarma(Nasal irrigation), Dhumpna (Medicated smoking), Svedana (Hot sudation)

**Apathya** -Adharniya Vegadharana (Suppression of natural urges), Atapa Sevan (Excessive Sunlight exposure), Divaswapna (Day-time sleep)

### 3) Mental Regimen

**Pathya** – Mana and indriya prsannata (Pleasure)

**Apathya** – Chinta (Excessive worried), Shoka (Depressed), Krodha(Anger)

### Beneficial Yogic Practices in Migraine

Yoga passes on benefits either by enhancing the body resistance against triggering factors or by delivering the tranquility to the mind. Migraine is a psychosomatic disorder and one of the leading causes is stress. Yogic theory also

propound that this disorder take place only in persons whose minds are uneasy all the time. Once the mind which orchestrates the senses and organs of perception is kept calm, headaches do not occur. Yoga works by enhancing the circulation and soothing the sympathetic nerves. No other exercise work at the cellular level in the manner in which yoga does. Regular practice of asanas reduces the incidence and severity of attacks. Practice of Meditation is required for introverting the senses and mind. This accounts to a peaceful Neuro-physiological state.

### Effect of Asanas in migraine:

Practice of specific Asanas in migraine assist to reduce stress, and some give strength to body against triggering factors. The stress unleashing Shavasana <sup>[20]</sup> and Makrasana <sup>[21]</sup> give mental relaxation and helps to lessen the physical and psychological stressors. The practice of Tadasana, Paschimottanasana, Pawanmuktasana and Bhujangasana improve appetite and leads to a number of physiological and biochemical changes in abdominal viscera and endocrine

glands.

**Effect of Pranayama in migraine:** Pranayama imparts calming effect to the brain by improving its blood supply and oxygen supply. In Migraine context the Nadi shodhana and Bhramari pranayama are beneficial. They balance the sympathetic and parasympathetic nervous systems and decrease stress, cerebral tensions, anxiety annoyance, and insomnia<sup>[22][23]</sup>.

**Effect of Meditation in migraine:** Meditation imparts the feeling of tranquillity and liberty in daily life. It eases depression, anxiety, insomnia, and various pains including headache.

### Conclusion

Migraine is psychosomatic disorder can be correlated with Ardhavabhedaka. It is occurring most frequently due to adoption of faulty lifestyle, anxiety, depression, stress etc. in the busy schedule of human beings. With only use of medicines it could not be possible to prevent and control this disease. Large numbers of the modern medicines employed for treatment of this disease are restricted to suppress the symptoms only. A repeated and long term use of such drugs begins to cause serious and significant side effects. Therefore, search for safe and effective non-pharmacological approaches is the prime need of the day. Ayurveda emphasises more on both nidana-parivarjana and Pathya Ahara-Vihara intake for any disease management. Contraindication of Apathya Ahara-Vihara can reduce the symptoms of this disease. It can be prevented if intervention in the form of Pathya Ahara and yogic practices are applied in initial stage. Daily practice of selected yogasana and pranayama decrease Ardhavabhedaka pain by remove the stress and by sympathetic activity of nervous system.

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## Lifestyle - A Common Denominator for the Onset and Management of Migraine Headache: Complementing Traditional Approaches with Scientific Evidence

### Abstract

**Background:** Ayurveda and Yoga have gained popularity in the management of various chronic health problems associated with pain including migraine headache. It is evident from both scientific as well as traditional literature that stress, diet, sleep, and exposure to extreme climatic conditions act as triggering factors for the onset of migraine. Hence, it is essential to focus on lifestyle including diet as important factors for prevention and as adjuvant factors in the management of migraine headache. **Aim:** The aim was to propose a new perspective to the understanding of migraine headache keeping in view the role of lifestyle including diet. **Methods:** Classical Ayurveda texts and traditional Yoga scriptures were used to compile information on the role of lifestyle including diet in the onset and management of migraine headache. This was complemented by PubMed-based review of scientific literature. **Outcome:** Ayurveda texts provide an extensive information about the basic understanding, causes, precipitating factors, and management of migraine headache, while Yoga texts refer to the concept of mental stress (*adhi*) leading to physical health problems (*vyadhi*). It is evident from the literature that diet, sleep, exposure to extreme climatic conditions, and mental stress play an important role in the onset and management of migraine headache. **Conclusion:** Lifestyle appears to be the common factor for both onset and management of migraine headache.

**Keywords:** Ayurveda, diet, lifestyle, migraine headache, yoga

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### Introduction

A migraine is one of the most common primary headache disorders, characterized by unilateral, pulsatile, or throbbing sensations in the head. It is associated with greater degree of disability and is triggered by psychological and physiological stressors.<sup>[1]</sup> A number of intrinsic and extrinsic factors can trigger an episode of migraine. The important triggers are stress, food, fasting, sleep deprivation, and change in weather conditions.<sup>[2]</sup> The need for lifestyle modification, including physical exercise, healthy habits, proper diet, and stress adaptability, has become essential factors in the management of most chronic ailments like migraine. Exploring this understanding as per Ayurveda and Yoga texts and correlating it with available scientific literature aims at providing a value addition with supporting evidence in the management of migraine headache.

Ayurveda, an ancient system of Indian medicine, defines health as a state of

well-being resulting from a synergistic balance in *Doshas* (principal systems functions - *Vata*, *Pitta*, and *Kapha*), *Dhatu* (body tissues), *Mala* (excretory products), and *Agni* (digestive fire). A blissful state of *Atma* (spirit), *Indriya* (sense organs), and *Manas* (mind) is also said to be important to achieve the state of positive health.<sup>[3]</sup> Migraine headache is referred as *Ardhavabedhaka* under the classification of *Shiroroga* (diseases related to the head region) in Ayurveda treatises.<sup>[4]</sup> The pain associated is one-sided, intense, and piercing in nature. The onset of *Ardhavabedhaka* is attributed to various causes, such as fasting, intake of dry food items, alcohol, weeping, suppression of natural urges, daytime sleeping, anxiety, fear, and grief. The line of treatment for migraine involves administration of *samshodhana* (*Panchakarma*-Bio-purificatory techniques) with special mention of *kaya virechana* (therapeutic purgation),<sup>[5]</sup> diet and lifestyle regulation. *Pathya ahara* (wholesome

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regulated diet) and *vihara* (wholesome regulated lifestyle) are the primary approaches to maintain homeostasis of all *dosha's* for prevention and management of diseases. Scientific literature also shows that diet, lifestyle, and stress can contribute to increased prevalence of migraine headache and their understanding helps in its management.<sup>[6]</sup>

According to Yoga, migraine is considered as an *adhija vyadhi* (mind-body disorder) where the disturbances in the mind influence the flow of *Prana* (the vital force/breath) resulting in physical problems and affecting the weakest system in the body.<sup>[7]</sup> Yogic principles of diet are based on *trigunas* (the three inherent qualities of food), which emphasize on intake of healthy and nourishing vegetarian diet. The concept of *achara* and *vichara* denoting healthy activities such as practice of *asana*, right thoughts, and attitude, respectively, play a key role in the prevention and management of diseases.

Scientific literature mentions diet and lifestyle as migraine triggers and also states that education on the same plays a major role in its prevention.<sup>[6]</sup> Complementing the traditional understanding with scientific evidence, therefore, would add value in designing a more holistic and integrative line of treatment. Hence, this concept paper aims at compiling information from both traditional and modern literature to present a new perspective to the management of migraine headache.

## Methods

Seven major texts of Ayurveda which included *Bruhtrayis* (three major texts), *Laghutrayis* (three minor texts) and Yoga Ratnakara were reviewed, and relevant information was compiled under two headings: (i) factors responsible for the onset of migraine and (ii) factors which play a key role in the management of migraine apart from conventional Ayurveda therapies. The factors were further categorized into two (i) diet and (ii) lifestyle (stress, sleep, habits, and others). The texts reviewed included *Charaka samhita*, *Sushruta samhita*, *Ashtanga Hridaya*, *BhavaPrakasha*, *Madhava nidana*, *Sharangadhara samhita*, and *YogaRatnakara*. The compilation also includes information on headache-related disorders (*shiroroga*), as migraine is grouped under this category in some Ayurveda texts.

Similarly, an attempt was made to classify the appropriate information from ancient Yogic texts under the categories mentioned above. The texts included *Upanishads*, *Bhagavadgita (B.G.)*, *Hatha Yoga Pradipika*, *Patanjali Yoga Sutras (P.Y.S)*, *Shatdarshana* and *Yoga Vasishta*. Although we found no direct mention of migraine headache in the texts, selected concepts related to disease and pain were considered.

Furthermore, a focused search of modern literature was conducted using PubMed as the data base during July 2018. Since the objective was to derive complementary information to the traditional understanding and not to do

a systematic review, we considered PubMed as the only search engine for this purpose. The keywords used for the search were lifestyle, diet, stress, sleep in relation to a migraine headache. The type of articles considered included review articles, cross-sectional studies, randomized controlled trials, cohort studies, and surveys.

## Description of common factors responsible for the onset and management of migraine

Further to the compilation, the concepts have been described to arrive at an understanding of diet and lifestyle as common factors which would play an important role in both onset and management of a migraine.

The etiological factors as mentioned in Ayurveda treatises, Yogic scriptures, and modern medical research show lot of similarities.

Studies show that stress is one of the four most acknowledged triggers. The other three are fatigue, not eating on time and lack of sleep.<sup>[8]</sup> The triggers are also broadly classified as dietary causes and lifestyle based causes which includes stress.

## Factors responsible for the onset of migraine headache

### Role of diet in the onset

#### Concepts based on Ayurveda texts

The etiological factors described here are the concepts propounded by the great Ayurveda scholars known as *Acharya* (an accomplished practitioner and teacher known for his wisdom in Ayurveda). *Acharya Charaka* mentions independent and specific *nidana* (causes) for the onset of *Ardhavabhedaka* (migraine), whereas *Acharya Vagbhata* has explained only *Samanya shiroroga nidana* (general etiology of headache) which triggers any type of *Shiroroga* (diseases of the head) including *Ardhavabhedaka* (migraine). The other Ayurveda texts have also outlined similar details. The important verses in Sanskrit and their translation to English are cited under respective sections.

*Acharya Vagbhata* in the Ayurveda treatise “*Ashtanga Hridaya*” under *Uttarasthana* (A.H.U) explains the *samanya nidana* (general etiology) as:

- *Dhūmātapatuṣārāmbukrīḍāṭisvapnājāgaraiḥ |*
- *Utsvādādhīpurōvātābāspanīgraharōdanaiḥ || A.H.U. 23/1 ||*
- *Atyambumadyapānēna kṛmibhirvėgadhāranaiḥ |*
- *Upaghātamṛjābhyaṅgadvēśādhaḥpratātēkṣaṅaiḥ || A.H.U. 23/2 ||*
- *Asātmyagandhaduṣṭāmabhāsyādyaiśca śirōgatāḥ |*
- *Janayantyāmayān dōṣāḥ || A.H.U. 23/3 ||*

The smoke, sunlight, dew, playing in water, excessive sleep, keeping awake at night, excessive sweating, stress, wind, suppression of tears, crying, excessive intake of water and alcohol, helminthic infection, suppression of natural urges, avoidance of hygiene, dislike towards *abhyanga* (massage), constant gazing, bad odor, excessive talking may increase



the *ama* formation leading to accumulation of *dosha* in the head region causing various diseases of the head region.<sup>[9]</sup>

- *Acharya Charaka* in *Siddhisthana* (C.Si) explains the specific etiology as:
- *Rūksātyadhyāsanāt pūrvavātāvaśyāyamaithunaiḥ*
- *Vēgasandhāraṇāyāsavyāyāmaiḥ* || C.Si. 9/74 ||.

The intake of dry items, excessive intake of food, less intake of food, exposure to wind, controlling the natural urges of tears, sexual drive, bowel, and bladder evacuation vitiate the *vata*.<sup>[5]</sup>

Most of the causative factors mentioned under *samanya nidana* (general etiology) aggravate *vata*, *pitta*, and *kapha* and vitiate *rakta*. From the available information on *samanya nidana* of *shiroroga* and specific *nidana* of *Ardhavabhedaka*, the etiological factors have been classified as *aharaja nidana* (dietary causes), *viharaja nidana* (lifestyle causes), and *manasika nidana* (mental causes).

Specific dietary causes (*aharaja nidhana*) and the underlying mechanisms:

- *Adhyashana* (consumption of food before the digestion of previous meal): It leads to *ama* formation which enters the circulation and vitiates *rakta*. When it lodges in *ardhashiras* (one side of the head), it produces *Ardhavabhedaka*<sup>[5]</sup>
- *Amla ahara* (sour food): Excessive intake of sour food articles which have *laghu* (light), *snigdha* (unctuous), and *ushna* (hot) *guna* (quality) does the *vilayana* (melting down) of *kapha* and *pitta rakta dooshana* (vitiates *pitta* and *rakta*)
- *Anashana* (intake of less food): It may be *abhojana/alpamatra bhojana* (not taking food/taking less food) which leads to *rikta kosta* (empty stomach) and *vata prakopa* (aggravation)<sup>[5]</sup>
- *Atisheetambu pana* (intake of excessively cold water): It causes *agnimandya* (weak digestion) leading to the formation of *ama* (byproduct of improper digestion). *Sheeta guna* (cold quality) which vitiates *vata* in turn causes *sankocha* (constriction) of *sira* (arteries) in the body. It causes *kapha prakopa* (aggravation of *kapha*) by its *snigdha* (unctuous), *manda* (slow) and *guru* (heavy) *guna* causing *raktadusti* (vitiating of blood), *srotodusti* (vitiating of body channels) in the *shiras* (head) leading to *ardhavabhedaka*<sup>[5]</sup>
- *Ati madya sevana* (excessive intake of alcohol): It leads to *dooshana* of *pitta* and *rakta* (vitiating of *pitta* and blood). It also causes the *vidaha* (inflammation) of *rakta* by its *ushna* (hot), *vyavayi* (diffuse), *vikasi* (spreading nature) *gunas* (qualities), results in *kshobha* (constriction) of *raktavaha sira* (disturbance in blood vessels), which leads to *vatadi prakopa* (aggravation of *vata*) and *shiroroga* (diseases of the head)<sup>[9]</sup>
- *Guru Ahara* (heavy food): It leads to *agnimandya* (weak digestion), causes *kapha prakopa* there by acting as a trigger for headache<sup>[9]</sup>

- *Rookshashana* (dry food): It causes *vata prakopa* which leads to formation of *kledamsha* (waste) leading to the *srotorodha* (blockage of channels) leading to *Ardhavabhedaka*
- *Sambhojana* (eating food which is completely filling): It causes *tridosha prakopa* and cause *amotpatti* (production of *ama*) leading to *shirashoola* (headache).<sup>[5]</sup>

### Concepts according to Yoga texts

*Taittiriya Upanishad* summarizes the importance and role of food in an individual's life. It says: "*Annam Brahmeti vyajanaat*," i.e. food is *Brahman* (Universal consciousness), because it is food from which all beings are born, sustain and finally merge into. Food, therefore, plays an important role in health and disease.<sup>[10]</sup>

*Hatha Yoga Pradipika* explains food along with *yama* (restraints on behavior) and *niyama* (observances). It mentions that food taken should be of moderate quantity, pleasant, and sweet leaving one-fourth of the stomach empty. Food items which are sour, pungent, and hot-like mustard, alcohol, fish, meat, curds etc., reheated food, salty food are those advised to be avoided.<sup>[11]</sup>

The *B.G.* explains the importance of diet in the context of disease as follows:

- *Āyuhśattvabalārōgyasukhaprītivivardhanāḥ*
- *Rasyāḥ snigdhaḥ sthīrā hrīdyā āhārāḥ sāttvikapriyāḥ* || B.G. 17/8 ||
- *Kaṭvamlalavaṇātyuṣṇatīkṣṇarūksavidāhinaḥ*
- *Āhārā rājasasyeṣṭā duḥkhaśōkāmayapradāḥ* || B.G. 17/9 ||
- *Yātayāmaṃ gatarasaṃ pūti paryuṣitaṃ ca yat*
- *Ucchiṣṭamapi cāmēdhyaṃ bhōjanaṃ tāmasapriyam* || B.G. 17/10 ||.

Food in the mode of goodness increases the duration of life, purify one's existence and gives strength, health, happiness, and satisfaction. Such food are sweet, juicy, nourishing, and palatable and are known as *Satvic* food. Foods that are too bitter, too sour, salty, pungent, dry and hot, are liked by people in the modes of passion. Such foods cause pain, distress, and disease. These are *Rajasic* foods. The food cooked for more than 3 h before being eaten, which is tasteless, stale, putrid and unclean, is food liked by people in the mode of ignorance. It is called *Tamasic* food. Hence, it can be postulated that the *rajasic* and *tamasic* food when consumed inappropriately trigger diseases associated with pain as both of them aggravate *pitta* which is a principle factor in the onset of headache.<sup>[12]</sup>

### Complimenting concepts based on scientific literature

Scientific evidence shows that the food we consume acts as a potential trigger for migraine and is second to stress responsible for its onset.

Food items, such as dairy, processed food, fermented, pickled and marinated food, and those which contain nitrates (hot dogs, salami, and bacon), tyramine (aged cheese, beans,

citrus fruits, avocado, banana, onion, red wine) caffeine and histamine (seafood),<sup>[13]</sup> are found to be the triggers of migraine.

The onset of headache due to the above can be understood by theories of brain-gut axis where a sensitive nervous system develops hyperexcitability as a response to multiple environmental and immunological factors.<sup>[14]</sup>

Diet and nutrition can also bring about neurogenic and vascular inflammatory changes. Following ingestion of certain food, studies show that the rate in which neurons synthesize neurotransmitters is influenced.<sup>[15]</sup> This can be supported by studies where decreased serotonin levels have shown to trigger migraine and diet can contribute to increase in serotonin levels.<sup>[16]</sup>

### Role of lifestyle in the onset of migraine headache

#### Concepts according to Ayurveda (*viharaja karana*)

The following factors are known to trigger the onset of migraine according to Ayurveda texts:

- *Avashyaya/Tushara sevana* (excessive exposure to mist): It increases *vata* and *kapha* because of its *sheeta guna* (cold quality)<sup>[5]</sup>
- *Atapa sevana* (excessive exposure to sunlight): This causes *vilayana* of *kapha* and aggravation of *pitta guna* results in *raktadusti*<sup>[9]</sup>
- *Atimaitihuna* (excessive sexual indulgence): It causes *shukra kshaya* (oligospermia) which in turn leads to *vata dusti* (vitiation of *vata*) and causes *shiroroga* (disease of the head)<sup>[5]</sup>
- *Ayasa* (fatigue/exertion): Fatigue can be both physical and mental in origin. Physical fatigue occurs due to *ativyayama* (excessive exercise), and mental fatigue may be due to *rodana* (crying), *chinta* (worrying), etc., All these causes increase *rooksha guna*, leading to *shoshana* of *dhatu*s in the body. The *vata* gets vitiated in *ardha shiras* (half part of the head) to produce *ardhvabhedaka* (migraine)<sup>[9]</sup>
- *Diwa swapna* (day sleep): It causes *kapha prakopa* (vitiation of *kapha*) and increases *medas* leading to *raktadusti* (vitiation of blood) and *avarodha* in the *shiras* (blockage in blood vessels) to produce *vata prakopa* and *shirashoola* (headache)<sup>[9]</sup>
- *Pragvata* (exposure to cold breeze from eastern direction): This causes *vata kapha prakopa* by increasing *sheeta guna*. This causes *sankocha* of *siramukha* in *shiras* (obstruction of blood vessels) to produce *shiroroga* (headache)<sup>[9]</sup>
- *Ratri jagarana* (keeping awake during night): It does *prakopa* of *vata* by its *rookshaguna*<sup>[9]</sup>
- *Vega dharana* (suppression of natural urges): Suppression of urges such as *chardi* (vomiting) and *kshavatu* (sneezing), induces *vata prakopa*<sup>[9]</sup>
- *Asatmendriyartha samyoga* (improper stimulation of sense organs) is considered an important factor for trigger of diseases as Ayurveda considers the sense

organs to be the route to the brain. Constant glare, staring, bright light, loud noise, certain types of smell could trigger migraine.<sup>[9]</sup>

#### Role of lifestyle in health and disease according to Yoga

Yoga encompasses factors which are physical, mental, social, and spiritual in nature which can influence health and disease. The principles might appear general and subtle, but plays vital role in the overall understanding of health and disease.

*Acharya Patanjali* has provided the most comprehensive description of the five stress producing factors called *Kleshas*. They are *Avidya asmita raga dwesha and abhiniveshaha*.

Ignorance, ego, desire, dislike, and fear of change are the five stress producing factors. The fivefold *kleshas* are responsible for the onset of *dukha* (pain) which may be physical or mental. Diseases are considered as *dukha* and can be overcome through *cittavritti nirodha* (regulation of mental modifications). We could overcome the fivefold *klesha* by practicing *kriyayoga* (*tapas* [austerity], *swadhyaya* [self study], *ishwarapranidhana* [surrendering to the divine]) and by *ashtanga yoga* (Eight limbs of Yoga).<sup>[17]</sup>

*Acharya Patanjali* also mentions about *cittavikshepa* (obstacles) as the impediments in the path of achieving the control of mind. *Cittavikshepa* leads to *dukha* (pain). They are *vyadhi* (disease), *styana* (mental laziness), *samshaya* (doubt), *pramada* (lack of enthusiasm), *alasya* (physical lethargy), *avirati* (craving for sense pleasure), *bhrantidarshana* (illusionary vision), *alabdhabhumikatva* (despair due to failure to concentrate) and *anavasthitatva* (unsteadiness in concentration). There are seven methods mentioned by Patanjali as a remedy and for the sake of simple study, we could understand that keeping a positive attitude, practicing breathing techniques, and meditation on various objects help one to get rid of the *vikshepa*.<sup>[17]</sup>

The Lifestyle modifications are better understood by knowing more on *yamas* (restraints) and *niyamas* (observances) as explained in P.Y.S.

- *Ahimsā-satya-asteya brahmacharya-aparigrahāḥ yamāḥ* || P.Y.S. 2/30 ||
- *Śauca saṁtoṣa tapaḥ svādhyāy-eśvarapraṇidhānāni niyamāḥ* || P.Y.S. 2/32 ||

The *yama* (ethical living) guidelines have been mentioned as *ahimsa*: nonviolence, non-harming, *satya*: truthfulness, honesty, *asteya*: Nonstealing, to the extent that one should not even desire something that is not his own, *brahmacharya*: Walking in awareness of the highest reality, remembering the divine and practicing the path of celibacy, *aparigraha*: Non possessiveness, nongreedy, nonindulgence.

The *niyamas* (ethical observances) are *shaucha*: Cleanliness and purity of body and mind. It results in purification of the subtle mental essence, brings pleasantness, mastery over the senses, and capability for self-realization, *santosha*: Contentment or comfortable acceptance of what one currently has. It brings joy and happiness from within, *tapah*: Through training of the senses, there comes a destruction of mental impurities and an ensuing mastery over the body and the mental organs of senses and actions, *svadhyaya*: Self-study, reflection on sacred words, and study of the scriptures. Through this one attains communion with the underlying natural reality, *Ishvarapranidhana*: Surrender and dedication to the Supreme Being or Causal Source, devotion, and surrender of fruits of practice. It helps in achieving the state of perfect concentration (*samadhi*). *Yama* and *Niyama* when not practiced as applicable to common man can, therefore, lead to diseases.<sup>[17]</sup>

#### Scientific literature on lifestyle as a trigger in the onset

An episode of migraine is triggered by external factors such as fatigue, fasting, sleep disruption, exercise, and weather conditions.<sup>[18]</sup>

Fatigue has been evaluated and has been significantly seen 12 h before a migraine episode.<sup>[19]</sup>

Studies demonstrate that peripheral and central sensitization of the trigeminovascular projection to the dural vasculature can exacerbate neuronal responses to innocuous mechanical and noxious intracranial dural inputs. This is considered a reason for trigger of migraine following physical activities such as exercise.<sup>[20]</sup>

Sleep has been extensively studied as a cause of migraine. Lack of sleep, excess of sleep lead to migraine<sup>[21]</sup> and migraineurs report poor sleep quality and daytime tiredness when compared to non-migraineurs.<sup>[22]</sup> Reduced serotonin,<sup>[23]</sup> increased catecholamine's<sup>[24]</sup> and hypothalamic orexinergic system<sup>[25]</sup> play a role in the onset of migraine. Orexin-containing neurons in the hypothalamus fire in wakeful states, and disruption of orexinergic signaling results in excessive sleepiness. Orexinergic cells affect not only monoaminergic activity across the sleep cycle but also pain modulation. The melatonin levels which get synthesized by the pineal gland during darkness may not trigger migraine but may predispose the onset of headache leading to awakening from sleep.<sup>[26]</sup>

Since hypothalamus is said to be involved in physiological functions as a regulator for homeostasis and therefore plays a key role in sleep cycle, thirst, feeding, arousal, and urination. Hypothalamic activation has been demonstrated in migraine during and before an episode of migraine in imaging studies.<sup>[27]</sup> We, therefore, understand how lifestyle plays a role as a trigger of migraine.

#### Role of stress as a triggering factor

Ayurveda explains the concept of *pragyaparadha* (intellectual blasphemy). This unrighteousness is the main cause of somatic diseases and can induce all the pathological conditions.<sup>[28]</sup> Stress can be therefore considered as *pragyaparadha*. It is a factor due to which a person cannot perform optimum levels of intellectual functions and cannot discriminate between right and wrong. This increases *Vata* and hence aids manifestation of *shoola* (pain).

According to the Yoga text - *Yoga Vasista*, the concept of “*Adhija vyadhi*” explains about the diseases originating from stress and “*Anadhija vyadhi*” explains the diseases which are not due to stress. The duality of likes - dislikes, love – hatred, etc. which govern human emotions start creating imbalance at the level of *manomaya kosha* and when intensify cause “*Adhi*’s.”<sup>[7]</sup> These conflicts bring about the speed in mind and is termed “stress.” The repetition brings in the response of anxiety, depression, anger and affects the various systems. This is a state of mind described in P.Y.S as “*kshipta*” featured by agitation and restlessness and predominant with *rajas*. The *B.G.* illustrates the process of how stress can lead to manifold problems. Repeated thinking and dwelling on the same thoughts have been identified as source of all problems. This leads to attachment, desire, anger, delusion, memory loss, lack of discrimination, and finally destroys oneself.<sup>[12]</sup>

According to Scientific literature, stress can be due to physical, mental or psychological factors. A study on 3259 civil servants has shown that high strain jobs with low social support is associated with migraine.<sup>[29]</sup> It is found that prolonged stress activates immune system and may facilitate pain. The pro-inflammatory mediators such as tumor necrosis factor alpha, interleukin (IL)-1beta, IL-6 and nitrous oxide are activated due to stress leading to migraine.<sup>[30]</sup>

#### Factors which play an important role as an adjuvant in the management of migraine

##### *The comprehensive Ayurvedic approach in the management of migraine*

The first line of treatment for migraine is *nidana-parivarjana* (abstinence from etiological factors). The objective is to reduce the frequency of attacks and to improve the quality of life. By adapting *dinacharya* (daily regimen) and *rutucharya* (seasonal regimen), the frequency of headache episodes has reduced. Pitta individuals have strong *agni* (digestive power), and the dietary causes such as overeating of spicy food aggravate Pitta, leading to the formation of *ama* and further can trigger headache. Therefore, they are advised to avoid Pitta aggravating food. Lifestyle-based causes (*Viharaja nidana*), such as, weather-related causes, exposure to sunlight, wind, improper bowel, inadequate sleep and excessive exercise



should be avoided as they increase *pitta* and therefore increase the tendency of *shoola* (pain).<sup>[4]</sup>

The description given in *Sharangadhara Samhita Parishistam* (S.P) provides a comprehensive recommendation of diet (*Pathya-Apathya*) in the management of headache.

- *Śāli yavaṁ mām̐sa rasam vārtākuñca paṭolakam |*
- *Drākṣādāḍimakharijūraphalani ca payastathā ||*
- *Niśāpānam nadīsnānam gandhadravya niśevanam |*
- *Śiroroḡeṣu sarveṣu hitamuktam yathāyatham ||*
- *Dravyāṇi ca atitīkṣṇāni durjarāṇi ca yāni vā |*
- *Tānyaniṣṭapradānyatra tīkṣṇāśca nikhilāḥ kriyāḥ ||* (S.P 66).

Intake of red rice, barley, meat soup, snake gourd, grapes, pomegranates, dates, drinking milk at night is indicated in the management of all types of headache including migraine. Excessive exercise and strong smell are always contraindicated in the management of headache.<sup>[31]</sup>

Stress explained as *manasika nidana*, requires *satvavajaya chikitsa* for its management. A detailed counseling restores adaptability and is essential to alleviate the condition.

Another unique concept in the management is *Sadvritta* (personal conduct). It brings in good health and control over senses and desires, therefore, influencing the control and treatment of any disease including headache.

Although diet, lifestyle, and code of conduct have been mentioned in the management of *Ardhavabhedaka* (migraine), Ayurveda provides a line of treatment which involves *snehana* (internal and external oleation), *shodhana* (purificatory techniques), *shamana* (pacificatory therapy), *vamana* (therapeutic vomiting), *virechana* (therapeutic purgation), *basti* (enema) and *nasya* (nasal errhines) as *antahparimarjana chikitsa* (internal cleansing therapies). *Lepa* (medicated paste application), *upanaha* (poultice), *swedana* (fomentation), and *shirobasti* (oil retention on the head) are mentioned as *bahirparimarjana chikitsa* (external cleansing therapies) and *siravyadha* and *agnikarma* are the *shastra pranidhana* (surgical therapies) for the management of migraine headache.<sup>[4]</sup>

*Therapeutic yoga - a customized approach in the management of migraine*

- *Yuktāhāra-vihārasya yukta-ceṣṭasya karmasu |*
- *Yukta-svapnāvabodhasya yogo bhavati duḥkha-hā ||*  
B.G. 6/17 ||.

The Gita, explains that the one who follows the right diet, lifestyle, does proper actions, whose hours of sleeping and waking up are regulated can mitigate pain (disease) through Yoga.

Yoga emphasizes on healthy and nourishing food for the management of illness. Modern-day psychosomatic

diseases are fostered by the inappropriate diet and wrong eating habits. If the mind is controlled through Yoga, the craving for wrong food and the discrimination between right and wrong would be clear in individuals to bring in better health to the society.<sup>[12]</sup>

*Yama* and *Niyama* enhance the internal healing capacity due to the cultivation of right habits and moral-ethical living. Harming animals is an act of violence. Therefore, Yogic concepts suggest avoiding Non-vegetarian food and to follow the path of ahimsa to avoid the increase in rajas leading to diseases. In this way aspects of *yama* and *niyama* can be adapted in disease management.<sup>[17]</sup>

The beneficial effects of *yoga* in the management of disorders have been explained in *Hatha yoga pradipika*. By the practice of asana, an individual attains steadiness of the body and mind, diseaselessness and lightness of the body. The text describes that the practice of asana such as *matsyendrasana* (fish pose) and *pashchimottanasana* (seated forward bend pose) improves digestive fire (*jataragni*) and therefore alleviates diseases.<sup>[11]</sup>

Pranayama practices are known to help in balancing the flow of subtle energy across the *nadi*. The three practices, right nostril breathing, left nostril breathing and alternate nostril breathing which use uni-nostril voluntarily regulated breathing aim to stimulate, relax, and balance the flow of *prana* across the two main *nadis* - *Ida* and *Pingala*.<sup>[11]</sup>

Yoga also prescribes reduced sensory stimulation and sensory withdrawal through the process called *pratyahara* as an important technique.<sup>[17]</sup> Considering the precipitating factors for migraine headache, intense focusing as involved in *dharana* shall be avoided. Perhaps, meditation which takes an individual to an effortless state of expansion featured by alertful rest should be the practice of choice.

Hatha yoga pradipika in addition talks about the internal cleansing practices called “*Kriya*.”

Hence, an integrated approach involving asana (physical postures), *pranayama* (regulated breathing), *kriya* (cleansing techniques), meditation, and relaxation techniques are used in the management of migraine headache.<sup>[11]</sup>

*Scientific literature on Conventional medical concepts of management*

While the conventional medical approach prescribes oral analgesics as a symptomatic treatment in the management of migraine, equal importance has been given for regulating lifestyle and diet.

Modern nutritionists encourage mindful eating behaviors along with restriction of carbohydrate, gluten, alcohol, and caffeine. This is said to fit well with lifestyle management including stress reduction, adequate sleep, regular exercise, and weight management.<sup>[13]</sup>

In a study during Ramadan, the most common triggers for headache were stress, physical activity, change in weather and fasting. While 50% achieved relief by nonsteroidal anti-inflammatory drugs, 45% achieved through sleep.<sup>[32]</sup> Another study has shown that stress management has advantages compared to pharmacological treatments and the therapeutic effects are maintained for at least 7 years.<sup>[33]</sup>

## Conclusion

Lifestyle including stress and diet as major factors plays an important role for the onset and management of migraine headache. Traditional approaches would provide a better understanding of the preventive and management strategies, and the combination of Ayurveda and Yoga therapy shall provide long-term solutions to the management of migraine which is one of the most disabling headache disorders of the present day.

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# Yoga and Ayurveda for Headaches and Migraines

by Meggan Brummer

## The Prevalence of Headaches and Migraines

How many people in the world can claim that they have never experienced the ache in their head that we commonly refer to as a headache? It is a fact that nearly all of us will suffer from a headache during our lifetime; the less fortunate will suffer from migraines.

Followed by back pain, headaches and common colds are the two main causes of time off work for Australians! According to the National Health Survey conducted in Australia from February to November 2001, 2.2 million people reported that they had headaches that had started recently and 22,000 reported headaches on a longer-term basis.<sup>1</sup>

Migraines, classified as a disease of the nervous system, will affect around five percent of the Australian male population and 15% of the female population and are most common in the Australian population age group between 35 and 44 years of age.

## Identifying Headaches and Migraines

According to Aled Francis, a Manipulative Physiotherapist from the Sydney Headache Clinic, treatment has traditionally focused on identifying certain features such as the frequency, length of time or severity of reported headache symptoms, when diagnosing a headache as a Migraine, Tension Headache, etc. Thus, a headache pain which is one-sided lasts between four and 7 hours, is of moderate to severe intensity and is diagnosed as a Migraine without Aura. Similarly, a headache that occurs on both sides of the head, lasts from 30 minutes to seven days, and is of a mild to moderate intensity, is diagnosed as a

Tension Headache.<sup>2</sup> Whilst migraines tend to occur now and again, (i.e. we can anticipate when they will occur, for example, if they are hormonal then they will occur once a month with the menstrual cycle), tension headaches tend to be more constant.

Headaches are usually considered to be less severe than migraines with a lower intensity of pain, and headaches are not usually associated with the extreme visual or sensory disturbances, nausea, vomiting, irritability and intolerance of light that often accompany migraines.<sup>3</sup>

## Types of Headaches

Headaches can be divided into two main categories – primary and secondary.

### Primary Headaches

Headaches and migraines are generally primary headaches and the two most common types of headaches are migraine and the tension headache. Primary headaches are not related to any pre-existing medical condition. This is because there are no investigatory techniques that are able to detect what is causing these headache symptoms.

### Secondary Headaches

Secondary headaches are when the headache is related to a pre-existing medical condition. For example, children often have headaches related to a middle-ear infection and adults often get headaches related to inflamed sinuses.

## What causes Headaches and Migraines?

"There are virtually no investigatory or scanning techniques, e.g. X-rays or CT scans, which can detect the existence of an abnormality which is causing the migraine or tension type headache symptoms."<sup>4</sup> There are many different theories as to what could be causing a migraine. Migraines often have similar causes to headaches, and many patients suffer both. In many cases, a number of causes might combine to produce a migraine attack. It is commonly believed that headaches are the result of irritation to nerves and pain sensitive structures in the head and neck. Other countless possible causes may include:-

- **Poor dietary habits and irregular eating habits** – eating food low in nutrients and eating irregularly can be potent headache triggers;
- **Food** – foods that have been known to trigger headaches include alcohol, chocolate, citrus fruits and dairy products – especially cheese;
- **Nervousness** – noisy, polluted environments, a hectic lifestyle, over-activity, accumulated fatigue and excessive worrying can cause nervous headaches. Headaches of this origin are often experienced by people who try to do more than they are capable of. To cure such headaches, the causes need to be removed, life style changed, etc. Headaches of this sort that are not cured at the root level, but suppressed by painkillers, can lead to migraines;
- **Constipation** – mild constipation often gives rise to dullness or heaviness in the head, but when constipation becomes more chronic, with it comes a more persistent headache;





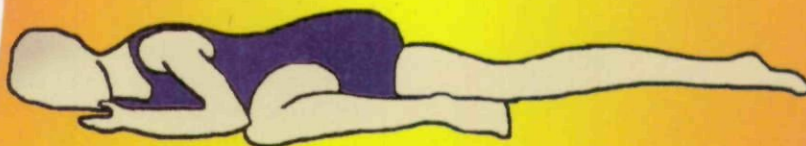
- **Stress** – Stress is associated with a number of different types of headaches, and is often an aggravating factor to headache attacks;
- **Blocked nostrils** – according to Ayurveda, ignoring the problem of a blocked nose may lead to more serious health problems, headaches, migraines or pain in the jaw, ear or shoulders.<sup>5</sup>
- **Menstruation** – women tend to suffer from headaches and migraines more than men and this has often been connected with menstruation;
- **Poor postural or sleeping habits** – Aled Francis, Manipulative Physiotherapist, suggests that headaches can occur as a result of poor sleeping habits and recommends that we do not lie on our stomachs whilst sleeping. It is a good idea to get a pillow that will hold your head symmetrically in line with your spine. Often when we stand we do not keep our bodies in neutral alignment, but stand awkwardly, causing strain on certain muscles. Sitting or standing for long periods of time could also cause problems. Francis recommends that we sit at a desk for no longer than 35 to 40 minutes at a time. In addition, headaches may be caused by extreme hot or cold weather, neck stiffness, lack of physical exercise, muscle tension, sinus problems, problems with the jaw and eyestrain.

### Curing Migraines

Although it is possible to cure migraines with Ayurvedic treatment, it is obviously better to prevent them in the first place – what makes this possible is the fact that migraines often come with pre-attached symptoms. If you can learn to recognize these symptoms in time then it will be easier to do something before the symptoms become full blown. Many migraine sufferers have tried one treatment or another without success. Involving the expertise of a number of health professionals and having a multi-pronged approach to curing migraines is essential.

A survey conducted by the Australian Bureau of Statistics in 1995, indicates that nearly 15% of the Australian population was taking medication for headaches.<sup>6</sup> However, once we decide to move away from pill popping to cure these pains, we discover the multitude of alternative natural options that don't come with the negative side affects of putting chemical toxins into our system.

The Flopping Fish Pose



### Yoga for Headaches and Migraines

Although yoga on its own may not cure headaches and migraines, it is more often being recommended for headache and migraine sufferers as part of their programme. Bear in mind that beneficial yoga poses will differ from one individual to another, so if you suffer from headaches or migraines, it is best to get personal advice from a professional yoga teacher rather than going with the flow of a Yoga group situation which may merely aggravate the issue. Having said this, here are some yoga poses that are generally effective for migraine and headache sufferers:-

#### Relaxation poses

For any ailment, the importance of relaxation yoga poses cannot be over-emphasized. They can be performed at the beginning and end of any yoga session or at any time when the body feels tired and needs deep rest:

#### Flapping Fish Pose – *Matsya Kridasana*

This is a great relaxation pose. Many people naturally sleep in a variation of this pose because intuitively they feel the deep rest that can be gained from it. Lie on your stomach and interlock your fingers. Extend the right elbow so that it is pointing away from your head and point the left elbow down towards your legs. Rest your right cheek on top of your interlocked fingers. Bend your left leg, bringing your thigh close up towards your ribs. Touch your left

elbow to your left knee or as close as possible. Keep your right leg straight. Relax in the final position and breathe normally. After five minutes, change sides. The bent knee and the head may be supported on a pillow for extra comfort.

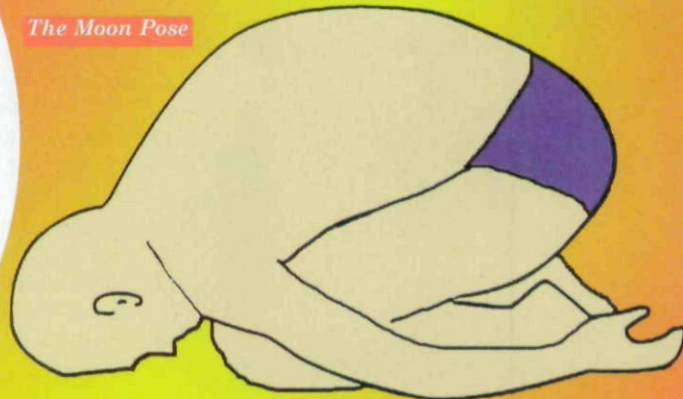
As well as inducing deep relaxation, this pose stimulates digestion by stretching the intestines, helping to remove constipation. Therefore, it is especially beneficial for those people whose headaches are connected to poor digestion. This pose also re-distributes excess waistline weight.

#### Pose of the Moon or Hare Pose – *Shashankasana*

Sit on your heels and place the palms of your hands on your thighs. Close your eyes and relax, keeping your head and your spine straight. Inhale and raise your arms above your head. As you exhale, bend the top half of your body forward from the hips. Stretch your arms out so that they rest shoulder-width apart on the ground in front of you. Rest your forehead on the floor in front of your knees. You can bend your arms slightly so that they are fully relaxed. Try to hold this position for a minute at first, building towards holding it comfortably for at least three minutes.

Moon Pose helps to calm an overactive mind common amongst headache sufferers. It gently brings fresh blood and oxygen to the head, calming and soothing frayed nerves. Moon Pose is also great for calm-

The Moon Pose





ing anger, inducing an overall sense of well-being and a peaceful state of mind.

Note that those with very high blood pressure, slipped disc or vertigo should not perform this *asana*.

### **Palm Tree Pose – Tadasana**

Stand with your feet shoulder width apart, arms by your side. With your body weight evenly distributed on both feet, breathe in and slowly raise your arms above your head. Interlock your fingers, turning your palms upwards. To help your balance, fix and keep your eyes fixed on a point on the wall in front you, just above the level of the top of your head. Keep breathing. After a few breaths, inhale deeply and raise your heels slightly off the ground. Tighten your buttocks and stretch towards the sky. Imagine that your body is triple its normal length, stretching up as high as you can. Tuck your pelvis in so that your lower back doesn't strain. Remember to keep your facial muscles soft and relaxed as you hold this pose, creating no additional tension in the body. Hold for as long as is comfortable and then exhale slowly as you lower your heels and bring your arms down. This is one round. Complete five to ten rounds.

Although it is more difficult to retain one's balance, this pose can also be performed looking up towards your interlocked fingers. This is a useful pose for those suffering from headaches, helping to alleviate tension in the neck and shoulders, developing physical and mental balance and stretching the entire spine and the intestines. As the spine is a great channel of energy, the stretch happening in the spine during *Tadasana* can help to alleviate energy blockages between the lower back and the head.

### **Double Angle Pose – Dwikonasana**

Stand up straight with your feet one foot apart. Take your arms behind your back and interlock your fingers. Take a

deep breath in. Keeping your head up and looking forwards, breath out gradually as you bend the top half of your body forward from your hips. If you are someone who commonly has problems with your back, then take extra care with bending forward or avoid it altogether. Bending the knees slightly as you move into a forward bend will help to eliminate the extra pressure that is often felt in the lower back during forward bends. As you do this, raise your arms behind your back without straining them and allow your hands to drop over your head, down towards the ground. Hold this final position for about ten seconds to begin with, keeping the body as relaxed as you can. To move out of the position, raise your head so that you are looking upwards and outwards and take a deep breath in as you raise your body up to standing position. Relax your arms by the side of your body. Close your eyes and stand still for a few moments, allowing the breath to return to normal. Observe any sensations in your body, relaxing completely and feeling the firm connection between your feet and the ground.

*Dwikonasana* is highly recommended pose for headache sufferers. With the arms acting as a lever, this pose gives the shoulders and chest an excellent stretch and helps to dissolve the tension we often store beneath the shoulder blades. However, those with very painful shoulder joints should avoid this *asana*.

### **Palming – Eye Exercise**

Sit quietly and close your eyes. Rub the palms of your hands together briskly until you can feel the heat in your hands. Gently place the palms of your hands over your eyes and hold them there until the heat has been absorbed into your eyes. Feel and visualize the energy and warmth moving from your hands to your eyes as the eye muscles relax. Make sure the palms of the hands and not the fingers are covering the eyes. Enjoy rest-

ing your eyes in the soothing darkness. Keep your eyes closed as you lower your hands to your knees. Repeat the process at least three times.

It is said that the benefits of this practice are increased if practised in front of a rising or setting sun. Palming helps to sooth eye tension that often contributes to the pain and discomfort of headache and migraine sufferers

### **Breathing – Pranayama**

Various rhythms and methods of breathing have different effects on the mind, body and spirit. According to Sri Sri Ravi Shankar, founder of the International Art of Living Organization, 70% of the body's toxins are released through the breath. The breath is a subtle yet powerful tool in which to release much of the stress, tension or anxiety associated with headaches and migraines.

### **The Psychic Breath – Ujjayi Breathing**

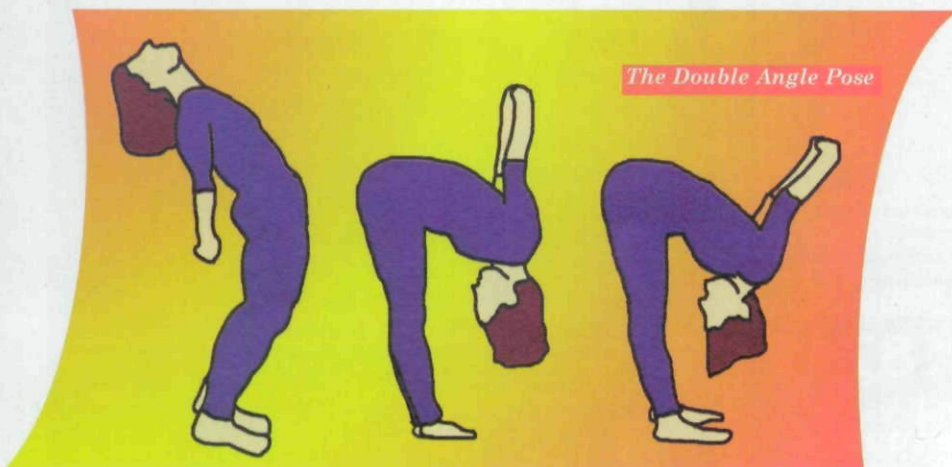
Known as the pranayama that gives freedom to bondage, or the psychic breath, *Ujjayi* breathing is both simple and powerful. Start by sitting for a few quiet minutes in comfortable position, closing the eyes and relaxing the body completely. Begin by observing the natural breath without making any effort to change it. Then shift your awareness to your throat. Imagine that the breath is moving in and out through the throat. Gently contracting the throat muscles, breathe in and out slowly and deeply. The sound that starts to come from the throat is like the sound of a baby snoring. It is just a very gentle sound that should only be heard by you, so keep it light. Concentrate on the sound in your throat. Begin by practising the *Ujjayi* breath for up to five minutes, working up towards 15 to 20.

You can practise *Ujjayi* breathing whilst lying down, which is especially good for people suffering from insomnia, but sitting up will give you the added benefits of a rejuvenating meditation.

### **Other Natural Remedies for Headaches Balm**

Ayurveda suggests that balms and mixtures of various herbal oils can help to alleviate the pain of a headache. For example, combine the following ingredients for quick relief, but remember that this will not remove the cause of the pain at a root level:-

- Five parts of eucalyptus oil
- One part anise oil
- One part menthol crystals
- One part camphor<sup>7</sup>



*The Double Angle Pose*



## Other Natural Remedies for Migraines

### Feverfew Leaves

Take one fresh feverfew leaf a day (eaten either in a salad or sandwich) as prevention for migraines.<sup>8</sup> However, feverfew is not nearly as effective once the attack is underway. If no fresh leaves are available, take 125mg capsules or tablets, available from most good health food or drugstores.

### Peppermint

Peppermint, in the form of peppermint oil in balms and massage oils, can be helpful if the migraine is linked to digestive problems.<sup>9</sup>

### Vitamins and Minerals

For the prevention or alleviation of migraines, take vitamin C, B and magnesium. A high quality multivitamin containing these is a good idea. Alternatively, good sources of magnesium are leafy, green vegetables and nuts.

### Royal Jelly

Take Royal Jelly on a regular basis to prevent migraines.

### Fresh Juices

Include in your diet regular intake of freshly juiced carrots, celery, beet, cucumber, spinach and parsley.

## Enemas

If a headache is due to constipation, then an enema will help to relieve it almost immediately. However, if you decide to take this root, make sure that you seek professional advice first.

### Modifying your diet

Choosing whole-grain products, fruits and vegetables, limiting protein and fat intake and increasing water intake could be a few helpful alterations to begin with. "A diet low in fat, refined sugar and processed food, and high in complex carbohydrates is one of the most important steps in preventing headaches."<sup>10</sup>

### Therapy

Still too often doctors in large medical practices are treating patients with a huge prescription of chemical cocktails, but of most importance when treating any ailment, are looking at the emotional and mental state of a person. Going for therapy may help to uncover and overcome emotional, psychological or mental issues that are connected to your headaches and migraines, ensuring that the programme for alleviating or curing your pain is holistic, looking at you as an individual in relation to who you are and what is going on in your life.

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## About the Author

Meggan is a teacher of the Art of Living Course, designed by highly respected and world renowned Spiritual Master, Sri Sri Ravi Shankar. The courses include yoga, meditation and a powerful breathing technique called the *Suddarshan Kriya*, effective in eliminating physical and mental stress toxins and has benefited millions in over 150 countries around the world. She can be contacted at [meggan@artofliving.org.au](mailto:meggan@artofliving.org.au) [www.artofliving.org](http://www.artofliving.org)

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**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 in turn 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 criteria B-D	A. At least two attacks fulfilling criteria B-D
B. Attacks lasting 4-72 hours if untreated or unsuccessfully treated	B. Aura consisting of at least one of the following, but no motor weakness:
C. Headache has at least two of the following characteristics	Y Fully reversible visual symptoms including positive features (e.g. flickering lights, spots or lines) and /or negative features (i.e. loss of vision)
Y Unilateral location	Y Fully reversible sensory symptoms including positive features (i.e. pins and needles) and / or negative features (i.e. numbness)
Y Pulsating quality	Y Fully reversible dysphasic speech disturbance
Y Moderate or severe pain intensity	C. At least two of the following:
Y Aggravation by or causing avoidance of routine physical activity	Y Homonymous visual symptoms and /or unilateral sensory symptoms
D. During headache, at least one of the following	Y At least one aura symptom develops gradually over ≥5 minutes and / or different aura symptoms occur in succession over ≥5 minutes.
Y Nausea and /or vomiting	
Y Photophobia	
Y Phonophobia	
E. Headache not attributable to any other disorder	

	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 II 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)**

<b>First-line therapies</b>	Simple analgesics/ NSAIDs or their combinations/ Ergot alkaloids/ Sumatriptan, rizatriptan.
<b>Other effective therapies</b>	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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INTEGRATIVE EFFECT OF YOGIC PRACTICES IN THE MANAGEMENT OF  
ARDHAVABHEDAKA (MIGRAINE)

( Page No: 147-155)

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## RESEARCH ARTICLE

**EVALUATION OF INTEGRATIVE EFFECT OF YOGIC PRACTICES  
IN THE MANAGEMENT OF ARDHAVABHEDAKA (MIGRAINE)****Dr. Sunil Kumar<sup>1</sup>, Dr. Neeru Nathani<sup>2</sup>, Dr. J.S. Tripathi<sup>3</sup>**<sup>1</sup>Junior Resident-III year, <sup>2</sup>Assistant Professor, Dept. of Swasthavritta and Yoga, Faculty of Ayurveda, Institute of Medical Sciences, Banaras Hindu University, Varanasi, UP, India<sup>3</sup>Professor, Dept. of Kayachikitsa, Faculty of Ayurveda, Institute of Medical Sciences, Banaras Hindu University, Varanasi, UP, India**ABSTRACT:**

*In modern era speed, accuracy and to compete others are the prime demands of mankind. To cope with these situations everybody has to face hectic and stressful life. Ardhavabhedaka (Migraine) is occurring most frequently due to adoption of faulty lifestyle, anxiety, depression, stress etc. in the busy schedule of human beings. The classical feature of this psychosomatic disease is one sided headache with giddiness and attacks occur once a week, once a fortnight, or once a month. Majority of the modern medicines, employed for treatment of this disease are limited to suppress the symptoms only. A repeated and long term use of such drugs has been found to cause serious side effects also. By the only use of medicines, it may not be possible to prevent and control this disease. Practice of Yoga could be a safe, effective and economical approach for better management of Migraine. A clinical study was conducted to assess the combined effect of selected Yogic practices (including Asanas, Pranayama, Meditation) on the symptoms of Migraine. Total 20 patients of Migraine were registered and a set of yogic practices were advised to them. 19 patients completed all the three follow-ups, each of one month intervals. Frequency change in severity grades of symptoms at different follow ups was found statistically highly significant in terms of Severity, Frequency and Duration of Migraine attack, VAS score and MIDAS.*

**Key words:** Ardhavabhedaka, Stress, Yogic practices

## INTRODUCTION

### Correspondent:

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In Ayurvedic system of health care various types of *Shiroroga* has been described, in which the major symptom is *Shirahshoola* or headache. Ardhavabhedaka is an important one of them caused by vitiation of all the three *doshas*. It is characterized with splitting, pricking, churning or piercing type of pain in one half of the head, usually appears at an interval of fortnight or ten days<sup>1</sup>. In this era of science and technology people works beyond their capacity to defeat the competitors or to earn more. It leads to continuous physical and mental stress. *Manasika santapa* plays a significant role in the disease progression. Taking rest, proper sleep, non-suppression of natural urges and control over mind are helpful to control the headache. Satvavajaya therapy and *Yoga* could alleviate the disease by making the patient able to cope up his illness with better adjustment and adaptation.

In modern medicine a similar disease called Migraine has been described with characteristic feature of intermittent headache episodes, accompanied with nausea, photophobia and phonophobia<sup>2</sup>. Typically the headache is unilateral and pulsating in nature, lasting from 2 to 72 hours. The pain is generally aggravated by various triggering factors related with variety of stress, daily routine and emotional factors etc<sup>3</sup>. It is the second most common cause of vascular headache which affects nearly 15% or approximately one billion people worldwide<sup>4</sup>. It is more common in woman at 19% than men at 11%<sup>5</sup>. Up to one-third of people with migraine headache perceive an aura: a transient visual, sensory, language, or motor disturbance which signals that the headache will soon occur<sup>6</sup>. The recurrence of migraine attacks may depend either on a reduced threshold or on particularly strong or frequent trigger factors or both<sup>7</sup>.

Migraine mainly occurs in person whose mind is mostly restless. When the mind which controls the senses and organs of perception is kept calm, headaches will disappear. Only pharmacological approach is not appropriate for management of Migraine due to its side effects and only instant relief. Practice of *Yoga* is the best non-pharmacological approach to combat the symptoms of migraine and to increase the quality of life. *Yoga* works at all levels



of wellbeing of human beings viz. physical, mental, intellectual, emotional, and spiritual. *Yogic* practices works by enhancing the body resistance against triggering factors and by relaxing the mind.

### **OBJECTIVE OF STUDY**

The objective of this study was to evaluate the effect of selected *Yogic* Practices on *Ardhavabhedaka* (Migraine).

### **MATERIALS AND METHODS**

A clinical study was conducted in the OPDs of *Swasthavritta & Yoga*, and of *Kayachikitsa* of Sir Sunder Lal Hospital, Institute of Medical Sciences, Banaras Hindu University, Varanasi. This study was already approved from the ethical committee of the Institute. 20 patients of Migraine with different age group, gender, socio-economic status, *prakriti* and *satva* were randomly selected, on the basis of following criteria:

#### **Inclusion criteria:**

- Age 16 – 60 years
- Patients with signs and symptoms of *Ardhavabhedaka* (Migraine)

#### **Exclusion criteria:**

- Age < 16 yrs and > 60 yrs
- Secondary headache caused by meningitis, tumour, cervical spondylitis, encephalitis, sinusitis, and refractive errors etc.

- Migraine with Fever, Hypertension, Type II Diabetes or other complicated diseases

### **PLAN OF STUDY**

All the registered cases were advised to practice *Yoga* regularly in a set order. To record the effect of *yoga* on subjective and objective criteria, all patients were reviewed at 3 follow-ups, each of 1 month intervals. Out of 20 cases only 1 was dropped out before first follow-up. The schedule of *yogic* practices was as follows:

#### **I. Asanas:**

1. *Tadasana* : 5 rounds /day
2. *Pascimottanasana* :5rounds /day
3. *Pavanmuktasana* 5 rounds /day
4. *Bhujangasana* : 5 rounds /day
5. *Makarasana* : 5 rounds /day
6. *Shavasana*::Minimum 10 minutes

#### **II. Pranayama:**

1. *Nadisodhana*: 20 rounds /day
2. *Bhramari* : 20 rounds/ day

#### **III. Meditation:**

- Omkar Dhyana* : 5 minutes/ day



### CLINICAL ASSESSMENT CRITERIA

#### Severity of Headache:

- 0 -No Headache
- 1- Mild Headache, patient is aware only if he/she pay attention to it
- 2-Moderate Headache, can ignore at times
- 3-Severe Headache, can't ignore but he/she can do his/her usual activities
- 4-Excruciating Headache, can't do anything

#### Frequency of Headache: (Assessed in terms of frequency/week)

- 0-Nil,
- 1-Once/week,
- 2-Twice/week,
- 3-Thrice/week,
- 4-More than thrice/week

#### Duration of Headache: (Assessed in terms of hours/day)

- 0-Nil,
- 1-1-3 hours/day,
- 2-3-6 hours/day,
- 3-7-12 hours/day,
- 4-More than 12 hours/day

#### VAS (Visual Analogue Scale):

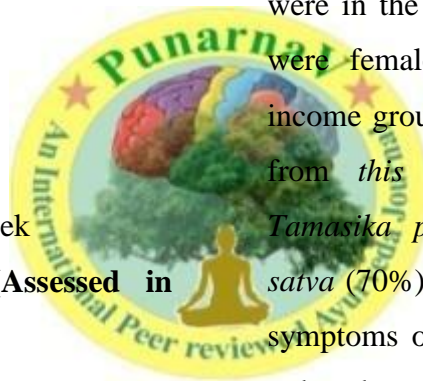
- 0-None,
- 1-Annoying,
- 2-Uncomfortable,
- 3-Dreadful,
- 4-Horrible,
- 5-Agonizing

#### MIDAS(Migraine Disability Assessment Score):

- 0-Minimal or Infrequent Disability (0-5 days), grade-I
- 1-Mild or Less Frequent Disability (6-10 days), grade-II
- 2-Moderate Disability (11-20 days), grade-III
- 3-Severe Disability (> 20 days), grade-IV

### OBSERVATIONS AND RESULTS

In this study group of 20 *Ardhavabhedaka* (Migraine) patients. 85% were in the age group of 31-45 yrs, 75% were female and 65% were of middle income group. Majority of cases suffering from *this disease* were of *Rajasika-Tamasika prakriti* (60%), and of *avara satva* (70%). The proportion of cases with symptoms of *Ardhavabhedaka* (Migraine) reduced at each follow-up and at third follow-up the cases without headache were increased. The results of intra group comparison (Friedman test) were found statistically highly significant ( $p < .001$ ) for all parameters, as shown in the following tables.



**INTEGRATIVE EFFECT OF YOGIC PRACTICES IN THE MANAGEMENT OF  
ARDHAVABHEDAKA (MIGRAINE)**

**Table 1: Effect of *Yogic* practices on Severity of Headache**

Grade	Headache No. and % of Cases				Within the Group Comparison (Friedman Test)
	BT	F <sub>1</sub>	F <sub>2</sub>	F <sub>3</sub>	
<b>0-Absent</b>	0	0	6 (31.6%)	8 (42.1%)	$\chi^2=53.29$ $p < .001$
<b>1-Mild</b>	1 (5.0%)	3 (15.8%)	7 (36.8%)	5 (26.3%)	
<b>2-Moderate</b>	6 (30.0%)	11 (57.9%)	6(31.6 %)	6 (31.6%)	
<b>3-Severe</b>	13 (65.0%)	5 (26.3%)	0	0	

**Table 2: Effect of *Yogic* practices on Frequency of Migraine Attack**

Grade	Frequency No. and % of Cases				Within the Group Comparison (Friedman Test)
	BT	F <sub>1</sub>	F <sub>2</sub>	F <sub>3</sub>	
<b>0-Absent</b>	0	0	6(31.6 %)	9(47. 4%)	$\chi^2=51.04$ $p < .001$
<b>1-Mild</b>	1(5.0 %)	4 (21.1%)	5(26.3 %)	5(26. 3%)	
<b>2-Moderate</b>	8 (40.0%)	9 (47.4%)	8 (42.1%)	5 (26.3%)	
<b>3-Severe</b>	11(55. 0%)	6 (31.6%)	0	0	

**Table 3: Effect of *Yogic* practices on Duration of Migraine Attack**

Grade	Duration No. and % of Cases				Within the Group Comparison (Friedman Test)
	BT	F <sub>1</sub>	F <sub>2</sub>	F <sub>3</sub>	
<b>0-Absent</b>	0	0	5 (26.3%)	9 (47.4%)	$\chi^2=51.11$ $p < .001$
<b>1-Mild</b>	1 (5.0%)	4 (21.1%)	8 (42.1%)	7 (36.8%)	
<b>2-Moderate</b>	8 (40.0%)	11 (57.9%)	6 (31.6%)	3 (15.8%)	
<b>3-Severe</b>	11 (55.0%)	4 (21.1%)	0	0	

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**Table 4: Effect of *Yogic* practices on Visual Analogue Scale Score of Migraine patients**

Grade	VAS No. and % of Cases				Within the Group Comparison (Friedman Test)
	BT	F <sub>1</sub>	F <sub>2</sub>	F <sub>3</sub>	
<b>0-None</b>	0	0	1 (5.3%)	12 (63.2%)	$\chi^2=55.07$ p < .001
<b>1-Annoying</b>	0	1 (5.3%)	11 (57.9%)	6 (31.6%)	
<b>2- Uncomfortable</b>	4 (20.0%)	11 (57.9%)	7 (36.8%)	1 (5.3%)	
<b>3-Dreadful</b>	8 (65.0%)	7 (36.8%)	0	0	
<b>4-Horrible</b>	8 (65.0%)	0			

**Table 5: Effect of *Yogic* practices on MIDAS Scale of Migraine patients**

Grade	MIDAS No. and % of Cases				Within the Group Comparison (Friedman Test)
	BT	F <sub>1</sub>	F <sub>2</sub>	F <sub>3</sub>	
<b>0-Absent</b>	0	0	6 (31.6%)	9 (47.4%)	$\chi^2=53.05$ p < .001
<b>1-Mild</b>	1 (5.0%)	3 (15.8%)	12 (36.8%)	4 (21.1%)	
<b>2- Moderate</b>	6 (30.0%)	11 (57.9%)	1 (5.3%)	6 (31.6%)	
<b>3-Severe</b>	13 (65.0%)	5 (26.3%)	0	0	

## DISCUSSION

Almost all headaches are susceptible to exacerbate by psychological stressors, but most common are vascular headache like migraine and tension headache. Migraine headaches usually happen on weekends after the stress is over. During this time, there is an initial constriction of blood vessels in the scalp, followed by over dilatation to carry out blood for carrying away lactic acid and other products produced during the high-

energy, fight or flight phase i.e. stress. The swollen blood vessels, in turn, stimulate the nerves around them to release chemicals, which produce inflammation. The overly expanded vessels pulsate as the heart pumps, stimulating surrounding tissue so that more chemicals are produced, contributing to the pain and nausea. Biochemical researches have provided evidence for certain physiologic characteristics in migraineurs, which have been proposed as predisposing factors for

Migraine. These include platelet serotonin (5-HT) metabolism, platelet activation, and increased sensitivity to nitric oxide (NO) donors, reduced levels of metabolic enzymes, abnormal opiate receptor function, and electro-encephalographic (EEG) abnormalities<sup>8</sup>.

Mind and body are not separate entity, the gross form of mind is the body and subtle form of the body is mind. The practices of *Yoga* integrate and harmonize both of them. *Yoga* works by improving the circulation and soothing the sympathetic nerves. In present era *Yoga* has been considered as effective measure for control of various psychosomatic and lifestyle disorders. *Yogic* practices like *asana*, *pranayama*, meditation bring about their combined effect in decreasing the intensity and frequency of migraine attacks. Udupa KN and Singh RH et al., 1971 proved by scientific study that the practice of yoga reduces the bodily stress<sup>9</sup>. John PJ et al., 2007 in their study found that the patients of *Yoga* group treated for three months improved more than control group in frequency and intensity of migraine<sup>10</sup>. Dubey R and Nayak, 2009 reported that *Shavasana*, *Sarvangasana* and *Pranayama* are best measures for the removal of migraine<sup>11</sup>.

The *Asanas* are the postures to achieve perfect mental and physical relaxation. With context to migraine the

practice of specific *Asanas* help to reduce stress, and some give strength to body against triggering factors. The stress releasing *Shavasana* and *Makrasana* give mental relaxation and helps to reduce the physical and psychological stressors. The practice of *Tadasana*, *Paschimottanasana*, *Pavanmuktasana* and *Bhujangasana* improve appetite and brings about a number of physiological and biochemical changes in abdominal viscera and endocrine glands. *Tadasana* develops physical and mental balance. *Paschimottanasana* tones and massages the entire abdominal and pelvic regions. *Pavanamuktasana* massages the digestive organs, therefore removes flatus and constipation. *Bhujangasana* improves and deepens breathing, stimulates appetite, alleviates constipation, and beneficial for all abdominal organs.

*Pranayama* means controlled way of breathing. It imparts soothing effect to the brain by enhancing its blood supply and oxygen supply. In context of Migraine the *Nadi shodhana* and *Bhramari pranayama* are helpful. They balance the sympathetic and parasympathetic nervous systems and reduce stress, cerebral tensions anger, anxiety, and insomnia.

*Omkar Dhyana* (Meditation) imparts the feeling of tranquility and freedom in daily life. It reduces anxiety, depression, insomnia, and various pains

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including headache. Therefore every individual should follow these *Yogic* practices regularly.

### **CONCLUSION**

*Yoga* is an applied science of life, working on all physical, mental, intellectual, emotional and spiritual dimensions of individual. *Yoga* is as an effective way of lifestyle to control various psychosomatic disorders by decreasing sympathetic activity of nervous system and stress removal. This study proves that daily practice of selected *Yogasana*, *Pranayama* and Meditation has definite integrative effect in reduction of severity, frequency and duration of Migraine attacks. Therefore every individual should incorporate these *Yogic* practices in their daily routine to live healthy life.

### **ACKNOWLEDGEMENT**

We are grateful to all patients who have incorporated themselves wishfully in the present study and practiced yoga regularly.

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# SCIENTIFIC EVALUATION OF EFFECT OF YOGIC PRACTICES OVER ARDHAVABHEDAKA (MIGRAINE)

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### SCIENTIFIC EVALUATION OF EFFECT OF *YOGIC* PRACTICES OVER *ARDHAVABHEDAKA* (MIGRAINE)

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#### ABSTRACT

A lot of ancient literature including *Samhitas*, texts etc. modern science literature and published material in various journals, magazines has been studied. For this clinical study, randomly total 50 cases of *Ardhavabhedaka* (Migraine) were selected based on presenting complaints as described in *Ayurveda*, from Neurology Medicine OPD. These 50 cases were divided in two subgroups; control and intervention consisting 25 cases in each. In control, sub-group no medication was advised but in intervention subgroup, initially light medication of 1<sup>st</sup> order was given. *Yogic* practices were done regularly twice a day (twenty minutes in morning and in evening time) for 3 months by the cases of both groups. Evaluation of symptoms and anxiety rating scale was done monthly for three months (three follow-up) in all cases of both groups. Paired and unpaired Friedman's test, chi<sup>2</sup> test and Wilcoxon Signed Rank's Test were applied to assess changes in the quantitative variables from base line to different sequences of follow up. In this study, most of the symptoms of *Ardhavabhedaka* improved in both subgroups significantly (p<0.001) but better results were observed in intervention subgroup. *Yoga* practices (*Nadi Shodhana Pranayama* (NSP), *Dhyana*/meditation) affecting positively to *Agya Chakra* (hypothalamo-cerebral system) improves quality of life in *Ardhavabhedaka* patients by improving symptoms.

**Key words:** *Ardhavabhedaka*, *Pranayama*, *Dhyana*.

#### INTRODUCTION

Headache is such a common complaint and can occur for so many different reasons that its proper evaluation may be difficult. Headaches may be of acute onset and chronic in nature. Chronic headaches are commonly due to migraine, tension, or depression.<sup>1</sup> Almost all ancient *Acharyas* have mentioned about the *Shiro-roga* of which *Shirahshula* (headache) as the main symptom. *Shirahshula* in general is one of the commonest complaints of the people. Exact cause is unknown. *Acharya Charaka* emphasized the role of *Manah Santapa* (emotional disturbance) and *Rodana* (Weeping) is the etio-pathogenesis of headache.<sup>2</sup> In present period it may produce by overload of work related to family, occupation and job. It becomes the result of chronicity of the psychosomatic disorders. Many people are susceptible to headache at the time of emotional disturbance. Headache can be initiated or amplified by various triggers, including glare, bright lights, sounds, or other afferent stimulation; hunger; surplus stress; physical hard work; violent climate or barometric pressure changes; hormonal fluctuations during menses; lack of or excess sleep; and alcohol or other chemical stimulation. Knowledge of a patient's susceptibility to specific triggers can be useful in management strategies involving lifestyle adjustments.<sup>3</sup>

The term migraine refers to a syndrome of vascular spasm of cranial blood vessels. Symptoms of migraine may include heightened sensitivity to light and sound (sonophotophobia), nausea, auras (loss of vision in one eye or tunnel vision), difficulty of speech and intense pain predominating in one side of head. Where these symptoms have almost similarity with

condition *Ardhavabhedaka* described in classics.<sup>4</sup> The word *Ardhavabhedaka* has two components viz. *Ardha* and *Avabhedaka*. *Ardha* means half side. Thus, literal meaning of *Ardhavabhedaka* is perforating or bursting out like pain in one half of the head either right or left. *Chakrapani*, the commentator of *Charaka Samhita* made it clear by saying *Ardhavabhedaka* means "*Ardha Mastaka Vedana* (pain in half side of head)"<sup>5</sup>. It is termed as half headache by the common public and related as migraine in modern sciences. It is a severe interrupted headache, teases once in 3/5/10/15 or 30 days. As the condition one half of the head develops severe tearing and pricking pain, giddiness and piercing pain, suddenly after a fortnight or ten days. This should be diagnosed as *Ardhavabhedaka* caused by vitiation of all the three *Doshas*<sup>6</sup> but chief involvement of *Doshas* are *Vata* and *Kapha*.

#### *Nadi Shodhan Pranayama and Dhayan*<sup>7</sup>

The word *Nadi* means 'energy channel' and *Shodhana* means 'to cleanse' or 'to purify'. Therefore, *Nadi Shodhana* is a practice whereby the *Pranaic* channels are purified and regulated. *Nadi Shodhana* is also a complete practice and the higher stages achieve the aim of *Pranayama*. *Nadi Shodhana* is practised by alternating the inhalation and exhalation between the left and right nostrils, thus influencing the *Ida* and *Pingala Nadis* and the two part of brain cerebral hemispheres. This leads to control of the oscillations of the body-mind network, bringing balance and harmony throughout the system

An unbroken flow of knowledge to particular object is *Dhyana*. The mind tries to think of one object, to hold itself to one

particular spot, as the top of the head, the heart, etc., and if the mind succeeds in receiving the sensations only through that part of the body, and through no other part, that would be *Dharana* (concentration), and when the mind succeeds in keeping itself in that state for some time it is called *Dhyana* (meditation).

#### Aim of study

To assess the effect of *Yogic* exercise (*Nadi Shodhana Pranayama* with *Dhyana*) over *Ardhavabhedaka* (migraine) with the help of symptoms and anxiety rating scales.

#### MATERIALS AND METHODS

**Ethical clearance-** This study was started after the ethical clearance from institutional ethical committee in accordance with ethical standards. EC registration no. is ECR//256/Inst/UP/2014

#### Study Design

To study the effect of *Pranayama* especially *Nadi Shodhana Pranayama* with *Dhyana* in stress induced migraine, total 50 cases of *Ardhavabhedaka* (migraine) were registered randomly following diagnostic criteria as described in *Ayurveda*. Cases were registered from the Neurology Medicine OPD, IMS, BHU. These 50 cases were divided in two subgroups control and intervention, consisting 25 cases in each.

**Control-** Only *Yogic* practices were done.

**Intervention-** *Yogic* practices practice of *Pranayama* (*Nadi Shodhana Pranayama*) with *Dhyana* (meditation) for three months with some very light medications of 1<sup>st</sup> order initially which were withdrawn later (after one month).

*Yogic* practices were done two times morning and evening for twenty minutes (*Nadi Shodhana Pranayama* for 10 minutes followed by *Dhyana* for 10 minutes), regularly for three months. This duration was equal in all age groups. Evaluation of all symptoms and anxiety rating scale was done monthly for three months (three follow-up) in cases of both subgroups. This evaluation was done based on grade of each symptom. Grade of symptoms and anxiety rating scale was noted before and after *Yogic* practices.

During this study, all the symptoms of *Ardhavabhedaka* were recorded with their grading. Along this Hamilton's Anxiety Rating scale (HARS) grading also.

The **HARS**<sup>8</sup> is one of the first rating scales developed to measure the severity of anxiety symptoms, and is used in both clinical and research settings. The scale consists of 14 items, each defined by a series of symptoms, and measures both psychic anxiety (mental agitation and psychological distress) and somatic anxiety (physical complaints related to anxiety).

#### Scoring

Each item is scored on a scale of 0 (not present) to 4 (severe), with a total score range of 0–56, where <17 indicates mild severity, 18–24 mild to moderate severity and 25–30 moderate to severe.

#### Rupa (General symptoms) of *Ardhavabhedaka*<sup>9</sup>

According to *Charaka*, the features of *Ardhavabhedaka* are i.e., severe pain in half side of the head, affecting particularly neck, eye brows temporal region, ear, eye, and forehead. The pain is like cutting by the sharp objects or piercing in nature aggravated by *Pragvata* (fast and cold wind), sun rays and sound.

#### Diagnostic criteria of *Ardhavabhedaka*<sup>10</sup>

- *Shirashula* (Headache)
- *Bhrama* (Vertigo)

- *Bhedatoda* (Pricking sensation)
- *Utklesha* (Nausea)
- *Chardi* (Vomiting)
- Duration of attack
- Frequency of attack

All the above symptoms were graded in increasing order according to severity. (0=absent,1= mild, 2=moderate and 4=severe)<sup>11</sup>.

#### Diagnostic criteria for migraine<sup>12</sup>

##### Classical migraine

- Paroxysmal headache
- Nausea or vomiting
- Aura (usually visual)

##### Common migraine

- Paroxysmal headache (with or without nausea or vomiting)
- No aura

##### Exclusion criteria

- Patient with co-morbidity affecting mental or physical health
- Patient with extreme age groups >65years or <15years
- Abuse of drugs and alcohol
- Patients with terminal illness or advanced state of disease

##### Inclusion criteria

- Patients & healthy male & female volunteers between age group 15 – 65 years.
- Patients diagnosed with irregular menstrual cycle, chronic pelvic pain and suffering with stress and anxiety.
- Patients of chronic headache with history of stress

#### Technique of *Nadi Shodhana Pranayam*<sup>13,14</sup>

First sit in any comfortable meditation posture, preferably *Siddhasana*, *Siddha Yoni Asana*, *Padmasana* or *Sukhasana*. Maintain the head and spine straight. Relax the whole body and close the eyes. Practise *Yogic* breathing for some time. Adopt *Nasagra mudra* (nose tip position) with the right hand and place the left hand on the knee in chin or *Gyana Mudra*. Close the right nostril with the thumb. Inhale and exhale through the left nostril 5 times, keeping the respiration rate normal.

After completing 5 breaths release the pressure of the thumb on the right nostril and press the left nostril with the ring finger, blocking the flow of air. Inhale and exhale through the right nostril 5 times, keeping the respiration rate normal. Lower the hand and breathe through both nostrils together 5 times, keeping the respiration rate normal. This is one round. Practise 5 rounds. The breathing should be silent. In this way, they were prescribed with direction that they must do this breathing *Nadi Sodhana Pranayam* five to ten rounds (10 minutes) per day for three months.

#### Technique of *Dhyana*<sup>15</sup>

Patients were advised any comfortable position may be assumed for sitting as *Padmasana* and *Siddhasana* and maintaining *Chin Mudra* or *Gyana Mudra*. Then to keep the spine erect and the chest lifted it. This slows down the flow of breath regulate the activity of the brain and leads to the cessation of all thoughts. Keep the body alert with sharp awareness. Keep the brain passive, sensitive and silent, like the thin end of leaf, which shakes even in a gentle breeze. Then advised to close the eyes and look within. Shut the ears to outward sounds. Listen to the inner vibration and follow them until they merge in their source. Any lack of awareness in the eyes and ears creates fluctuation in the mind. In the real sense *Dhyana* is the integration of the body, mind, intelligence, will, conscious, ego and the self. The mind

acts as the subject and the self-object; yet in reality the self is the subject. The end of the meditation is to make the mind submerge in the self so that all seeking and searching to come at an end. They were advised to stay in meditation for if they can, without any discomfort. Then they were advised to lie in *Savasanas* for 5-10 minutes.

In this way, they were prescribed with direction that they must do this *Dhyana* for 10 minutes per day for three months.

**Statistical methods**

At the end of three months' comparison in grade of symptoms was done and observations were analyzed using statistical methods. Paired and unpaired Friedman's test, chi<sup>2</sup> test and Wilcoxon Signed Rank's Test were applied to assess the changes in the quantitative variables from base line to different sequences of follow up. SPSS 16 software was used to analyze the study. P value >0.05 indicates insignificant result and P value <0.05 indicates significant result. P value <0.001 indicates highly significant result.

**OBSERVATION AND RESULTS**

Chance of incidence of *Ardhavabhedaka* (migraine) is more common in female (66%) than male (34%). In *Sharirika Prakriti* (Physical constitution) *Vataja-Kaphaja Prakriti* (60%) is the most affected than others (*VP*=26% and *PK*=14%). *Shirahsula*

in intervention subgroup was absent in 4.0% cases initially and was absent in 92% after 3<sup>rd</sup> follow up, statistically highly significant (p<0.001). In control subgroup *Shirahsula* was absent initially in 8.0% while in 80% after *Yogic* practices, statistically highly significant (p<0.001) also. *Bhrama* in intervention subgroup was absent in 20% initially and was absent in 96% after 3<sup>rd</sup> follow up, statistically highly significant (p<0.001). In control subgroup *Bhrama* was absent initially in 16% while in 92% after *Yogic* practices, statistically highly significant (p<0.001) also. *Bhedatoda* in intervention subgroup was absent in 12% initially and was absent in 84% after 3<sup>rd</sup> follow up, statistically highly significant (p<0.001). In control subgroup *Bhedatoda* was absent initially in 16% while in 32% after *Yogic* practices, statistically highly significant (p<0.001) also. *Utklesha* in intervention subgroup was absent in 4% initially and was absent in 84% after 3<sup>rd</sup> follow up, statistically highly significant (p<0.001). In control subgroup *Utklesha* was absent initially in 00% while in 36% after *Yogic* practices, statistically highly significant (p<0.001) also. *Chardi* in intervention subgroup was absent in 24% initially and was absent in 92% after 3<sup>rd</sup> follow up, statistically highly significant (p<0.001). In control subgroup *Chardi* was absent initially in 12% while in 64% after *Yogic* practices, statistically highly significant (p<0.001) also. Although in both subgroups results were statistically highly significant (p<0.001) but on observation better result were recorded in intervention than control.

**Table 1: Distribution of 50 cases according to grading of Duration of attack**

Sub Groups	No. and Percentage of cases					Within the subgroups comparison Friedman test
	Grade	BT	FU1	FU2	FU3	
Control (25)	0	0(00%)	02(08%)	07(28%)	12(48%)	$\chi^2=70.159$ p<0.001
	1	02(08%)	07(28%)	08(32%)	05(20%)	
	2	10(40%)	06(24%)	04(16%)	04(16%)	
	3	13(52%)	10(40%)	06(24%)	04(16%)	
Intervention (25)	0	0(0%)	02(08%)	08(32%)	19(76%)	$\chi^2=71.170$ p<0.001
	1	03(12%)	11(44%)	09(36%)	04(16)	
	2	10(40%)	05(20%)	03(12%)	01(04%)	
	3	12(48%)	07(28%)	05(20%)	01(04%)	
Between the subgroups comparison- Chi Square test		$\chi^2=0.240$ p=0.887	$\chi^2=1.350$ p=0.510	$\chi^2=0.348$ p=0.840	$\chi^2=5.290$ p=0.0214	

Table shows initially maximum cases were found to maximum grading in relation to duration of attack and after 3<sup>rd</sup> follow up maximum cases were related to minimum grading in both intervention and control subgroups, showing statistically highly significant (p<0.001) in both subgroups.

**Table 2: Distribution of 50 cases according to grading of Frequency of attack**

Sub Groups	Frequency of attack No. and Percentage of cases					Within the subgroups comparison Friedman test
	Grade	BT	FU1	FU2	FU3	
Control (25)	0	0(00%)	04(16%)	06(24%)	13(52%)	$\chi^2=67.344$ p<0.001
	1	04(14%)	08(32%)	10(40%)	06(24%)	
	2	08(32%)	04(16%)	04(16%)	03(12%)	
	3	13(52%)	09(36%)	05(20%)	03(12%)	
Intervention (25)	0	00(0%)	05(20%)	09(36%)	21(84%)	$\chi^2=68.313p$ p<0.001
	1	06(24%)	09(36%)	08(32%)	03(12%)	
	2	11(44%)	07(28%)	06(24%)	01(04%)	
	3	08(32%)	04(16%)	02(08%)	0(0%)	
Between the groups comparison- Chi Square test		$\chi^2=2.060$ p=0.356	$\chi^2=2.900$ p=0.235	$\chi^2=2.510$ p=0.474	$\chi^2=6.450$ p=0.040	

Table shows that initially maximum cases were found to maximum grading in relation to Frequency of attack and after 3<sup>rd</sup> follow up maximum cases were related to minimum grading in both intervention and control subgroups, showing statistically highly significant (p<0.001) in both subgroups.

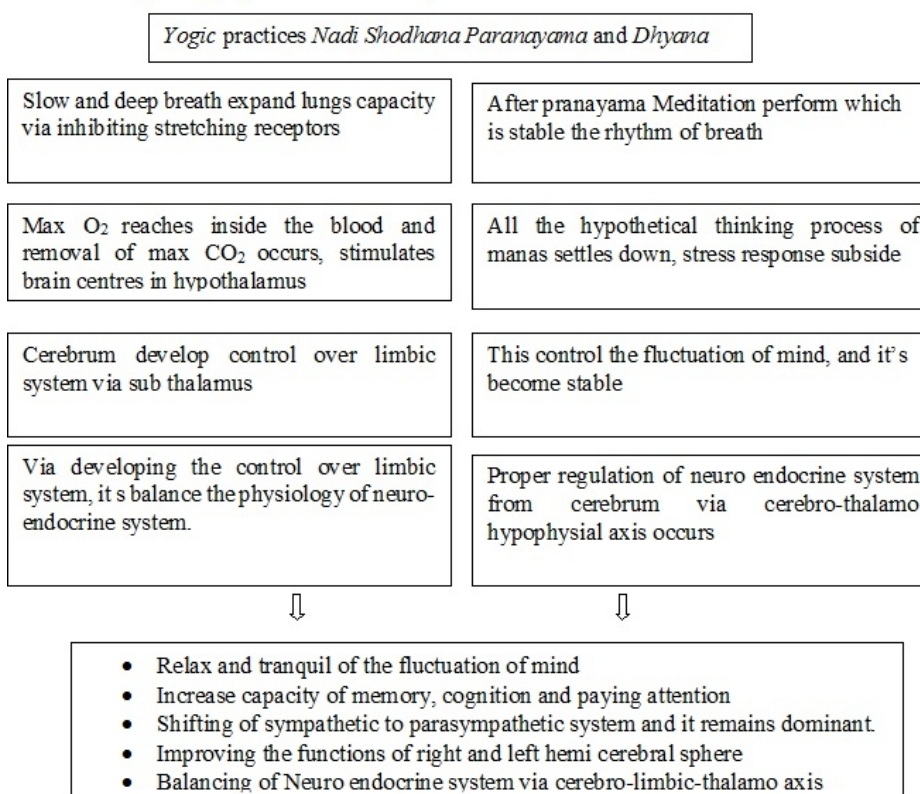


**Table 3: Effect in terms of Hamilton Anxiety Rating Scale of 50 cases**

Groups		Hamilton Anxiety Rating Scale (HRS)		
		1-17=1 Mild	18-24=2 Mild to Moderate	25-30=3 Moderate to severe
BT vs. AT	Control (BT)	2	1	22
	Control (AT)	10	12	3
BT vs. AT, Z= 1.503, p=0.208				
Wilcoxon Signed Rank's Test	Intervention(BT)	4	2	19
	Intervention(AT)	14	10	1
	BT vs. AT, Z= 2.443, p<0.001			

Table shows that initially maximum cases (22) were related to maximum grading of HARS and after 3<sup>rd</sup> follow up maximum cases were related to mild to moderate grading followed by minimum grading in control and in intervention initially maximum cases (19) were related to maximum grading of HARS and after 3<sup>rd</sup> follow up maximum cases were related to mild grading. This result also proved the accessory beneficial response of *Yogic* practices as the supportive tools of treatment.

**Scientific way of *Yogic* practices to develop control over *Ardhavabhedaka*<sup>20-21</sup>**



**Figure 1: Diagram of the series of events that occur during the autonomic shift present in *Yogic* practices *Nadi Shodhana Pranayama* and *Dhyana***

**DISCUSSION**

Almost all headaches are disposed to make worse by emotional stressors, but the most frequent are vascular headache like migraine and tension headache. Migraine headaches frequently happen on weekends after the stress is greater than usual. Throughout this time, there is a primary constriction of blood vessels in the scalp, followed by more dilatation to carry out blood for transport away lactic acid and other products formed during the high-energy, fight or flight stage i.e. stress. The engorged blood vessels, in turn, stimulate the nerves in the region of them to liberate chemicals, which bring into being inflamed. The excessively extended vessels throb as the heart pumps, simulating adjoining tissue so that more chemicals are

produced, contributing to the pain and nausea. Biochemical researches have made available evidence for confident physiologic characteristics in migraineurs, which have been projected as predisposing factors for Migraine as platelet serotonin (5-HT) metabolism, platelet activation, and augmented sensitivity to nitric oxide (NO) donors, reduced levels of metabolic enzymes, nonstandard opiate receptor purpose, and electro-encephalographic (EEG) abnormalities.<sup>16</sup>

In the present study, maximum registered cases belonged to female category which is also described by a lot of researches. In the United States and wide-reaching, women have a superior incidence of chronic pain as compared to men. Women are more possible than men to report periodic pain, pain in manifold areas

of the body, and pain that is crueler. Many chronic pain syndromes are more common in women, including fibromyalgia migraine headaches, irritable bowel syndrome, temporomandibular disorder, a variety of neuropathic pain, and others. Women have also been reported in experimental studies to be more responsive to quite a lot of different modalities of pain and have an inferior threshold for pain. Smith et al. report that, in women, high oestrogen states were related with an increase in endogenous mu opioid neurotransmission through painful stimuli. In disparity, low oestrogen states were linked with decline in endogenous opioids in numerous areas of the brain and hyperalgesic responses to stimuli. The influence of hormones on pain awareness may be one of the reasons that gender diversity.<sup>17</sup>

Mechanisms contributing to a condition of peaceful attentiveness consist of amplified parasympathetic constrain, calming of stress comeback systems, neuro-endocrine release of hormones, and thalamic generators.<sup>18</sup> An emergent body of proof also supports the certainty that *Yoga* paybacks considerable and psychosocial wellbeing during the mechanisms of down-regulation of the hypothalamic-pituitary-adrenal axis and the sympathetic nervous system. As an outcome, *Yoga* plays a significant role in plummeting sympathetic activity, escalating parasympathetic activity, getting better quality of life, and declining pain levels. As stated, there is evidence of the benefit of *Yoga* in reducing pain.<sup>19</sup> Thus grading of anxiety scale also gets reduced along with decreased frequency of attack and duration of attack.

## CONCLUSION

The *Yoga* Techniques *Pranayama* and *Dhyana* directly affect the *Agya Chakra*. Concentration on the *Chakras* while performing *Yogic* practices and stimulates the flow of energy through the *Chakras* and helps to activate them. This in turn awakens the dormant areas in the brain and the corresponding faculties in the psychic and spiritual bodies, allowing one to experience planes of consciousness which are normally inaccessible. These practices on stimulation of *Agya Chakra* develop control and regulation over autonomic nervous system via sifting of sympathetic to parasympathetic nervous system and enhance relax mode of body for rest and digest.

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Review

# Effects of yoga exercises for headaches: a systematic review of randomized controlled trials

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**Abstract.** [Purpose] To assess the evidence for the effectiveness of yoga exercises in the management of headaches. [Subjects and Methods] A search was conducted of six electronic databases to identify randomized controlled trials (RCTs) reporting the effects of yogic intervention on headaches published in any language before January 2015. Quality assessment was conducted using the Cochrane risk of bias tool. [Results] One potential trial was identified and included in this review. The quality critical appraisal indicated a moderate risk of bias. The available data could only be included as a narrative description. Headache intensity and frequency, anxiety and depression scores, and symptomatic medication use were significantly lower in the yoga group compared to the control group. [Conclusion] There is evidence from one RCT that yoga exercises may be beneficial for headaches. However, the findings should be interpreted with caution due to the small number of RCTs. Therefore, further rigorous methodological and high quality RCTs are required to investigate the hypothesis that yoga exercises alleviate headaches, and to confirm and further comprehend the effects of standardized yoga programs on headaches.

**Key words:** Headaches, Yoga exercises

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## INTRODUCTION

Headaches are a common and universal phenomenon in humans. They have been suggested as the main cause of time off from work, reduced school performance, and low quality of life<sup>1-3</sup>). Furthermore, they have led to personal, familial and societal burdens, and significant healthcare problems globally<sup>4, 5</sup>). The prevalence of headaches is estimated at 13% of the United States population<sup>6</sup>), 20% of the Australians<sup>1</sup>), and migraines are estimated at 11%, with tension-type headaches at 78% of the population world-wide<sup>5, 7</sup>).

According to the International Headache Society, headaches can generally be divided into two categories which are primary and secondary headaches on the basis of the underlying pathology<sup>8</sup>). Primary headaches are not associated with pre-existing medical conditions and there are three types: migraines, tension-headaches and cluster-headaches<sup>6</sup>). Secondary headaches are related to a pre-existing medical condition.

Headache management is traditionally based on pharmacological therapies. However, only about half of migraineurs show clinically positive responses to medications<sup>9</sup>). The remaining headache-sufferers discontinue medications due

to adverse side-effects or excessive use of abortive medications. These can lead to a refractory condition of medication overuse headache, which means a consequent worsening of the headaches<sup>10</sup>). As a result of these shortcomings, complementary and alternative medicine has recently become common practice in current headache management<sup>6, 10-13</sup>).

Yoga exercises are considered to be complementary and alternative medicine and are practiced by approximately 5% of the adult population in the United States and 12% of Australians for alleviating headaches<sup>14</sup>). Yoga is a combination of physical postures and breathing exercises. Yoga has been reported as a safe and cost-effective intervention for managing pain<sup>1, 14</sup>). Evidence for the efficacy of yoga exercise for a number of conditions is emerging. A growing body of evidence also supports the belief that yoga benefits physical and psychosocial health through the mechanisms of down-regulation of the hypothalamic-pituitary-adrenal axis and the sympathetic nervous system<sup>15-17</sup>). As a result, yoga plays an important role in reducing sympathetic activity, increasing parasympathetic activity, improving quality of life, and decreasing pain levels<sup>18, 19</sup>). As stated, there is evidence of the benefit of yoga in reducing pain<sup>20, 21</sup>). However, rigorous methodology and quality of the evidence needs to be examined to establish whether or not we can assert yoga can be used as a complementary and alternative therapy for sufferers of headaches<sup>22, 23</sup>). Therefore, the aim of this review was to assess the evidence for the effectiveness of yoga exercises in the management of primary headaches.

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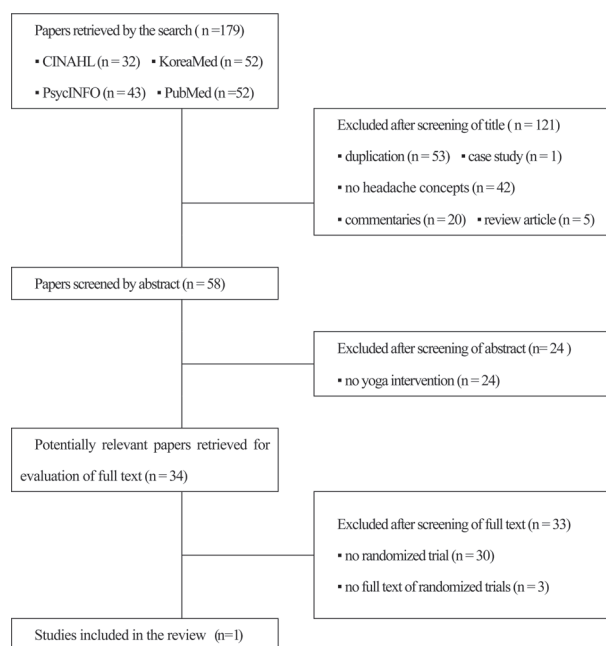
## SUBJECTS AND METHODS

The review was planned and conducted in accordance with the Preferred Reporting Items for Systematic Reviews and Meta-Analyses (PRISMA) guidelines<sup>24</sup>, and the Consolidated Standards of Reporting Trials (CONSORT) guidelines for Reporting Parallel Group Randomized Trials<sup>25</sup>. The Cochrane Library, CINAHL, Embase, PsycINFO, PubMed, and KoreaMed electronic databases were searched to identify RCTs published between 1966 and January 2015. The search terms were as follows: yoga AND headache OR migraine. All potentially eligible studies were retrieved and the full texts of the articles were reviewed to determine whether they met the following selection criteria.

To be eligible, studies had to meet the following conditions. 1) Population: participants in the trials had to meet diagnostic criteria according to the International Classification of Headache Disorders, 3rd edition (beta version) published by the International Headache Society 2013<sup>8</sup>; primary headaches. 2) Intervention: randomized controlled trials were included that used yoga as an intervention to review or reduce symptoms associated with headaches or migraines compared with no yoga. 3) Outcomes: primary outcomes were headache intensity, frequency, and duration; secondary outcomes were anxiety and depression scores, and symptomatic medication use. Quality assessment of the articles was conducted using the critical appraisal, Cochrane risk of bias tool for RCTs, which was recommended by the Cochrane Handbook for systematic Reviews of Interventions<sup>26</sup>. The Cochrane risk of bias tool is a six-item list designed to assess sequence generation, allocation concealment, blinding, incomplete outcome data, selective outcome reporting, and other potential sources of bias. Each item is rated as “yes”, “no”, or “unclear”. According to the Cochrane Handbook, the quality of clinical trials can be divided into three levels<sup>27</sup>. When the study design fully meets the preceding six criteria, it is considered A level, which means a low risk of bias. B level is assigned when one or more criteria are partly met, and when one or more criteria are not met, the study is defined as C level, implying high risk of bias. Studies rated as C level should be eliminated<sup>24</sup>. No meta-analysis was performed as only one study was identified.

## RESULTS

A total of 179 titles related to the search terms were screened. Among these, there were 32 potential trials identified from CHINAL, 52 from KoreaMed, 43 from PsycINFO and 52 from the PubMed databases. After the titles had been retrieved a total of 121 studies were excluded either because they were duplicates or they were case studies, commentaries, review articles, or had no target concepts, which means no headaches or migraines. The remaining 58 abstracts were retrieved. After assessing the abstracts, 24 studies were excluded because there was no yoga intervention. Thirty-four potential trials were identified in the search conducted in January 2015. Thirty-four potentially relevant papers were retrieved for evaluation of the full text. After evaluation of the 34 full texts, 33 studies were excluded, because 30 studies had no randomized trials and 3 studies had no full text of



**Fig. 1.** Flowchart of included studies through the literature searches

RCT. The literature retrieval process is depicted in Fig. 1. The characteristics of the included study are also presented (Table 1).

The one RCT originated in India<sup>28</sup>. The trial was conducted at the Zoology department of a University. Participants were recruited from a headache clinic of the NMP medical research institute by advertising in local newspapers. The sample size of the trial totaled 72 participants. The participants' mean age was 34.2 years, and they had primary headaches with migraines.

The yoga program comprised yoga postures, breathing and pranayama, and kriya etc. Yoga postures included physical exercises such the stretching of the neck, shoulder and back muscles, followed by relaxation, toning, strengthening, and flexibility. Breathing and pranayama means conscious breathing, kriya was practiced as a jalaneti (nasal water cleansing) and kapalbhanti (forced exhalations). Program length, frequency, and duration of one trial was 60 minutes a day, 5 days per week for 3 months. Yoga was performed under the guidance and supervision of a yoga therapist.

One trial was identified that compared a control group with a yoga intervention group and evaluated the effect on headaches. The available data could only be included as a narrative description. Headache intensity ( $p < 0.001$ ), headache frequency ( $p < 0.001$ ), anxiety and depression scores ( $p < 0.001$ ), and symptomatic medication use ( $p < 0.001$ ) were significantly lower in the intervention group than in the control group (Table 1). Neither included trial reported data on adverse effects of treatment (Table 1).

Assessments of each methodological quality item of the one included trial are described (Table 2). The quality of the one trial was level B.



**Table 1.** Characteristics of included randomized controlled trials

Author, year, location	Participants	Interventions	Outcome measures	Main results	Adverse events	Limitations
		Experimental group	Control group			
	Population	Interventions				
	Sample size (N; EG/CG)	Delivery method				
	Mean age (years; EG/CG)	Duration				
	Drop out n (%)	Interventionist				
John et al., 2013, India/Rajasthan	General person 72 (36/36) 34.2 (34.3/34.2) 7 (9.7)	Yoga postures, pranayama, kriya 60 min per day, 5 days per week 3 months Yoga therapist	Self-care Education Once a month 3 months Handouts	Headache intensity Headache frequency Headache duration Anxiety-depression scores Symptomatic medication use	(p<0.001) (p<0.001) (p<0.001) (p<0.001)	Absence of a placebo groups. No blinding. All subjective outcome measures. No long-term follow-up data

EG: experimental group; CG: control group; N: number

**Table 2.** Methodological quality summary of included trials

Study, year	Random allocation	Allocation concealment	Blinding	Incomplete outcome	Selective reporting	Other bias	Quality level
John et al., 2013	+	+	?	+	+	+	B

+: criteria met; -: criteria not met; ?: unclear whether criteria were met

## DISCUSSION

The purpose of this review was to assess the evidence for the effectiveness of yoga interventions for primary headaches when compared to no yoga. A meta-analysis combining results from all the trials was not possible because only one study was identified. Only one RCT was identified and included in this review. Its interventions included yoga poses, pranayama, and kriya to manage headaches or migraines. One trial reported a significant decrease in headache intensity, headache frequency, anxiety and depression scores, and symptomatic medication use in the trained group. If required, participants were allowed to take acute medication prescribed by neurologists during the trial. The effects of the medication could have diminished the efficacy of yoga exercises for alleviating headaches. In spite of both groups having received medication, reduction in the outcome of the yoga group was significantly higher than that of the control group. As stated in previous studies, these results support yoga practice as a means of evidence-based positive management of headaches or migraines<sup>20, 22, 28, 29</sup>. The quality rating of the trial included in this review had a moderate methodological quality, and the trial did not mention blinding. However, no strong conclusion can be made due to the number of small trials and other methodological considerations.

The strength of this systematic review includes the use of strict methodological criteria. Major strengths of this group of studies include the study, the use of randomization, and the quality of measurement tools. This may be the first comprehensive review of yoga exercises for headaches. No

adverse effects associated with yoga practice were described.

This study had some limitations. First, the trial had no placebo group. This may have led to favorable effects in the yoga group. Second, the trial did not mention blinding, lack of which may have threatened the internal validity of the trial. Third, all the outcome measurements were questioner-based and subjective; objective parameters were lacking. Therefore, evidence-based research employing objective outcome parameters is needed to identify the efficacy of integrated yoga therapy for headaches. Fourth, the trial had no long-term follow-up data concerning the durability of the treatment effect. Finally, the generalizability of the findings was limited due to the number of small trials and their partially limited quality. However, this one trial does provide a strong basis for future studies and suggests that yoga exercises could provide a safe, cost-effective therapy for the growing public health issue of headaches. Furthermore, this review contributes to the development of knowledge in physical therapy about how sufferers with primary headaches can manage themselves.

In conclusion, although this review retrieved only a limited number of small trials, of partially limited quality, its findings suggest that yoga practice can effectively alleviate symptoms associated with primary headaches. However further rigorous methodological and high-quality RCTs are needed to confirm and further comprehend the effects of standardized yoga programs aiming to control pain intensity and frequency, symptoms, and medication use etc., in the treatment of primary headaches.

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# Preventive Effects of a Three-month Yoga Intervention on Endothelial Function in Patients with Migraine.

- **Source:** International Journal of Preventive Medicine . Apr2014, Vol. 5 Issue 4, p424-429. 6p.
- **Author(s):** Naji-Esfahani, Hajar; Zamani, Mahsa; Mohamad Marandi, Seyed; Shaygannejad, Vahid; Haghjooy Javanmard, Shaghayegh
- **Abstract:** Background: Migraine is a neurovascular disorder and any interventions improving endothelial function may contribute to its treatment and prevention of vascular complications like ischemic stroke. Yoga has been shown to have several beneficial effects on cardiovascular systems. However, no randomized controlled studies to date have investigated its effects on endothelial function of migraineurs. Methods: A total of 42 women patients with migraine were enrolled and randomized into either a Yoga exercise group or a control group. The control group received only medication for 12 weeks and the Yoga group was placed in yoga training program in addition to the same medical treatment. Blood test was given from all patients in order to measure plasma levels intercellular adhesion molecule (ICAM) and vascular cell adhesion molecule (VCAM) after yoga training program. Results: Totally 32 patients were participated in the final analyses (yoga: n = 18, control: n = 14). By analyzing data between yoga and control groups after the treatment period, there was a significant decreased in plasma level of VCAM in yoga group compare with the control group ( $15.29 \pm 2.1$  ng/ml vs.  $21.70 \pm 3.0$  ng/ml,  $P < 0.05$ ), whereas there was no significant difference in ICAM level between groups ( $19.1 \pm 1.8$  ng/ml vs.  $20.97 \pm 1.9$  ng/ml  $P > 0.05$ ). Conclusions: It seems that yoga exercises, as a complementary treatment beside pharmacological treatments, can be potentially an effective way of improving vascular functions in migraineurs.
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## Preventive Effects of a Three-month Yoga Intervention on Endothelial Function in Patients with Migraine

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### INTRODUCTION

Yoga originates from Ayurveda-ancient knowledge that aims to realize the true sense of human life and tries to find remedies for diseases. It is a form of mind-body medicine and also a part of Complementary and Alternative Medicine.[1] It has been shown that yoga has the potential to improve chronic and acute pain; however, the underlying mechanisms remained unknown. Based on evidences, these kinds of exercises may increase tissues oxygenation and release of enkefalins or endorphins.[2] Other potential mechanisms of action may include decreases in sympathetic nervous system activity or reductions in inflammatory markers.[3] Yoga creates not only inner, physical and emotional balance through the use of postures, called asanas, combined with breathing techniques or pranayama, but also has diverse clinical and non-clinical applications as a result of the degree of complexity and multidimensionality of these exercises. Yoga also may be helpful through reducing anxiety and depression of individuals deal with the emotional aspects of chronic pain.[4,5] A few studies investigating the effects of yoga on migraine have



reported positive benefits. Migraine is the most common primary headache disorder.[6] Although its pathophysiology is still unknown, three different mechanisms including: Vascular, neurological and neuroinflammatory theories have been suggested for it.[7]

Migraine is associated with an increased risk for several vascular disorders, including ischemic stroke and coronary artery disease.[8] Altered vascular structure and function may be the underlying pathophysiology of migraine. Surveys have been shown endothelial dysfunction in patients with migraine without aura.[9,10,11,12,13,14]

Established techniques to detect Endothelial Dysfunction are divided at least into three large groups of functional, cellular and biochemical markers.[15]

Functional diagnosis of endothelial dysfunction includes tests of endothelium dependent vasorelaxation, arterial stiffness and pulse wave propagation. Flow-mediated vasodilatation which uses high resolution ultrasound equipment to measure the post-occlusive increase in diameter and flow of brachial or radial arteries is reflective of the shear stress-stimulated production of nitric oxide (NO).[16]

A broader appreciation of the endothelial functions can be obtained by study of the levels of molecules of endothelial origin in circulating blood. When the endothelium is activated, the direct products of endothelial cells (ECs) such as NO metabolites and adhesion molecules are released and let us know something about the status of the endothelium. In this category, it has been shown that intercellular adhesion molecule (ICAM) and vascular cell adhesion molecule (VCAM) can provide important information regarding the severity of Endothelial Dysfunction.[17]

Risk factors and other hazardous states for the vascular system induce up regulation of endothelial adhesion molecules such as VCAM-1, ICAM-1, selections (L, E and P) and integrins. These molecules are thought to regulate the attachment and transendothelial migration of inflammatory cells into the intima and trigger the inflammatory response to injury.[15] Among them circulating levels of soluble ICAM and VCAM are frequently used for monitoring endothelial function.[18]

The present study was designed to test the hypothesis that, whether 3 months of yoga training would have a greater preventive action on migraine headache and endothelial dysfunction in migraineurs.

## **METHODS**

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### **Study design and setting**

This study was a randomized, controlled trial conducted at physiology research center, Isfahan, Iran, from April to June 2012. The Ethical Committee of Isfahan University of Medical Sciences approved the project and the protocol. All participants gave written informed consent before baseline assessment and randomization.

## Patients

Patients were recruited from Neurological Institute under the supervision of neurologist. All potential subjects were informed that we were conducting a study of a migraine treatment intended to reduce the negative effect on their personal, family and social lives. Evaluations (with diagnosis) were performed by neurologists and detailed case histories were taken by trained interviewers. The criteria for selection of the subjects among the other migrainous were according to the definition of the International Headache Society.[19] All the patients were in menstrual age and have not had any experience of yoga training before. They also did not have any other exercise during the treatment period and were taken similar drugs.

Eighty-five patients agreed to participate in the program. Forty-three patients were excluded. Seventeen of them were omitted due to different medical treatments. Seven migrainous were crossed out for additional diseases and nineteen of them did not meet the inclusion criteria. The rest of migraine patients were accidently divided into two groups (yoga exercise group and control group). In the control group, four patients left the intervention because of worsening their symptoms, two refused to participate in blood test and one left the program because of her working problem. In experiment group, one patient refused to continue because of drugs' side-effects and two patients left the treatment due to unknown reason. Thirty-two patients were finally analyzed.

## Procedure

Patients were informed of the details of the treatment plan. The initial examination and medication were performed by a neurologist who confirmed the diagnosis of migraine. Personal information, family headache history, frequency and duration of headache and medication were recorded. Patients were randomly divided into two groups (yoga and control groups). The control group received only medication for 12 weeks and the yoga group was placed in yoga training program 3 sessions/week (each session 75 min) in addition to the same medical treatment. Yoga program were chosen from Hatha yoga Pradipika. It included asanas (yoga movements), pranayama (breathing exercises) and shavasanas (relaxation). Asanas largely deal with the positions which were related to the head and neck part although lower extremity exercises, arms and shoulders were also involved. Eye-related exercises, Pawanmuktasana, pre-pranayama and pranayama, Standing-sitting-and lying out screw position, Palming, Neti exercises and Shavasana were kinds of exercises which were done under the supervision of the trainer. Surya namaskar was another part of a program which includes 12 positions itself and it is mainly used for warm up, Stretch, strength and flexibility increase.

Blood test was given from all patients in physiology research center at Isfahan Faculty of Medicine in the morning between 8 am and 10 am in a fasting status. In the first session of exercises, patients were told to mark their headache frequency whenever their attack begins during these 3 months in the diary which was given to them. The Flow diagram of patient participation through the study is illustrated in the [Figure 1](#).

## Blood sample analysis

In order to measure ICAM and VCAM levels, 2 cc of a blood sample was obtained from the antecubital vein and plasma was extracted by centrifuging the blood sample. The plasma was aliquot and then stored at  $-70^{\circ}\text{C}$  until assayed.

## Statistical analysis

Statistical analyses were performed with SPSS 16 (SPSS Inc, Chicago, Illinois, USA) software by a blind analyzer. We calculated that a sample size of 30 patients was required to identify a difference of 1.25 in the number of migraine headache days/month with 80% power, with  $P = 0.05$  as level of significance and assuming a common standard deviation of 2.5 for yoga and control groups. The results are expressed as mean  $\pm$  standard error. Between groups differences were examined by independent-sample t-test  $P = 0.05$  was considered significant.

## RESULTS

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The mean age was  $35.4 \pm 7.9$  years old in the exercise group and  $34.9 \pm 8.37$  years old in the control group. As it has been illustrated in [Figure 2](#), when comparing yoga and control group after 12 weeks, a significant decreased levels of VCAM level was seen in yoga group (yoga group =  $15.29 \pm 2$  ng/ml, control group =  $21.70 \pm 3.0$  ng/ml,  $P < 0.05$ ). Although blood ICAM level also decreased after 3 months treatment period, the difference was not significant (yoga group =  $19.1 \pm 1.8$  ng/ml, control group =  $20.97 \pm 1.2$  ng/ml,  $P > 0.05$ ).

## DISCUSSION

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To the best of our knowledge, this is the first randomized controlled trial showed the effectiveness of yoga-based intervention on migraine headache and endothelial dysfunction. As a result, yoga was found to have a beneficial effect on various migraine parameters (frequency, intensity, duration of attack and medication score) and biomarkers of endothelial dysfunction.[\[20\]](#)

The benefits of yoga and meditation on cardiovascular disease (CAD) risk factors are well-known.[\[21\]](#) The underlying mechanisms of the observed beneficial effects of yoga on vascular function remain speculative; however are likely to happen through at least two pathways.[\[22\]](#)

Despite this fact that yoga cannot prevent or treat diseases itself, it relaxes muscles, regulate blood circulation and help patients feeling better in general. Yoga exercises reduce diastolic blood pressure and resting heart rate. It may be largely because of the reduction of sympathetic nervous system activity. Pranayama also seems to be an efficient method for balancing the autonomic nervous system and has a powerful influence on stress release,[\[20\]](#) as a significant risk factors of vascular dysfunctions.

Other important causes of vascular dysfunctions may be high blood pressure and loss of oxygen.[\[23\]](#) Pranayama leads to more oxygen delivery into the whole body including heart, brain and cells.[\[24\]](#) It is a commonly held belief that doing exercises consciously seems to play a key role. It reduces peripheral vascular resistance and regulates vessels' tone, the event which may help vessel walls related disorders. In addition, yoga asanas also improve the body's strength and flexibility which may help control blood pressure, respiration and heart and metabolic rates.[\[25\]](#)

On the other hand, yoga training helps patients to cope with stress and Anxiety, the factors which are known to be the common causes of CAD.[26] Furthermore, it gives patients a deeper knowledge about themselves that can often lead to a healthy life-style and the elimination of the modifiable risk factors for CAD.[27] The physical and mental activities in yoga enhance vascular health and promote a feeling of well-being.[28,29]

Expression of VCAM-1 and ICAM-1 has been consistently observed in atherosclerotic vessels. There is accumulating evidence from prospective studies for a predictive role of elevated circulating levels of sICAM-1 in initially healthy people and of sVCAM-1 in patients at high risk or with overt CAD. VCAM-1 plays a major role in the initiation of atherosclerosis and is the most important adhesion molecules involved in monocyte recruitment to inflamed regions of vessels.[30,31]

Our study's most evident limitation lies in the absence of a placebo group; we find it impossible to develop a scientifically legitimate sham yoga technique. Consequently, patient expectation well might have confounded our results; the yoga group may have felt the need to assist in recording a favorable result, whereas the control group alternatively may have wished to demonstrate an unfavorable outcome. All the outcome measures were questioner-based and subjective and yoga therapy ideally should be tested with an objective derived outcome measure as well. Finally, we obtained no long-term follow-up data which would allow us to comment upon the durability of the treatment effect.

## CONCLUSIONS

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In summary, this study provides preliminary evidence that integrated yoga therapy can be an effective treatment for migraine and also improve vascular function. Additional trials employing objective outcome parameters with larger sample size need to be conducted to confirm our results and to determine the long-term effect of yoga.

## Footnotes

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**Source of Support:** Isfahan University of Medical Sciences

**Conflict of Interest:** None declared

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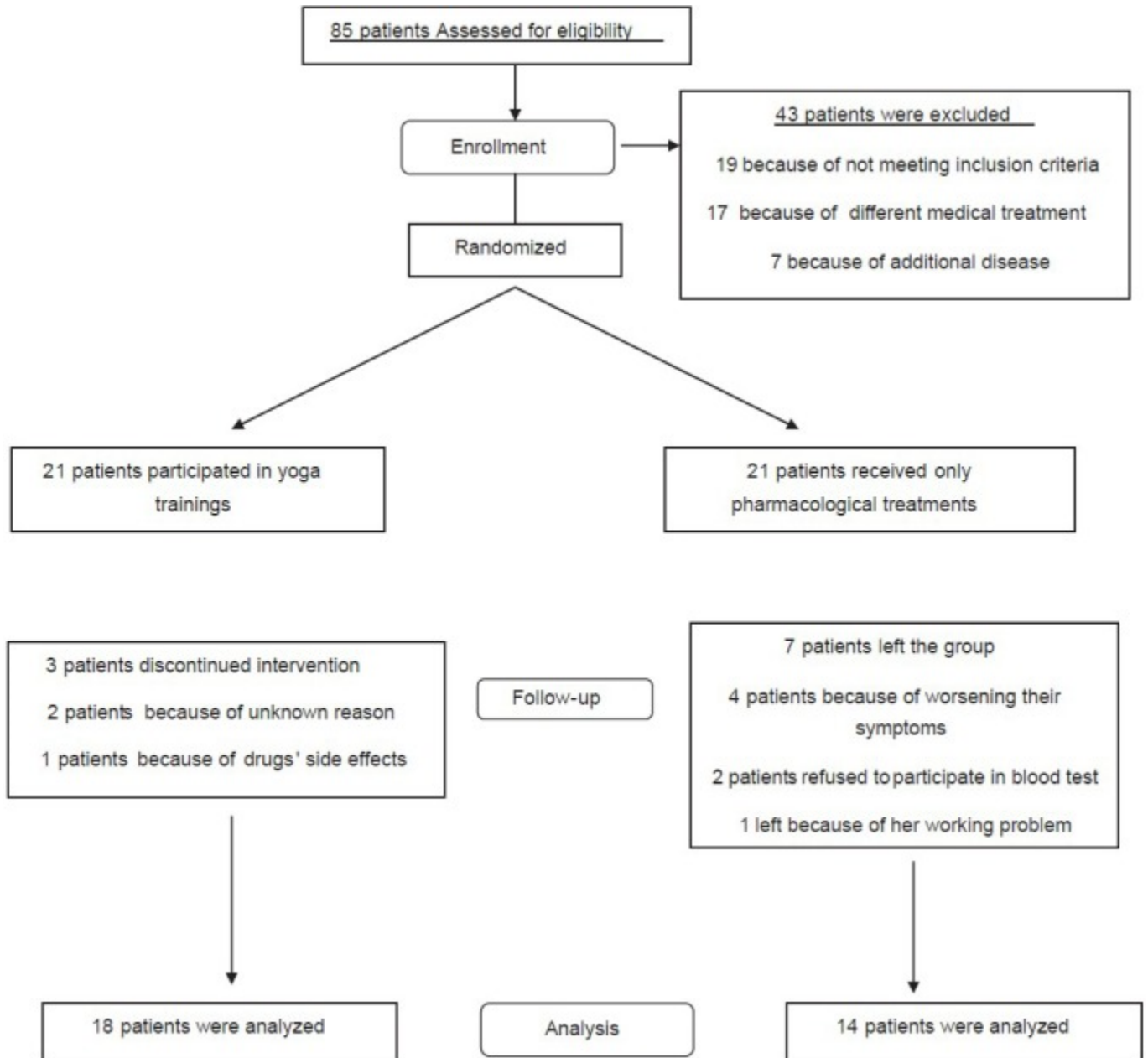
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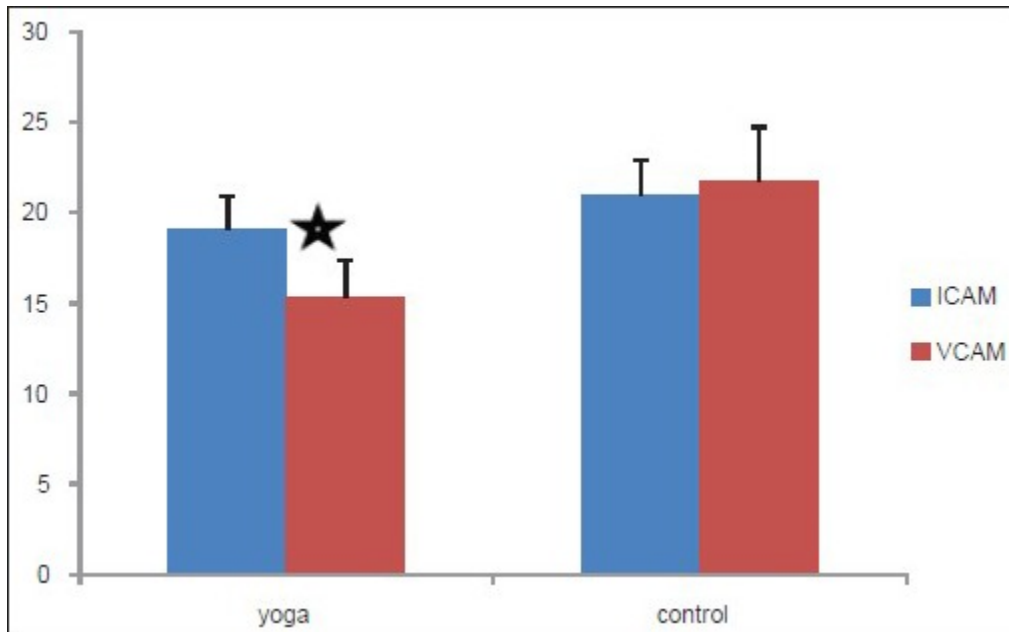
## Figures and Tables

Figure 1



Flow diagram of patient participation through the study

**Figure 2**



The comparison of serum levels of intercellular adhesion molecule (ICAM) and vascular cell adhesion molecule (VCAM) between yoga and control groups. Serum level of VCAM is significantly lower in yoga than the control group; however there is no significant difference between serum level of ICAM in two groups. (\* $P < 0.05$  in compare with VCAM concentration in the control group)



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# Role of Panchakarma in the management of Migraine (Ardhavabhedaka) : A Review

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## ABSTRACT

Headache is one among the most common reasons patients seek medical attention, on a global basis being responsible for more disability than any other neurological problem. Migraine is the 2<sup>nd</sup> most common primary headache, also known as 'Hemicrania', means 'half of the head'. It constitutes 16% of the primary headache and affects ~10-20% of general population, i.e. about 15% of women and 6% of men. It is characterized by recurrent episodes of headache that is moderate to severe and pulsatile in nature and lasting for 2-72 hours. Associated symptoms are nausea, vomiting, sensitivity to light, sound, or smell. It is not a lethal disorder but it can disturb patient's life very widely, so its treatment requires more attention and care. Unfortunately, there is no preventive medication for migraine has been stabilized so far, only symptomatic medication are available, which medications have a lot of adverse effects and make dependence. In Ayurveda it can be correlated to *Ardhavabhedaka*. Very elaborative treatment has been given in Ayurvedic *Samhitas*; especially *Panchakarma* offers significant relief in this disease.

**Key words:** Migraine, Hemicrania, Ardhavabhedaka, Panchakarma.

## INTRODUCTION

Migraine is an extraordinarily prevalent neurological disease, affecting 39 million men, women and children in the U.S. and 1 billion worldwide. Everyone either knows someone who suffers from migraine, or struggles with migraine themselves. It is the 3<sup>rd</sup> most prevalent and the 6<sup>th</sup> most disabling illness in the world. 85% of chronic migraine sufferers are women. Before puberty boys are affected more than girls, but during adolescence, the risk of migraine and its

severity rises in girls.<sup>[1]</sup> The current increase in the prevalence of migraine could be related to stress, depression and the development of metabolic syndrome and change in our diet with high intake of fast foods, seafood, fructose sweetened beverages and alcohol, and also the increase in life expectancy. However, the migraine is caused by a genetic abnormality that makes the neurovascular system hyper excitable. Thus, it can be initiated or amplified by various triggers.<sup>[2]</sup> The pathogenic mechanisms are not well understood, hence the vascular theory holds that initial vasoconstriction or shunting of blood through carotid arteriovenous anastomoses produces cerebral ischemia and starts the attack. The Neurogenic theory considers it to be a spreading depression of cortical electrical activity followed by vascular phenomena. About 15-30% of people in migraine experience migraine with aura and few patients also have episodes without aura. Diagnosis usually made by symptoms during attack and during latent period. The diagnosis of migraine without aura, according to International Headache Society, can be made by criteria given by it.<sup>[2]</sup> Drug therapy of

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migraine has to be individualized. Mild migraine should be treated with simple analgesics/NSAIDs or their combinations and antiemetic. In moderate migraine NSAIDs combinations/a triptan/ergot alkaloids and antiemetic, prophylactic therapy is advised only when attacks are more frequent than 2-3 per month. Severe migraine attack need specific drugs have to be prescribed along with antiemetic, like a triptan/ergot alkaloid plus prophylaxis, propranolol/other beta blockers, amitriptyline / other tricyclic antidepressants, flunarizine / other calcium channel blockers, valproate / topiramate. Prophylactic regimens lasting 6 months or more are recommended.<sup>[3]</sup> The modern drugs have their side effects like drug dependence and drug withdrawal syndrome, relapse of headache within hours and chances of getting chronic headache. The migraine can be symptomatically correlated with *Ardhavabhedaka* which has been mentioned under *Shiroroga* by our *Acharyas*. The Ayurveda emphasizes preventative and healing therapies along with various methods of purification (*Panchakarma*) and rejuvenations. All the *Panchakarma* procedures are indicated for migraine, offers significant relief. However *Nasya Karma* play a vital role in disintegrating the pathology of the disease.<sup>[4]</sup>

### Disease Review

*Ardhavabhedaka* is one among the 11 types of *Shirorogas* considered by our *Acharyas*. The word *Ardhavabhedaka* has two components viz. *Ardha* and *Avabhedaka*. *Ardha* means half side, *Ava* suggest bad prognosis, *Bhedaka* means breaking through, perforating or bursting out type of pain. In this, pain affects half region of the head. *Acharya Chakrapani* made it clear by saying *Ardhavabhedaka* means 'Ardha Mastaka Vedana'.<sup>[5]</sup> *Acharya Sushruta* considers it as *Tridoshaja*, *Acharya Charaka* has explained it as either to be purely *Vataja* or *Vatakaphaja*, *Vagbhata* opines that only *Vata Dosha* is involved. Similarly in *Bhela Samhita*, *Madhava Nidana*, *Yogaratanakara*, *Bhava Prakasha* it is considered as either purely *Vataja* or *Vata Kaphaja*. *Videha* of *Nimitantra* opines it to be *Vatakaphaja*.<sup>[6]</sup>

### Samprapti (Etiopathogenesis)

According to *Acharya Charaka* from *Rooksha Bhojana*, *Atibhojana*, *Adhyashana*, *Vegadharana*, *Ativyayama*, *Vata* either alone or in combination of *Kapha*, seizes the one half of head and causes *Teerva Vedana* (acute pain).<sup>[7]</sup>

*Nidana Sevana* → *Agnimandya* → *Amotpatii* → *Srotovarodha* → Aggravation of all the three *Doshas* → *Urdhavagaprapti* (reach the head) → Manifestation of symptomatology of *Ardhavabhedaka*.

### Rupa (Clinical Features)

Severe cutting or piercing (*Sashtra-Arninibha*) pain usually half side of head affecting neck (*Manya*), eye brows (*Bhru*), eye (*Akshi*), ear (*Karna*), temporal (*Shankha Pradesha*) and forehead (*Lalata*).<sup>[8]</sup> The disease develops either at the interval of fortnight (15 days) or 10 days<sup>[9]</sup> or a month and subsides its own accord.<sup>[10]</sup>

### Upadrava (Complications)

It has severe complications even it can destroy the sense organs and produce deafness, blindness.<sup>[11]</sup>

### Treatment

The treatment principles according to *Acharya Charaka*, *Chatuh-Sneha Pana*, *Shira* and *Kaya Virechana*, *Nadi Swedana*, *Jeerna Sarpi*, *Niruha* and *Anuvasana Basti*, *Upanaha*, *Shirobasti*, *Dahana* and *Pratishyayvat Chikitsa*.<sup>[12]</sup>

The treatment principles mentioned can be grouped under the following headings

- **Anthaparimarjana Chikitsa** - can be given in the form of *Shodhana* or *Shamana Snehana*, *Vamana*, *Virechana*, *Basti* and *Nasya*.
- **Bahiparimarjana Chikitsa** - includes *Lepa*, *Upanaha*, *Dhoopana*, *Swedana* and *Shirobasti*, *Shiroabhyanga*, *Shirodhara*.
- **Sashtra Pranidhana** - includes *Siravedha* and *Agnikarma*.<sup>[13]</sup>

## DISCUSSION

Ayurveda is a science and art of appropriate living which helps to achieve longevity. The *Panchakarma* therapy provides balanced state of body, mind and consciousness by cleansing of body toxins.

### *Snehana Karma*

It can be used as *Abhayantara Snehana / Snehapana* (internal oleation) and *Bahya Snehana* (External oleation) as *Shiroabhyanga*.

### *Snehapana*

*Sneha* acts as a solvent to remove the obstruction by dissolving *Doshas* in it, resulting in the removal of *Srotorodha*. After proper *Snehana* all cells of the body becomes completely saturated with fats. Then the fat material comes out to extra-cellular fluid by osmosis process. Due to the aqueous properties of *Sneha* and liquefied *Mala* brought from the tissues, the levels of fatty acids etc. increases in the blood resulting in the high plasma volume. To keep up the equilibrium of the normal plasma level, the extra amount of liquid reaches to the *Koshtha* for excretion. Later on, this increased amount of the body fluids are evacuated through other therapies, like *Vamana*, *Virechana*.<sup>[14]</sup>

### *Shiroabhyanga*

During *Shiroabhyanga* different type of mechanical sensation is given to the skin like pressure, rubbing, touches. These impulses are received by respective receptors present on the skin surface and carried to the hypothalamus and provides soothing effect and also stimulates para sympathetic nervous system, thus decreases stress hormones like cortisol and adrenalin and dilates blood vessels. All these factors provide relaxation to the mind and relieves pain.<sup>[15]</sup>

### *Shirobasti*

It is a *Snigdha Swedayukta* procedure. It has dual benefits of both *Snehana* and *Svedana*. The temperature of the *Taila* in *Shirobasti* leads to peripheral vasodilation. This increases the peripheral circulation which nourishes the tissues, hastens phagocytosis and brings about regenerative changes.

Thus *Shirobasti* is a very complex process certainly influencing the *Shareerika* and *Manasika Doshas*.<sup>[16]</sup>

### *Nasya Karma*

In *Nasya Karma* the medicine is put into nostril, moves in the channels upto the *Shringataka* and spreads to whole of the interior of the head and to the junction place where all the channels related to eyes, ears and throat situated together, thus shows influence on *Shiras* by removing out the accumulated *Doshas* localized in *Shiras* i.e. from all sinuses in the skull, the action known as *Shirovirechana*. The olfactory nerves entering olfactory mucosa of nose carry the sheaths dura, arachnoids and pia with them. They directly enter into the brain. Olfactory strai are extensively connected to the limbic system stimulation can nourishment of nerve ending through *Nasya* alters the pathology of migraine.<sup>[17]</sup>

### *Basti Karma*

In *Ardhavabhedaka*, *Niruha Basti* prepared with *Vatanashaka* drugs should be given first, followed by *Anuvasana Basti* prepared of *Ghrita*, *Taila* etc.<sup>[18]</sup> *Basti* is being considered as the one of the best therapeutic procedures for the management of migraine. The rectum with its vascularity and venous plexuses provides a good absorbing surface and many soluble substances produce their effect more quickly by entering into systemic circulation. Due to *Achintya Prabhava* of *Basti*, it might have reduced swelling of temporal artery and there by the patient gets relief from symptoms.<sup>[19]</sup>

### *Vamana Karma*

The active principle of *Vamana Dravya* taken orally is absorbed from the stomach into circulatory system, where from it is circulated to all over body. On reaching at the site of *Dosha Sanghata*, which is at the cellular level, it breaks the nexus of *Dosha* and brings back the toxic substances thus released into the stomach, where from they are expelled out of the body by the action of vomiting.<sup>[20]</sup>

### *Virechana Karma*

*Virechana Dravya* produced mild irritation in stomach and intestinal mucosa respectively, to cause inflammation, which facilitates quick absorption of

the active principles (*Virya*) of the drug in initial stage. Later on it facilitate the excretion of the morbid matters, which generally are not supposed to be excreted out through the mucosa of gut. It is possible only because of inflammation increases the permeability of the capillaries, which in turn allow the absorption, as well as excretion of such substances.<sup>[22]</sup>

#### **Agni-Karma**

Provides significant relief in the symptoms of migraine. *Acharya Charaka* indicated *Dahana Karma*. It is indicated on *Lalata* and *Shankha Pradesha* at two *Angula* area. As per Ayurveda, 'pain cannot occur without involvement of *Vata Dosha*'. *Agni* has *Ushna Guna*, this *Ushna Guna* gets transferred to *Twak* (skin), and normalises *Vata* and *Kapha*, helped to reduce *Shira-shoola* in *Ardhavabhedaka*.<sup>[22]</sup>

#### **Raktamokshana**

The vitiated blood can be detoxified by *Raktamokshana* (bloodletting). Removal of toxins balances the *Doshas*. It can remove *Avarana* of *Kapha* or *Pitta Dosha* giving way for *Anulomana* indirectly cures the *Vatika* symptoms along with *Pitta* and *Kapha Dosha* and patient gets immediate relief in pain.<sup>[23]</sup> In acute migraine attack, *Raktamokshana* from the jugular vein is beneficial.<sup>[24]</sup>

#### **Shirodhara**

Involves gently pouring liquids over the forehead. The liquids used in *Shirodhara* can include oil, milk, buttermilk, coconut water or even plain water. Its work by relaxing the hypothalamus in the brain, also normalize the functions of hormones that regulate sleep and emotions. The soothing of *Marma*'s and in turn soothing of Nervous system and endocrine glands as an effect of *Shirodhara* treatment procedure will definitely relax *Prana Vayu*, *Sadhaka Pitta* and *Tarpaka Kapha* in the brain.<sup>[25]</sup>

#### **Dhoopana**

It dilates blood vessels and helps in oxidation of blood. It leads to adequate tissue perfusion and oxygenation. Thus, reduces inflammation, pain, itching and eliminates infection.<sup>[26]</sup>

## **CONCLUSION**

*Ardhavabhedaka* is *Vatakapha Pradhana Shiroroga*, the symptoms complex of which very well correlate to that of migraine. Most of the *Nidanas* which includes *Aharaja*, *Viharaja* and *Manasika* factors etc. are mentioned in our classics go in similarly with migraine triggers, which have active part in diagnosis and in planning first line of treatment i.e. *Nidanparivarjana*. *Panchakarma* provides various routes of *Deha Shuddhi* and also pacifies the *Doshas*. Thus by adopting particular *Panchakarma* procedure individual will get better results in curing *Ardhavabhedaka* (migraine).

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## Clinical Study

# A Comparative Study of The Role of *Nasya Karma* And *Shirodhara* In The Management of *Ardhavabhedaka* w.s.r. to Migraine

\*Dr. Mridul Ranajan, \*\*Dr. Sarvesh Singh, \*\*\*Vd. Srinivas Sharma, \*\*\*\*Prof. Ajay Kumar Sharma

### Abstract-

*Ardhavabhedaka* is the disease of *Urdhawajatrugata Roga*. It is named because of its classical symptom of severe pain in half of the head, which lasts for hours or days. It reoccurs after three, eight, fifteen days, or a month. This disease is more commonly seen in the ladies and teenagers, which is felt at particular time intervals. The sign and symptoms of *Ardhavabhedaka* can be correlated with migraine in modern system of medicine. For management purpose of *Ardhavabhedaka*, Ayurveda has designed a variety of treatment modalities among which *Panchakarma* is most superior. *Panchakarma* mitigates the root causes of the disease and promotes the health.

The study had been conducted on 34 patients of *Ardhavabhedaka* (Migraine) which were divided in to three groups and were given treatment for 21 days and follow-up after 1 month.

- Group A : *Nasya Karma* done for 21 days with *Kumkumadi Ghrita*.
- Group B : *Shirodhara* done for 21 days with *Dashmoola-Shrita Ksheera*..
- Group C : Combined treatment for 21 days.

It was observed that group A and group C are more effective than group B i.e. *Kumkumadi Ghrita Nasya* is more effective than *Dashmool shrita Ksheera Shirodhara*.

**Key Words:** *Ardhavabhedaka*, Migraine, *Nasya Karma*, *Shirodhara*

### सारांश-

अर्धावभेदक उर्ध्वजगत रोग है। अर्ध शिर में तीव्र शिरः शूल होने के कारण इस रोग को अर्धावभेदक कहते हैं। अर्धावभेदक में शिरःशूल कुछ घंटों से लेकर कई दिनों तक होता है जो कि 3, 8, 15 और 30 दिन के अन्तराल पर होता है। यह रोग मुख्यतः स्त्रियों एवं किशोरों में होती है। लक्षणों के आधार पर आधुनिकानुसार अर्धावभेदक की तुलना हम माईग्रेन से कर सकते हैं। चिकित्सात्मक दृष्टि से आयुर्वेद में अर्धावभेदक की विविध चिकित्सा उपक्रम मिलते हैं जिनमें से पञ्चकर्म चिकित्सा सर्वोपरि है पञ्चकर्म रोग के मूल कारण का समूल नाशा कर स्वास्थ्य की अभिवृद्धि करता है।

प्रस्तुत शोध में 34 अर्धावभेदक के रोगियों को 3 वर्गों में विभक्त कर 21 दिन तक चिकित्सा दी गयी। वर्गों का विभाजन निम्न प्रकार से किया गया-

**प्रथम वर्ग** - कुमकुमादि घृत से 21 दिन तक नस्य कर्म। **द्वितीय वर्ग** - दशमूलघृत क्षीर से 21 दिन तक शिरोधारा। **तृतीय वर्ग** - 21 दिन तक कुमकुमादि घृत नस्य कर्म में दशमूल घृत क्षीर से शिरोधारा।

तीन वर्गों के रोगियों में चिकित्सोपरान्त निष्कर्ष के विश्लेषण के बाद यह पाया गया कि प्रथम एवं तृतीय वर्ग द्वितीय वर्ग की अपेक्षा अधिक प्रभावी रहे अर्थात् कुमकुमादि घृत दशमूल घृत क्षीर शिरोधारा से ज्यादा प्रभावी रहा।

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## Clinical Study

# A Comparative Study of The Role of *Nasya Karma* And *Shirodhara* In The Management of *Ardhavabhedaka* w.s.r. to Migraine

Dr. Mridul Ranajan, Dr. Sarvesh Singh, Vd. Srinivas Sharma, Prof. Ajay Kumar Sharma

### Introduction –

Man's ambitious nature, luxurious life etc. made him busy all the time which gave rise to stress, strain, mental disturbances. It is fact "A healthy mind is the cause for a healthy body", which sounds quiet true.

It is the brain, which controls all the voluntary and involuntary functions of the body. Thus, brain can be considered as supreme, important and major organ of the body. Our ancient sages have described three vital organs and have given prime importance to head i.e. Shirah, as the existence of body depends upon the vital organs. Shirah is that part of the body where life along with sense faculties resides. Almost all Acharyas have given prime importance to Shiro roga (diseases of head). All types of headaches have been described under the heading of 'Shiroroga', which are further divided into eleven types according to *Sushruta*. *Ardhavabhedaka* one of the important type of Shiroroga.

According to *Charaka Vata* either alone or in combination with *Kapha*, seizes the one half of head and causes *Ativedana* (acute neuralgic pain) in the sides of the *Manya* (neck), *Bhroo* (eyebrow), *Shankha* (temple), *Karna* (ear), *Akshi* (eyes) or *Lalata* (forehead of one side). This pain is very agonizing like that of churning rod (red hot needle). This disease is called *Ardhavabhedaka*. If the condition becomes aggravated, it may even impasse the functions of the *Nayana* (eye) and *Shrota* (ear).

According to *Sushrut* *Ardhavabhedaka* is characterized by one half of the head develops *Bheda* (severe tearing) and *Toda* (pricking pain), *Bhrama* (giddiness) and *Shoola* (piercing pain) suddenly after a fortnight or ten days. This should be diagnosed as *Ardhavabhedaka* caused by all the three *Doshas*.

In modern science *Ardhavabhedaka* is found to be identical to migraine characterized by half sided headache, moderate to severe headache and nausea.

According to Harrison's-principles of internal medicine migraine is benign and recurring syndrome of headache, nausea, vomiting and/or other symptoms of neurological dysfunction in varying admixtures like photophobia, phonophobia.

With advent of modern drugs, the pattern of disease has grossly changed, where the drugs only assuage the symptoms temporarily and the underlying pathology goes on progressively to worsen the condition. Though ample research is being carried out for alleviating the disease and new avenues are being explored for treating early stage of the disease.

Therefore, the Ayurvedic therapeutics especially Panchakarma (Bio-purification) therapy has attracted considerable glamour for providing safe and effective remedies. Numerous researches have been done time and again to reprove the worth of these medicaments. Yet there is a necessity for perusing further research to find out some safe, effective remedy.

### Need of study:

Worldwide, migraines affect nearly 15% or approximately one billion people. It is more common in women at 19% than men at 11%. During adolescence migraines becomes more common among women and this persists for the rest of the lifespan, being two times more common among elderly females than males.

Taking all the above points into consideration, its nature of chronicity, the disease was selected, to find a measure that could help in restoring quality in life of patients.

Considering all the above factors the disease "Ardhavabhedaka" and 'Kumkumadi Ghrita Nasya' and 'Dashmool shrita Ksheera Shirodhara' were selected for the present study which is mentioned in Ashtang Hridaya for treatment of Ardhavabhedaka on various scientific parameters to evolve a safe, effective, readily available and economic treatment protocol.

#### **Aims And Objectives:**

- 1) To evaluate the role of Kumkumadi Ghrita Nasya and Dashmoola-Shrita Ksheera Shirodhara in the management of Ardhavabhedaka (Migraine), comparatively.
- 2) To provide economic, easily manageable, permanent and adverse affect free treatment for migraine.

#### **Materials And Methods**

Following materials and methods were adopted for conducting the present research project.

#### **Selection of Cases/Patients:**

The study was conducted on 30 clinical and pathological diagnosed patients of Ardhavabhedaka (Migraine). The patients were selected from O.P.D. and I.P.D. of National Institute of Ayurveda, Jaipur.

#### **Sampling Technique:**

In the present study 30 clinically diagnosed patients of Ardhavabhedaka (Migraine) were selected and randomly divided into three groups.

1. Group A- In this group 10 patients were registered for Kumkumadi Ghrita Nasya Karma.
2. Group B - In this group 10 patients were registered for Dashmoola-Shrita Ksheera Shirodhara Karma.
3. Group C - In this group 10 patients were registered for both Nasya and Shirodhara Karma.

The patients were selected randomly irrespective of sex, religion, education and occupation etc.

**Duration of Trail:** 21 days in each group

**Nasya Dose:** 6 drops in each nostrils

Shirodhara with duration: continuous pouring of 2 lt. Dashmoola-Shrita Ksheera for 45 min/day.

**Follow up:** Follow up was carried out for 1 month after the completion of treatment to see the long standing effect of the therapy.

#### **Diagnostic Criteria's Adopted:**

- Age: 15 to 50 years.
- Patients presenting with signs and symptoms of Ardhavabhedaka-Migraine described as per Ayurvedic texts and Modern texts were included in the study. For this purpose a special research proforma was prepared as per the Modern and Ayurvedic view.
- The diagnosis of the disease was done on the basis of clinical manifestations like recurrent attacks of headache, mostly unilateral in nature, variable in intensity, frequency and duration, nausea, vomiting, Photophobia, phonophobia and vertigo.

Random sampling method was adopted for the selection of the patients.

#### **Inclusion Criteria:**

1. Age between 15 to 50 years.
2. Patients presenting with signs and symptoms of Ardhavabhedaka, described as per Ayurvedic and modern science.

#### **Exclusion Criteria :**

1. Pregnant and lactating women.
2. Patients suffering from major disease e.g. tuberculosis, cancer, diabetes mellitus, heart disease, hypertension etc.
3. Ophthalmoplegic migraine.
4. Complicated migraine.
5. Secondary Headache caused by sinus headache, meningitis, brain tumour, encephalitis, cervical spondylitis, refractive error and increased intra ocular pressure.
6. Patients using drugs for any other systemic illness.

**Discontinuation criteria:**

1. Aggravation of symptoms.
2. Patients not willing to continue.

**Investigations Performed****Following investigations were advised-**

1. Blood for CBC,ESR
2. Vision test

**Criteria For Assessment:****Subjective Improvement**

Improvement in the following subjective sign and symptoms are

1. Intensity of Headache
2. Episodic Interval
3. Duration of Headache
4. Nausea
5. Vomiting
6. Photophobia
7. Phonophobia
8. Vertigo
9. Visual Disturbance
10. Alteration of consciousness

**Observations And Results:**

For the clinical study, 34 clinically diagnosed and confirmed cases of Ardhavbhedak (Migraine) were registered on the basis of a specially designed proforma prepared for the purpose. Out of 34 patients, 4 patients discontinued the treatment.

The entire patient treated Nasya Karma with Kumkumadi Ghrita and Shirodhara with Dashmool shrit Ksheer were very well and no side or toxic effects in these trial were observed.

The observations made on the 34 patients of Ardhavbhedaka of this series showed that maximum number of patients were of age group of 21 – 30yrs (38.2%), Females (64.7%), Hindu (82.4%), Graduate (38.2%), Married (58.8%), House wives (32.3%), Student(35.3), Middle class (91.2%), Urban habitat

(88.3%), Vegetarian (64.7%). Majority of the patients had disturbed sleep (70.6%), Vata-pitta prakriti (47%), Rajas prakriti (67.6%), Madhyama Sara (82.4%), Madhyama Samhanana (76.4%), Madhyama Satmya (61.7%), Madhyama Satva (58.8%), Madhyama Pramana (79.4%), Madhyama Abhyavaharana Shakti (64.7%), followed by Avara Jarana shakti (64.7%), Madhyama Vyayama shakti (64.7%).

The maximum nidanas (etiological factors) observed in patients were Anashana (64.7%), Ratrijagarana(61.8%), Chinta(58.8%), Vishamashana (55.9%) and Vega sandharana (47%).

The chief complaints reported from the patients were Headache (Shirahshoola) (100%), Nausea (67.6%), Vomiting (58.8%), Photophobia (64.7%), Phonophobia (75.6%), vertigo (52.9%) and Visual disturbance (41.1%).

Maximum patients were having unilateral headache (88.2%), Throbbing type of headache (61.7%). Severe intensity of headache was seen in (67.6%) with chronicity of 2 years (32.4%). The duration 7-12 hours/day was seen in maximum (44.1%) with episode interval >7 days - < 14 days in 41.1% of patients.

The clinical data presented here is based on the 30 patients of trial work arranged in 3 groups, each had 10 patients.

**Table No: 1- Results in Group A**

**Effect of *Kumkumadi Ghrita Nasya* various symptoms of *Ardhavabhedaka* (Migraine) in 10 patients (Wilcoxon matched-pairs test)**

Symptoms	Mean Value			% of Relief	SD ±	SE ±	P	Remarks
	BT	AT	Diff.					
Intensity of pain	3.20	1.0	2.20	68.75%	0.78	0.24	0.002	HS
Episodic interval	2.3	0.7	1.6	69.56%	0.51	0.16	0.002	HS
Duration of Headache	2.4	0.8	1.6	66.66%	0.51	0.16	0.002	HS
Nausea	2.28	0.71	1.57	68.86%	0.53	0.20	0.0156	S
Vomiting	1.6	0.5	1.1	68.75%	0.87	0.27	0.0313	S
Photophobia	1.9	0.6	1.3	69.23%	0.48	0.18	0.0156	S
Phonophobia	1.62	0.5	1.13	69.23%	0.35	0.13	0.0078	HS
Visual disturbance	1.75	0.50	1.25	71.42%	0.50	0.25	0.1250	NS
Vertigo	1.40	0.4	1.0	71.42%	0.44	0.20	0.0625	NS
Alteration of consciousness	1.62	0.37	1.25	76.92%	0.70	0.25	0.0156	S

The present study shows 68.75% relief in Intensity of pain (Shirshool) which was highly significant statistically ( $p = 0.002$ ), while 69.56% & 66.66% relief in episodic interval and duration of headache respectively was observed which was also highly significant statistically ( $p = 0.002$ ). The study also shows 68.86% relief in nausea which was significant statistically ( $p = 0.0156$ ) and 68.75% relief in vomiting which was also significant statistically ( $p = 0.0313$ ), 69.23% of improvement in both photophobia and phonophobia was observed which was statistically significant ( $p = 0.156$ ) and highly significant ( $p = 0.078$ ) respectively. whereas 71.42 relief was seen in both the symptom of visual disturbance and vertigo which was also non significant statistically ( $p = 0.125$ ,  $p = 0.0625$  respectively) and 76.92% relief was seen in alteration of consciousness which was statistically significant ( $p = 0.0156$ ).

**Table No: 2 Results in Group B**

**Effect of *Dashmool shrit Dugdha Shirodhara* on various symptoms of *Ardhavabhedaka* (Migraine) in 10 patients (Wilcoxon matched-pairs test)**

Symptoms	Mean Value			% of Relief	SD ±	SE ±	P	Remarks
	BT	AT	Diff.					
Intensity of pain	2.9	1.7	1.1	37.93%	0.56	0.17	0.0313	S
Episodic interval	1.7	1	0.7	41.17%	0.48	0.15	0.0156	S
Duration of Headache	2.5	1.3	1.2	48%	0.91	0.29	0.0156	S
Nausea	1.71	1	0.71	41.66%	0.48	0.18	0.0625	NS
Vomiting	1.5	1.0	0.5	33.33%	0.54	0.18	0.0313	S
Photophobia	1.62	0.9	0.8	46.15%	0.46	0.14	0.0156	S
Phonophobia	1.55	0.77	0.77	50%	0.44	0.16	0.0156	S
Visual disturbance	2.2	1.2	1.0	45.45%	0.44	0.20	0.0625	NS
Vertigo	1.6	0.8	0.8	50%	0.44	0.20	0.1250	NS
Alteration of consciousness	2	0.71	1.29	64.28%	0.48	0.18	0.0156	S



The present study shows 37.93% relief in intensity of pain (Shirahshoola) which was highly significant statistically ( $p = 0.0039$ ) and 41.1% relief in episodic interval which was significant statistically ( $p=0.0156$ ), while 48% relief in duration of headache which was also significant statistically ( $p = 0.0156$ ). The study also shows 41.66% relief in nausea & 33.33% relief in vomiting which were non significant statistically ( $p=0.0625$ ) and significant statistically ( $p = 0.0313$ ) respectively. 46.15% improvement in photophobia and 50% in phonophobia both were statically significant ( $p=0.0156$ ) where as 45.45 % & 50% relief was observed in the symptom of visual disturbance & vertigo which were found non significant statistically ( $p=0.0625$  & 0.125 respectively) and 64.28% relief was seen in alteration of consciousness which was statistically significant ( $p=0.0625$ ).

**Table No: 3 Results in Group C**

**Effect of *Kumkumadi Ghrit Nasya* & *Dashmool shrit Dugdha Shirodhara* on various symptoms of *Ardhavabhedaka* (Migraine) in 10 patients (Wilcoxon matched-pairs test)**

Symptoms	Mean Value			% of Relief	SD ±	SE ±	P	Remarks
	BT	AT	Diff.					
Intensity of pain	2.9	0.8	2.1	72.41%	0.56	0.17	0.0020	HS
Episodic interval	2.2	0.6	1.6	72.72%	0.69	0.22	0.0020	HS
Duration of Headache	2.2	0.7	1.5	68.18%	0.97	0.30	0.0039	HS
Nausea	1.71	0.57	1.14	66.66%	0.37	0.14	0.0156	S
Vomiting	1.5	0.5	1.0	66.66%	0.63	0.25	0.0313	S
Photophobia	1.4	0.4	1.0	70%	0.51	0.16	0.0313	S
Phonophobia	1.55	0.44	1.11	71.42%	0.88	0.31	0.0156	S
Visual disturbance	2	0.6	1.4	70%	0.54	0.24	0.0625	NS
Vertigo	1.83	0.5	1.33	72.72%	0.81	0.33	0.0625	NS
Alteration of consciousness	2	0.42	1.57	78.57%	0.78	0.29	0.0156	S

The present study shows 72.41% relief in intensity of pain (Shirahshoola) which was highly significant statistically ( $p = 0.002$ ) and 72.72% relief in episodic interval which was highly significant statistically ( $p=0.002$ ), while 68.18% relief in duration of headache which was also highly significant statistically ( $p = 0.0039$ ). The study also shows 66.66% relief in nausea & vomiting which were significant statistically ( $p=0.0156$  & 0.0313 respectively) and 70% improvement in photophobia and 71.42% in phonophobia both were statically significant ( $p=0.0313$  & 0.0156 respectively) where as 70% & 72.72% relief was observed in the symptom of visual disturbance & vertigo which were found non significant statistically ( $p=0.0625$ ) and 78.57% relief was seen in alteration of consciousness which was statistically significant ( $p=0.0156$ ).

**Table No.4 – Overall effect of therapy in all groups (Wilcoxon matched-pairs test)**

Group	Mean Value			% of Relief	SD ±	SE ±	P	Remarks
	BT	AT	Diff.					
Group-A	2.01	0.61	1.4	69.65%	0.35	0.11	0.002	HS
Group-B	1.82	0.98	0.84	46.15%	0.29	0.09	0.002	HS
Group-C	1.95	0.56	1.39	71.28%	0.33	0.10	0.002	HS

Group A, showed 69.65% improvement with p-value = 0.002, which is highly significant statistically. Group B showed 46.15% improvement with p-value = 0.002, which is highly significant statistically and Group C showed 71.28% improvement with p-value = 0.002 which is statistically highly significant.

**Fig. No. 1 Comparison of percentage wise improvement in all groups**

No adverse effects of the trial drugs were observed during the study.

## Discussion

Ardhavabhedaka can be scientifically correlated with Migraine due to its cardinal feature unilateral headache and paroxysmal nature. The various types of pain and paroxysmal nature of Ardhavabhedaka suggest the Vishama nature of Vata dosha. So We can say that prominent dosa in Ardhavabhedaka is Vata, Ardhavabhedaka can be differentiated from other Shiro-roga such as Suryavarta, Shankha, etc. only due to its cardinal feature “half sided headache” and also due to its paroxysmal nature.

**Probable Mode of Action of Kumkumadi Ghrita Nasya: Generally, Nasya is effective in following 2 ways-**

### 1. Therapeutic effect of medicament

The mode of action of the drugs under trial can be understood as under - on the basis of inherent properties of the drugs by which one can assume their pharmacodynamics is as follows :

Guru Guna, Snigdha Guna, Madhura Rasa and Madhura Vipaka present in Ghrita and Sharkara pacify the Vata dosha which is the most important factor responsible for Ardhavabhedaka. Snigdha guna has Kledana Karma which acts as a binding agent. Sheeta Virya present in Ghrita and Sharkara pacify

the Pitta dosha which is responsible for nausea, vomiting & vertigo.

Katu and Tikta Rasa of Kumkuma, have Deepana – Pachana Karma, which having the property of Amapachana and thus provides proper metabolism and ultimately balances the Agni. Thus these Rasas works at Agni dushti level in the Samprapti of Ardhavabhedaka. Katu, Tikta Rasa and Usna Guna have Sroto-shodhaka property, which helps in expelling the morbid Doshas. Tikta Rasa shows its Shoshana Karma, more particularly Kleda Shoshana and Shlesma Prashamana properties. Ushna Virya of Kumkuma has Deepana – Pachana, Virechana, Vilayana properties, which softens and liquefies the morbid Doshas which are ultimately expelled out due to its Virechaka Karma.

Kumkuma has Medhya, Vedanasthapana, Raktaprasadaka, Kaphanissaraka and Katupaushtika. Ghrita acts as a helpful media by its Medhya and Smritivardhana properties. ‘Sanskaranuvartanat’ Guna of Ghrita is super most property of incorporating the quality of other drugs, which ever comes in contact with it, during processing.

Pharmacological studies also shows that Kumkuma has antinociceptive, anti-inflammatory,

antitumour, radical scavenger, hypolipaeamic, anticonvulsant effects and improve activity on learning and memory.

## 2. Procedural effect of the *Nasya Karma*

*Acharya Vagbhatta* said that, *Nasa* (nose) is the *Dwara* (door) for *Shiras*. The drug administered through nose reaches the *Shringataka Marma* and spreads throughout *Murdha*, *Netra*, *Shrotra* and *Kantha* through their *Siras* (*Shringataka Marma* is a *Sira Marma* and formed by the *Siras* of *Nasa*, *Akshi*, *Jivha* and *Shrotra*). Thereby eliminates the morbid *Dosha* of *Urdhwajatru* and expels them from the *Uttamanga* and nutritive part of *Nasya* is nourishes the *Shirah* (head).

*Nasya Dravya* gets absorbed through the cells of mucous membrane of nose and paranasal sinuses and then comes into circulation through local capillaries and veins. When the drug reaches the upper part of nasal cavity it reaches the olfactory area from where there is possibility that it can ascend to higher centres in the brain including the pituitary, thalamus, hypothalamus and the limbic system through the olfactory nerve terminals. The olfactory nerve fibres are also enclosed with dura and arachnoid matter and there is circulation of CSF in these layers and there is possibility that the drug reaches the intra cranial structures of brain through this pathway.

Thus, the effect of the drugs extends to the whole neurovascular system.

Hence *Nasya* provided better relief in all signs and symptoms of *Ardhavabhedaka*.

In short, the drug was found effective to tackle with *Ardhavabhedaka*. The formulation worked through its *Vatahara*, *Vedanasthapana*, *Smritivardhana*, *Mastishkabalya*, *Medhya*, *Nidrajanana*, *Nadibalya* properties.

### Probable Mode of Action of *Dashmool shrit ksheer Shirodhara*:

Although clinically the efficacy of *Shirodhara* is proved, it is a difficult task to understand the mode of action of *Shirodhara*. Generally, *Shirodhara* is effective in following two ways-

## 1. Therapeutic effect of medicament

Among the 10 *Dravyas* of *Dashmoola* 5 *Dravyas* (50%) have *Vata-Kapha Shamak* property, 4 *Dravyas* (40%) have *Tridosaghna* property and 1 *Dravya* (10%) has *Vata-Pitta Shamak* property. It means, in *Dashmoola* all *Dravyas* (100%) have *Vata Shamak* property and 9 *Dravyas* (90%) have *Vata-Kapha Shamak* property. Therefore, it will be a potent *Vata Dosha Shamak*, *Vata-Kapha Shamak* and *Tridosaghna* compound. Thus over all it pacifies *Vata*, *Vata-kapha Dosha* or *Tridosha* and *Ardhavbhedaka* being a *Vata Pradhana Vyadhi* (*Vata-kapha-Ch.* or *Ttridoshaja Su.*), there is every possibility of *Samprapti Vighatana* of *Ardhavbhedaka Roga*.

Milk subsides *Vata* and *Pitta Dosas* by *Madhura Rasa*, *Snigdha*, *Guru*, *Mridu*, *Sandra Guna* properties. As the milk is having identical properties of *Ojas*, it promotes *Ojas*. The Cow's milk acts as *Rasayana*, *Tarpaka*, *Jivaniya*, *Hridya*, *Ahmadakara* and *Medhya*.

## 2. Procedural effect of the *Shirodhara*

- The procedural effect of *Shirodhara* seems to be more powerful in relieving various sign and symptoms of *Ardhavbhedaka* (Migraine).
- The continuous pouring of medicated milk in a relaxed and comfortable position has an effect, which can be near compared to the cardling of a mother to her child. This acts as a sedative and soothing effect to the brain and induces sleep. Also the medicated milk or active ingredients of oil enters into the circulation acts as *vatahar* effects.
- The forehead and head are areas of many vital spots (*Marma*) as mentioned in Ayurvedic classics. Mainly *Sthapani*, *Utkshepa*, *Avarta Marma* are situated in this region. According to *Acharya Bhela*, the *Sthana* of *Chitta (Mana)* is *Bhrumadhya* i.e. *Sthapani Marma*. *Shirodhara* makes the patient to concentrate on this area by which the stability arrives in the functions of mind.
- In *Shirodhara* patient is asked to lie down in supine position as in *Shavasana*. This position

itself is used for relaxation in Yogic science. Again during Shirodhara patients concentrate on the forehead i.e. in between eyebrows. Then he is devoid of surroundings, which helps him to calm the stressful mind. As the patient concentrates on a particular place, the thought process decreases and thus the entire physiology relaxes.

In this way, Shirodhara is beneficial in eradicating Ardhavabhedaka (Migraine). It is useful in Vatadosha by its calming and penetrating effect whereas useful in Pitta dosha by its cooling effects.

### Conclusion

The study shows that Kumkumadi Grita Nasya alone was more effective in alleviating symptoms of *Ardhavabhedaka* (Migraine) than *Dashmool shrita ksheer Shirodhara* but combined drug therapy had greater potential to ameliorate the symptoms of *Ardhavabhedaka* (Migraine).

In nutshell, *Panchakarma* therapy is proved better in the management of the disease i.e., Kumkumadi Grita Nasya along with Dashmool shrita ksheer Shirodhara proved to be a good effective therapy in curing the disease.

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**Research Article****A Controlled Clinical Study on the Role of *Nasya Karma* and *Shirodhara* in the Management of Migraine****Mridul Ranajan<sup>1\*</sup>, Sharma S. N.<sup>2</sup>, Sharma C.M.<sup>3</sup>, Sharma A.K.<sup>4</sup>**<sup>1</sup>Ph. D. Scholar, Department of Panchakarma, I. P. G. T. & RA, Gujarat Ayurved University, Jamangar-361008, Gujarat, India<sup>2</sup>Ex-Associate Professor, Department of Panchakarma, NIA, Jaipur-302002, India<sup>3</sup>Professor & Head, Department of Neurology, S.M.S. Medical College and Hospital, Jaipur-302004, India<sup>4</sup>Professor & Ex-Director, National Institute of Ayurveda, Jaipur-302004, India**\*Corresponding author**

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**Abstract:** Migraine (*Ardhavbhedaka*) is now recognized as a chronic illness, the second most common cause of headache, not simply as a headache. With advent of modern drugs, the pattern of disease has grossly changed, where the drugs only assuage the symptoms temporarily and the underlying pathology goes on progressively to worsen the condition. Therefore, the Ayurvedic therapeutics especially *Nasya karma* (Errhine therapy) and *Shirodhara* of *Panchakarma* (Five major bio-purificatory therapies) therapy has attracted considerable glamour for providing safe and effective remedies in the treatment of migraine. The study had been conducted on 33 patients of Migraine which were randomly divided into three groups and were given treatment for 21 days and follow-up after 1 month. Out of the three groups, 11 patients were administered *Kumkumadi ghrita Nasya* 6 drops in each nostril, 12 patients of second group were administered *Dashmool shrita Ksheera Shirodhara*, and 10 patients of third group were administered Tab. Propranolol 40 mg bd and diclofenac 50 mg bd. During present trial it was observed that there was highly significant improvement in clinical manifestations of migraine after the therapy with *Nasya Karma*. So it is concluded that *Nasya karma* is completely or partially relieves the symptoms in Migraine.**Keywords:** Migraine, *Ardhavbhedaka*, *Nasya Karma*, *Shirodhara*.

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**INTRODUCTION**

Migraine is now recognized as a chronic illness, the second most common cause of headache, not simply as a headache. Worldwide, migraines affect nearly 15% or approximately one billion people. It is more common in women at 19% than men at 11% [1]. During adolescence migraines becomes more common among women [2] and this persists for the rest of the lifespan, being two times more common among elderly females than males [3]. The word migraine is derived from the Greek word hemicrania, meaning "half of the head" because the pain of migraine often occurs on one side. Pain also sometimes spreads to affect the entire head. The term "migraine" refers to a syndrome of vascular spasms of the cranial blood vessels. It is usually an episodic headache that is associated with certain features such as sensitivity to light, sound or movement; nausea and vomiting often accompany the headache [4].

In Ayurveda migraine is found to be identical to *Ardhavbhedaka* characterized by pain in half side of head. [5]. According to Charaka *Vata* either alone or in

combination with *Kapha*, seizes the one half of head and causes *Ativedana* (acute neuralgic pain) in the sides of the *Manya* (neck), *Bhroo* (eyebrow), *Shankha* (temple), *Karna* (ear), *Akshi* (eyes) or *Lalataardhe* (forehead of one side). This pain is very agonizing like that of churning rod (red hot needle). This disease is called *Ardhavbhedaka*. If the condition becomes aggravated, it may even impasse the functions of the *Nayana* (eye) and *Shrota* (ear) [6].

With advent of modern drugs, the pattern of disease has grossly changed, where the drugs only assuage the symptoms temporarily and the underlying pathology goes on progressively to worsen the condition. Though ample research is being carried out for alleviating the disease and new avenues are being explored for treating early stage of the disease. Therefore, the Ayurvedic therapeutics especially *Nasya karma* and *Shirodhara* of *Panchakarma* therapy has attracted considerable glamour for providing safe and effective remedies in the treatment of migraine. *Kumkumadi ghrita Nasya* [7] and *Dashmool shrita ksheer shirodhara* [8] were selected for the present

study which are mentioned in Ashtang Hridaya for treatment of *Ardhavabhedaka* on various scientific parameters to evolve a safe, effective, readily available and economic treatment protocol.

## MATERIALS AND METHODS

Following materials and methods were adopted for conducting the present research project.

### Selection of Cases/ Patients

The study was conducted on 33 clinical and pathological diagnosed patients of Migraine. The patients were selected from O.P.D. and I.P.D. of National Institute of Ayurveda, Jaipur and S.M.S. Medical College & Hospital, Jaipur.

### Sampling Technique

In the present study 30 clinically diagnosed patients of *Ardhavabhedaka* (Migraine) were selected and randomly divided into three groups.

- Group A- In this group 10 patients were registered for *Kumkumadi Ghrita Nasya Karma*.
- Group B - In this group 10 patients were registered for *Dashmoola-Shrita Ksheera Shirodhara Karma*.
- Group C - Control group of 10 patients were on allopathic regimen.

The patients were selected randomly irrespective of, sex, religion, education and occupation etc.

**Duration of Trail:** 21 days in each group

**Nasya Dose:** 6 drops in each nostrils

**Shirodara with duration:** continuous pouring of 2 lt. *Dashmoola-Shrita Ksheera* for 45 min/day.

**Follow up:** Follow up was carried out for 1 month after the completion of treatment to see the long standing effect of the therapy.

### Diagnostic Criteria's Adopted

- Age: 15 to 50 years.
- Patients presenting with signs and symptoms of Migraine described as per Ayurvedic texts and Modern texts were included in the study. For this purpose a special research proforma was prepared as per the Modern and Ayurvedic view.
- The diagnosis of the disease was done on the basis of clinical manifestations like recurrent

attacks of headache, mostly unilateral in nature, variable in intensity, frequency and duration with or without nausea, vomiting, photophobia, phonophobia and vertigo.

### Inclusion Criteria

- Age between 15 to 50 years.
- Patients presenting with signs and symptoms of Migraine described as per Ayurvedic and modern science.

### Exclusion Criteria

- Pregnant and lactating women.
- Patients suffering from major disease e. g. tuberculosis, cancer, diabetes mellitus, heart disease, hypertension etc.
- Ophthalmoplegic migraine.
- Complicated migraine.
- Secondary Headache caused by sinus headache, meningitis, brain tumour, encephalitis, cervical spondylitis, refractive error and increased intra ocular pressure.
- Patients using drugs for any other systemic illness.

### Discontinuation criteria

- Aggravation of symptoms.
- Patients not willing to continue.

### Selection of drug

The drug selected for the present study is in group A *Kumkumadi Ghrita* [7] 6 drops in each nostrils for *Nasya Karma* and in group B *Dashmool shrita Ksheera Shirodhara* [8] for *Shirodhara* and in group C Propranolol 40 mg bd and Diclofenac 50 mg bd for 21 days. The Ayurvedic drugs were prepared in the pharmacy, National Institute of Ayurveda, Jaipur and allopathy drugs were purchased from drug market.

### Investigations Performed

Following investigations were advised-

- Blood for CBC, ESR
- Vision test

### Criteria for Assessment Subjective Improvement

Improvement in the following subjective sign and symptoms are

**Table-1: Table 1: Scoring of Clinical Symptoms**

Criteria	Symptoms	Score
<b>Intensity of Headache</b>	No Headache	0
	Mild headache which doesn't interrupt patient's regular activities.	1
	Moderate headache which interrupt patient's activities & diverting his/her concentration.	2
	Severe headache in which patient is unable to perform his/her regular work.	3
	Severe headache due to which patient prefers to be in bed/dark room.	4
<b>Painless interval</b>	No reoccurrence of pain	0
	> 15 days	1
	> 7 days - < 15 days	2
	> 3 days - < 7 days	3
	< 3 days	4
<b>Duration of Headache (hours/ days)</b>	Nil	0
	1-6 hours/day	1
	7-12 hours/day	2
	13-18 hours/day	3
	18-24 hours/day	4
<b>Nausea</b>	No nausea	0
	Occasionally	1
	Moderate nausea, but does not disturb the routine work	2
	Severe nausea, disturbing routine work	3
	Severe enough, small amount of fluid regurgitating from mouth	4
<b>Vomiting</b>	No vomiting	0
	Only if headache dose not subside	1
	Vomiting 1-2 times	2
	Vomiting 2-3 times	3
	Forced to take medicine to stop vomiting	4
<b>Photophobia</b>	No photophobia	0
	Very mild photophobia	1
	Photophobia on exposure to sun light/bright light	2
	Photophobia on exposure to indoor light.	3
	Severe Photophobia in which patient unable to open the eye.	4
<b>Phonophobia</b>	No phonophobia	0
	Very mild phonophobia	1
	Moderate phonophobia	2
	Severe phonophobia	3
	Severe Phonophobia which force to take medicine	4
<b>Vertigo</b>	Nil	0
	Feeling of giddiness	1
	Patient feels as if everything is revolving	2
	Revolving signs + black outs	3
	Unconscious	4
<b>Visual disturbance</b>	Nil	0
	Mild	1
	Moderate	2
	Severe	3
	Very severe	4

**OBSERVATIONS**

For the clinical study, 33 clinically diagnosed and confirmed cases of Migraine were registered on the basis of a specially designed performa prepared for the purpose. Out of 33 patients, 3 patients discontinued the treatment. In group A, 11 patients were registered and 01 patients discontinued the treatment, in group B, 12 patients were registered and 02 discontinued the

treatment and in group C 10 patients were registered, and total 30 patients completed the treatment.

All the patient treated *Nasya Karma* with *Kumkumadi Ghrita* and *Shirodhara dhara* with *Dashmoola Shrit Kshir* were very well and no side or toxic effects in these trial were observed.

The observations made on the 33 patients of *Ardhavybedaka* of this series showed that maximum number of patients were of age group of 21 – 30yrs (42.4%), Females (63.6%), Hindu (72.7%), Graduate and Higher Secondary passed (24.2%), Married (66.6%), House wives (39.4%), Student(36.3%), Middle class (90.9%), Urban habitat (75.6%), Vegetarian (60.6%). Majority of the patients had disturbed sleep (66.6%), *Vata-pitta prakriti* (51.5%), *Rajas prakriti* (72.7%), *Madhyama Sara* (84.8%), *Madhyama Samhanana* (72.7%), *Madhyama Satmya* (60.6%), *Madhyama Satva* (57.6%), *Madhyama Pramana* (81.8%), *Madhyama Abhyavaharana Shakti* (63.6%), *Madhyam Jarana shakti* (63.6%), followed by *Madhyama Vyayama shakti* (60.6%). The maximum *nidanans* (etiological factors) observed in patients were *Anashana* (63.6%), *Ratrijagarana* (60.6%), *Chinta* (57.6%), *Vishamashana* (51.5%) and *Vega sandharana* (42.4%). The chief complaints reported from the patients were Headache (*Shirahshoola*) (100%), Nausea (66.7%), Vomiting (60.6%), Photophobia (66.7%), Phonophobia (72.7%), vertigo (54.5%) and Visual disturbance (42.4%).

Maximum patients were having unilateral headache (90.9%), Throbbing type of headache (57.6%). Severe intensity of headache was seen in (66.7%) with chronicity of 2 years (39.4%). The duration 7-12 hours/day was seen in maximum (48.5%) with episode interval >3 days - < 7 days in 39.4% of patients.

**RESULTS**

The clinical data presented here is based on the 30 patients of trial work.

**Effect of therapy on chief complaints**

**In Group A** (Wilcoxon matched-pairs test) (n=10) (Table 2)

The present study shows 68.75% relief in Intensity of pain (*shirshool*) which was highly significant statistically (p =0.002), while 69.56% & 66.66% relief in episodic interval and duration of headache respectively was observed which was also highly significant statistically (p =0.002). The study also shows 68.86% relief in nausea which was

significant statistically (p = 0.0156) and 68.75% relief in vomiting which was also significant statistically (p =0.0313), 69.23% of improvement in both photophobia and phonophobia was observed which was statistically significant (p = 0.156) and highly significant (p= 0.078) respectively, whereas 71.42 relief was seen in both the symptom of visual disturbance and vertigo which was also non significant statistically (p= 0.125, p = 0.0625 respectively).

**In Group B** (Wilcoxon matched-pairs test) (n=10) (Table 3)

The present study shows 37.93% relief in intensity of pain (*shirahshoola*) which was highly significant statistically (p = 0.0039) and 41.1% relief in episodic interval which was significant statistically (p=0.0156), while 48% relief in duration of headache which was also significant statistically (p = 0.0156). The study also shows 41.66% relief in nausea & 33.33% relief in vomiting which were non significant statistically (p=0.0625) and significant statistically (p = 0.0313) respectively. 46.15% improvement in photophobia and 50% in phonophobia both were statically significant (p=0.0156) where as 45.45 % & 50% relief was observed in the symptom of visual disturbance & vertigo which were found non significant statistically (p=0.0625 & 0.125 respectively).

**In Group C** (Wilcoxon matched-pairs test) (n=10) (Table 4)

The present study shows 75.86% relief in intensity of pain (*shirahshoola*) which was highly significant statistically (p = 0.002) and 45% relief in episodic interval which was also highly significant statistically (p=0.0078), while 76% relief in duration of headache which was also highly significant statistically (p = 0.002). The study also shows 81.81% relief in nausea which was significant statistically (p = 0.0156) and 75% relief in vomiting which was highly significant statistically (p =0.0078), 75% improvement in photophobia and 80% in phonophobia which were statically significant (p=0.0156) and highly significant statistically (p=0.0039) respectively where as 80% & 75% relief was observed in the symptom of visual disturbance & vertigo which were found non significant statistically (p=0.0625).

**Table 2: Effect of Kumkumadi ghrita Nasya in 10 patients of Migraine in group A**

Symptoms	Mean Value			% relief	SD	SE ±	p	Remarks
	BT	AT	D					
Intensity of pain	3.20	1.0	2.20	68.75%	0.78	0.24	0.002	HS
Episodic interval	2.3	0.7	1.6	69.56%	0.51	0.16	0.002	HS
Duration of Headeche	2.4	0.8	1.6	66.66%	0.51	0.16	0.002	HS
Nausea	2.28	0.71	1.57	68.86%	0.53	0.20	0.0156	S
Vomiting	1.6	0.5	1.1	68.75%	0.87	0.27	0.0313	S
Photophobia	1.9	0.6	1.3	69.23%	0.48	0.18	0.0156	S
Phonophobia	1.62	0.5	1.13	69.23%	0.35	0.13	0.0078	HS
Visual disturbance	1.75	0.50	1.25	71.42%	0.50	0.25	0.1250	NS
Vertigo	1.40	0.4	1.0	71.42%	0.44	0.20	0.0625	NS

**Table 3: Effect of Kumkumadi ghrta Nasya in 10 patients of Migraine in group B**

Symptoms	Mean Value			% relief	SD	SE ±	p	Remarks
	BT	AT	D					
Intensity of pain	2.9	1.7	1.1	37.93%	0.56	0.17	0.0313	S
Episodic interval	1.7	1	0.7	41.17%	0.48	0.15	0.0156	S
Duration of Headache	2.5	1.3	1.2	48%	0.91	0.29	0.0156	S
Nausea	1.71	1	0.71	41.66%	0.48	0.18	0.0625	NS
Vomiting	1.5	1.0	0.5	33.33%	0.54	0.18	0.0313	S
Photophobia	1.62	0.9	0.8	46.15%	0.46	0.14	0.0156	S
Phonophobia	1.55	0.77	0.77	50%	0.44	0.16	0.0156	S
Visual disturbance	2.2	1.2	1.0	45.45%	0.44	0.20	0.0625	NS
Vertigo	1.6	0.8	0.8	50%	0.44	0.20	0.1250	NS

**Table 4: Effect of Kumkumadi ghrta Nasya in 10 patients of Migraine in group C**

Symptoms	Mean Value			% relief	SD	SE ±	p	Remarks
	BT	AT	D					
Intensity of pain	2.9	0.50	2.2	75.86%	0.78	0.24	0.0020	HS
Episodic interval	2.0	1.1	0.9	45.0%	0.56	0.17	0.0078	HS
Duration of Headache	2.5	0.6	1.9	76%	0.73	0.23	0.0020	HS
Nausea	1.57	0.28	1.29	81.81%	0.48	0.18	0.0156	S
Vomiting	1.5	0.375	1.125	75%	0.64	0.22	0.0078	HS
Photophobia	1.71	0.42	1.28	75%	0.48	0.18	0.0156	S
Phonophobia	1.66	0.33	1.33	80%	0.5	0.16	0.0039	HS
Visual disturbance	2	0.4	1.6	80%	0.54	0.24	0.0625	NS
Vertigo	1.6	0.4	1.2	75%	0.44	0.2	0.0625	NS

HS: Highly Significant, S: Significant, NS: Non-Significant

### Overall Effect of Therapy

The overall effect of therapy showed that in Group A, complete and moderate improvement was seen in 20% in each, 50% patients had marked improvement and 10% patients had mild improvement. In Group B, 20% patients had marked improvement, 50% patients had moderate improvement and 30% patients had mild improvement while in Group C, complete and moderate improvement was seen in 30% in each and 40% patients had marked improvement.

### DISCUSSION

Regarding the response of the treatment on symptoms in the patients of Group A, treated with Nasya therapy, it was found that there was highly significant response in symptoms of Intensity of pain, Episodic interval, Duration of headache and Phonophobia which may be because the drug administered through nose reaches the *Shringataka Marma* and spreads throughout *Murdha, Netra, Shrotra* and *Kantha* through their *Siras (Shringataka Marma is a Sira Marma and formed by the Siras of Nasa, Akshi, Jivha and Shrotra)*. Thereby eliminates the morbid Dosha of *Urdhwa Jatru* and expels them from the *Uttamanga* and nutritive part of *nasya* is nourishes the *shirah* (head) [9] *Tikta rasa* and *usna guna* of *Kumkuma (Crocus sativus)* [10] have *Sroto-shodhaka* property, which helps in expelling the morbid *doshas*. *Tikta rasa* also shows its *Shoshana Karma*, more particularly *Kleda Shoshana* and *Shlesma Prashamana* properties [11] and significant response in symptoms of Nausea, Vomiting and Photophobia was found it may

be because of *Sheeta Virya* present in *Ghrta* [12] and *Sharkara* [13] pacify the *Pitta dosha* which is responsible for nausea, vomiting & Photophobia.

In Group-B patients, treated with *Shirodhara* therapy, highly significant changes were found in non of the symptoms, only significant changes were found in Intensity of pain, Episodic interval, Duration of Headache, Vomiting, Photophobia, Phonophobia because of the continuous pouring of medicated milk in a relaxed and comfortable position has an effect, which can be near compared to the cardling of a mother to her child. This acts as an sedative and soothing effect to the brain and induces sleep. Also the medicated milk enters into the circulation acts as *vatahar* effects and imbalance of *Prana, Udana* and *Vyana Vayu, Sadhaka Pitta* and *Tarpaka Kapha* can produce stress and tension. *Shirodhara* re-establishes the functional integrity between these three subtypes of *Dosha* through its mechanical effect and *dashmoola* [14] has potent *Tridoshaghna* property specially *Vat-kapha Shamaka* property, which is the main culprit in *Ardhvbhedaka*. Thus over all it pacifies *Vata, Vata-kapha Dosha or Tridosha* and *Ardhvbhedaka* being a *Vata Pradhana Vyadhi (Vata-kapha(Ch.) or Tridoshaja (Su.))*, there is every possibility of *Samprapti Vighatana* of *Ardhvbhedaka Roga*.

In Group C patients, treated with *Propranolol* and *Diclofenac* (Standard control group), statistically highly significant changes were found in maximum 5 symptoms out of 10 symptoms i.e. Intensity of pain,



Episodic interval, Duration of headache, Vomiting and Phonophobia and significant changes were found in Nausea, Photophobia. Diclofenac is directly indicated in the treatment of acute migraines and Propranolol (non-selective beta bloker) is indicated in Migraine prophylaxis.

### CONCLUSION

It is concluded that *Kumkumadi Ghrita Nasya* was more effective in alleviating symptoms of *Ardhavabhedaka* (Migraine) than *Dashmool shruta ksheer Shirodhara*. Allopathic drugs were slightly more effective than *Kumkumadi Ghrita Nasya* except relief in episodic interval, Allopathic drugs were lesser effective than *Nasya*. Research showed long term sustained relief as evident from 30 Days follow up study. Prolongation of therapy may provide better results. No adverse effect of the trial drug was observed during the study.

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## Research Submission

# Complementary and Alternative Medicine Use Among Adults With Migraines/Severe Headaches

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**Objective.**—Our objective was to determine patterns, reasons for, and correlates of complementary and alternative medicine (CAM) use by US adults with migraines/severe headaches.

**Background.**—While many patients with chronic conditions use CAM, little is known about CAM use by adults with migraines/severe headaches.

**Methods.**—We compared CAM use between adults with and without self-reported migraines/severe headaches using the 2007 National Health Interview Survey (n = 23,393), a national cross-sectional survey.

**Results.**—Adults with migraines/severe headaches used CAM more frequently than those without (49.5% vs 33.9%,  $P < .0001$ ); differences persisted after adjustment (adjusted odds ratio = 1.29, 95% confidence interval [1.15, 1.45]). Mind-body therapies (eg, deep breathing exercises, meditation, yoga) were used most commonly. More than 50% of adults with migraines/severe headaches reporting CAM use had not discussed it with their health care provider. Nonetheless, those with migraines/severe headaches used CAM more often than those without because of provider recommendation and because conventional treatments were perceived as ineffective or too costly. Correlates of CAM use among adults with migraines/severe headaches included anxiety, joint or low back pain, alcohol use, higher education, and living in the western USA. Only 4.5% of adults with migraines/severe headaches reported using CAM to specifically treat their migraines/severe headaches.

**Conclusions.**—CAM is used more often among adults with migraines/severe headaches than those without. However, few report using CAM to specifically treat migraines/severe headaches. Mind-body therapies are used most frequently. Further research is needed to understand the effectiveness and mechanisms of CAM treatments in adults with migraines/severe headaches.

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**Conflicts of Interests:** Dr. Wells reports no conflicts of interest. Dr. Bertisch reports no conflicts of interest. Dr. Buettner reports speaking at Harvard Medical School Continuing Medical Education and hospital affiliated programs focused on guiding health care providers on judging the evidence on, and assessing the risks and benefits of, herbs and dietary supplements in clinical practice. She has received honorarium for some of these programs (total <\$500/year). Dr. Phillips reports no conflicts of interest. Dr. McCarthy reports no conflicts of interest.

**Key words:** epidemiology, prevalence studies, migraine, severe headache, complementary and alternative medicine, mind–body medicine

**Abbreviations:** CAM complementary and alternative medicine, CoQ10 Coenzyme Q10, ER emergency room, NHIS National Health Interview Survey

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Migraine headaches afflict 13% of the US population.<sup>1</sup> The personal and societal burden is enormous, affecting quality of life<sup>2,3</sup> and costing the USA \$11 billion annually.<sup>4</sup> Despite available conventional treatments, many patients with migraines fail to achieve optimal control or have unacceptable medication side effects.

Complementary and alternative medicine (CAM) includes both complementary therapies used as an addition to conventional treatments and alternative treatments used instead of conventional therapies, although adults with migraines rarely use only alternative treatments.<sup>5</sup> The National Institutes of Health defines CAM as a group of diverse medical and health care systems, practices, and products that are not generally considered conventional medicine.<sup>6</sup> A prior national survey showed that adults with headaches judged CAM therapies to be more helpful than conventional care for treatment of headaches.<sup>7</sup> Previously, we reported that adults with common neurological conditions used CAM more frequently than those without (44.1 vs 32.6%,  $P < .0001$ ).<sup>8</sup> However, little is known about the patterns of CAM use in adults with migraines. Only a few prior surveys have examined CAM use in patients with headaches, and most were conducted in outpatient headache centers with small samples.<sup>5,9-14</sup> Knowing the prevalence and patterns of use of CAM in adults with migraines will help to characterize areas of potential underuse and barriers to use, as well as potential risks of CAM therapies in adults with migraines. Further, recognizing discrepancies between the scientific evidence and the prevalence of CAM use for patients with migraines may aid in our understanding of the medical and psychosocial needs of patients with migraines and target future areas of research. In this context, we analyzed the 2007 National Health Interview Survey (NHIS) to examine the patterns of CAM use in adults with migraines/

severe headaches in the USA. We describe the types of CAM therapies used by adults with migraines/severe headaches, and explore their reasons for use, disclosure to health care providers, and correlates of CAM use.

## METHODS

**Data Source.**—The NHIS is an annual nationally representative health survey of the civilian US population that was designed to obtain national estimates of health status, prevalence of medical conditions, and health care access and utilization.<sup>15</sup> NHIS is made publicly available, which we accessed via the Centers for Disease Control and Prevention's National Center for Health Statistics website.<sup>16</sup> NHIS employs a multistage stratified sampling design to select households for face-to-face interviews, conducted in English and/or Spanish.<sup>15</sup> Hispanic, Asian, and African American populations are oversampled to obtain more precise estimates for these populations. One adult, aged  $\geq 18$ , was randomly selected from each household to answer the Sample Adult questionnaire. In 2007, NHIS administered an alternative medicine supplement to better understand the use of CAM therapies.<sup>15</sup> Participants were asked, "During the past 12 months, have you used (specific therapy)?" The final adult sample included 23,393 respondents, with an overall response rate of 67.8%.<sup>15</sup>

**Migraines/Severe Headaches.**—Sampled adults were asked, "In the past three months, did you have a severe headache or migraine?"

**Outcomes of Interest.**—Our primary outcome was use of at least 1 CAM therapy within the previous 12 months, excluding prayer, vitamin use, special diets, and traditional healers, exclusions common in epidemiological studies on CAM use. CAM therapies were grouped into 4 broad categories: alternative medical systems (Ayurveda, acupuncture, homeopathy, natur-

opathy), manipulation/bodywork therapies (massage, chiropractic care, Feldenkreis, Alexander technique), biologically based therapies (herbal/other supplements, but not common vitamins or minerals; chelation therapy), and mind-body therapies (biofeedback, energy healing, hypnosis, tai chi, yoga, qi gong, meditation, guided imagery, progressive relaxation, deep breathing exercises). Among the herbal/other supplements, we further explored use of herbs and supplements commonly promoted for treatment of migraines, including feverfew and Coenzyme Q10.

For each therapy used in the previous year, respondents were asked about reasons for CAM use and disclosure to conventional practitioners. Respondents then answered yes/no to 7 items: (1) to improve or enhance energy; (2) for general wellness/general disease prevention; (3) to improve/enhance immune function; (4) because conventional medical treatments did not help; (5) because conventional medical treatments were too expensive; (6) it was recommended by a health care provider; (7) it was recommended by family, friends, or co-workers. Adults who reported use of a specific CAM therapy were then separately asked, "For what health problems or conditions did you use [CAM therapy]?"

**Correlates of CAM Use.**—We considered potential correlates of CAM use reported previously.<sup>17,18</sup> Sociodemographic characteristics included sex, age (18-24, 25-44, 45-64, 65-74, and  $\geq 75$ ), race/ethnicity (non-Hispanic white, non-Hispanic black, Hispanic, Asian, other), region of US residence (north-east, mid-west, south, west), birthplace (US born, foreign born), educational attainment (<high school, high school, >high school), imputed family income provided by NHIS<sup>19</sup> (\$0-19,999; 20,000-34,999; 35,000-64,999; and  $\geq 65,000$ ) and marital status (married/living with partner, widowed, divorced/separated, never married). Potential indicators of illness burden included perceived health status (excellent/very good/good, fair, poor), presence of functional limitations (difficulty performing any of the following independently: walking 3 city blocks, walking up stairs, standing for 2 hours, using fingers to grasp small objects, going shopping, or participating in social activities), number of emergency room (ER) visits in past year (0, 1, 2+), self-reported medical conditions (diabetes,

cancer, coronary artery disease, myocardial infarction, hypertension, hyperlipidemia, neck pain, insomnia, arthritis, joint pain, low back pain, depression, anxiety). We did not include neck pain or insomnia because of concerns that they may be on the causal pathway for migraine. Indicators that might alter access to care included insurance status (uninsured, Medicare, Medicaid, private, other), delayed care because of worries about cost or because they could not afford it. Health habit measures included smoking status (current, former, never), physical activity, and alcohol intake. Physical activity was categorized as high (vigorous activity 2 times/week or moderate activity 4 times/week), moderate (vigorous activity 1 time/week or moderate activity 1-3 times/week), or low (no vigorous or moderate activity/week) using validated methods.<sup>20</sup> Alcohol intake was categorized as abstainer (<12 drinks/lifetime or a former drinker/none currently), light ( $\leq 3$  drinks/week), moderate (>3 and  $\leq 7$  drinks/week for women, >3 and  $\leq 14$  drinks/week for men) or heavy (>7 drinks/week for women and >14 drinks/week for men).<sup>21</sup>

**Statistical Analyses.**—We used bivariable analyses to compare adults with and without migraines/severe headaches. We estimated the prevalence of CAM use, reasons for and disclosure of use to health care providers, and the prevalence of using CAM therapies to specifically treat migraines/severe headaches. We performed multivariable logistic regression to determine whether differences in CAM use persisted between adults with and without severe headaches/migraines after adjusting for sociodemographic characteristics, illness burden, access to care, and health habits. We used a stepwise backward elimination process that considered factors associated with CAM use with a *P* value <.15 in bivariable analyses and those found to be important in previous studies.<sup>17,18</sup> Factors with a Wald statistic *P* value of  $\leq .05$  and conditions that were considered a priori and have been shown to be important in the literature were retained in the final model.<sup>17,18</sup> We considered potential confounding by examining a 10% change in the estimated  $\beta$ -coefficient for factors that did not meet these criteria. Next, we used logistic regression (as described above) to identify independent correlates of CAM use in adults with migraines/severe head-

aches adjusting for sociodemographic characteristics, illness burden, access to care, and health habits. Prevalence estimates were computed after excluding missing data; no individual variable had missing data more than 4%. Multivariable models included respondents with complete data on all covariates. SAS-callable SUDAAN version 10.1 (Research Triangle Institute International, Research Triangle Park, NC, USA) was used to account for the complex sampling design and analyses were weighted to reflect national estimates.<sup>15</sup> The study was approved

for exemption by our institutional review board based on 45 CFR 46.101(b) (4) because of de-identified data.

## RESULTS

**Sample Characteristics.**—Overall, 2886 adults (12.3%), an estimated 27.4 million US adults, reported a history of migraine/severe headache within 3 months. Table 1 and online Table S1 show that compared with adults without migraines/severe headaches, those with migraines/severe headaches were

**Table 1.—Characteristics of Adults by Migraines/Severe Headaches Status†**

Characteristic	With Migraine/Severe Headache (n = 2886)	Without Migraine/Severe Headache (n = 20,507)	Chi-square P Value
<b>Sociodemographics</b>			
Age (years)			<.0001
18-24	340 (13.1)	2153 (12.8)	
25-44	1351 (46.9)	7185 (35.5)	
45-64	978 (33.9)	6787 (34.1)	
65-74	133 (3.9)	2279 (9.3)	
75+	84 (2.1)	2078 (8.3)	
Sex			<.0001
Male	738 (29.1)	9624 (51.0)	
Female	2148 (70.9)	10,858 (49.1)	
Race/ethnicity			<.01
Non-Hispanic white	1714 (69.9)	12,183 (68.5)	
Non-Hispanic black	448 (10.7)	3172 (11.6)	
Hispanic	529 (12.7)	3665 (13.5)	
Asian	110 (3.6)	1097 (4.6)	
Other	85 (3.1)	365 (1.8)	
Education			<.05
< High school	544 (16.1)	3677 (15.4)	
High school	787 (28.7)	5732 (28.6)	
>High school	1537 (54.6)	10,837 (54.9)	
Imputed family income (\$)			<.0001
0-19,999	867 (22.6)	4858 (16.6)	
20-34,999	597 (19.9)	3910 (16.8)	
35-64,999	704 (25.9)	5455 (27.8)	
≥65,000	717 (31.6)	6259 (38.8)	
<b>Illness burden</b>			
History of medical conditions			
Hypertension	898 (29.4)	5945 (26.8)	.0500
Hyperlipidemia	8011 (26.9)	5001 (24.0)	<.01
Neck pain	1051 (36.1)	2053 (9.8)	<.0001
Arthritis	869 (30.1)	4225 (19.5)	<.0001
Joint pain	1345 (45.5)	5220 (25.1)	<.0001
Low back pain	1550 (52.3)	4515 (21.9)	<.0001
Anxiety	891 (30.6)	1707 (8.1)	<.0001

†Data are reported as samples sizes (weighted %). Percentages were weighted to reflect national estimates. Variables with missing data are: education (n = 260), hypertension (n = 27), hyperlipidemia (n = 102), neck pain (n = 25), insomnia (n = 35), arthritis (n = 47), joint pain (n = 29), low back pain (n = 27), depression (n = 50), anxiety (n = 46). Other variables of interest are published online, see Table S1.



**Table 2.—Prevalence of Complementary and Alternative Medicine (CAM) Therapies† Use in the Previous 12 Months**

Modality	With Migraine/Severe Headache (n = 2886)	Without Migraine/Severe Headache (n = 20,507)	Chi-square P Value
Any CAM use	1400 (49.5)	6765 (33.9)	<.0001
Mind–body therapies	858 (30.2)	3506 (17.2)	<.0001
Deep breathing exercises	630 (23.9)	2286 (11.7)	<.0001
Meditation	446 (16.8)	1708 (8.8)	<.0001
Yoga	229 (9.2)	1113 (5.9)	<.0001
Progressive relaxation	142 (5.6)	502 (2.7)	<.0001
Guided imagery	106 (4.2)	375 (2.0)	<.0001
Biologically based therapies	661 (23.7)	3323 (16.6)	<.0001
Herbal/other supplements‡	661 (26.7)	3320 (18.4)	<.0001
Manipulation based therapies	584 (20.6)	2556 (13.2)	<.0001
Chiropractic	339 (15.4)	1514 (9.5)	<.0001
Massage	371 (15.1)	1459 (8.3)	<.0001
Alternative medical systems	148 (5.2)	579 (2.8)	<.0001
Homeopathy	86 (3.4)	308 (1.6)	<.0001
Acupuncture	67 (2.4)	276 (1.4)	0.0016

†Data are reported as samples sizes (weighted %). Percentages were weighted to reflect national estimates.

‡Does not include common vitamins and minerals.

Estimates not presented because  $n < 50$ : Ayurveda, naturopathy, chelation, Feldenkrais, Alexander, biofeedback, hypnosis, qi gong, tai chi, energy healing.

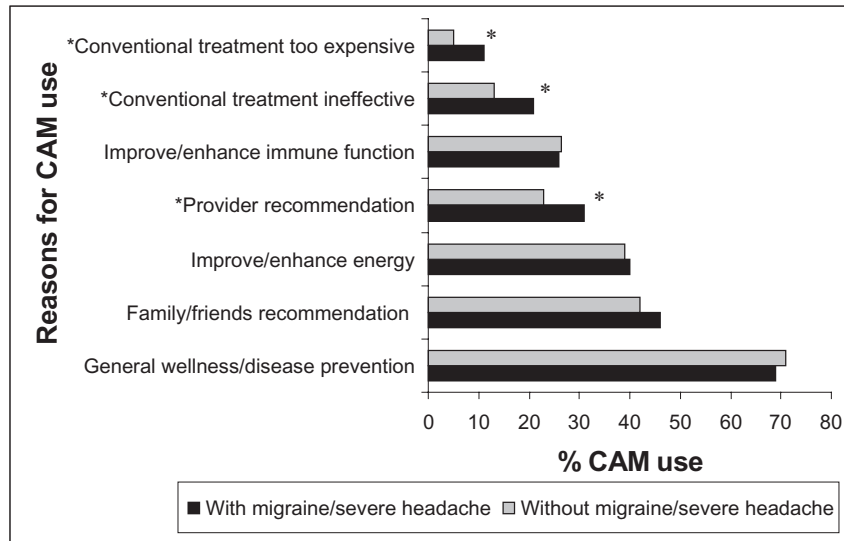
CAM = complementary and alternative medicine.

significantly more likely to be women, younger, have lower family incomes, perceive their health as fair or poor, have functional limitations, currently smoke, visit the ER in the prior year, report a history of hypertension, hyperlipidemia, insomnia, anxiety, depression, and other conditions associated with pain, and report having delayed their care because of worries about cost or because it was not affordable.

**Prevalence of CAM Use.**—Overall, 49.5% of US adults with migraines/severe headaches reported using at least 1 CAM therapy within the prior 12 months, representing an estimated 13.5 million adults, compared with 33.9% without migraines/severe headaches ( $P < .0001$ ) (Table 2). Adults with migraines/severe headaches remained more likely to use CAM than those without these conditions (adjusted odds ratio = 1.29, 95% confidence interval [1.15, 1.45]), after adjusting for age, sex, race/ethnicity, birthplace, imputed family income, educational attainment, insurance status, perceived health status, hyperlipidemia, diabetes, other pain syndromes, anxiety, smoking status, alcohol intake, physical activity level, number of ER visits in prior year, and delayed care because of worries about cost.

Among adults with migraines/severe headaches, mind–body therapies were used most frequently, followed by biologically based therapies; use of alternative medical systems were least common (Table 2). Deep breathing exercises and meditation were the individual mind–body therapies used most commonly; herbal/other supplements were the main biologically based therapy used; chiropractic care and massage were the main types of manipulation therapies used; and homeopathy and acupuncture were the main types of alternative medical systems used. Of note, biofeedback was reported by only 5 survey respondents with migraines/severe headaches. While a large percentage (26.7%) of adults with migraines/severe headaches reported use of herbal/other supplements, usage was split across 44 different supplements. Coenzyme Q10 (CoQ10) was used similarly between those with and without migraines/severe headaches (1.4 vs 1.3%, respectively) and feverfew was used by only 20 survey respondents, thus precluding further analyses.

**Reasons for and Disclosure of CAM Use.**—Among adults with migraines/severe headaches, when asked, “for what health problems or conditions did you use



**Figure.—Reasons for complementary and alternative medicine (CAM) use among adults with and without migraines/severe headaches. \* $P < .0001$  by chi-square analysis.**

[CAM therapy]?” only 131 respondents (4.5%) reported using a CAM therapy to specifically treat their severe headaches/migraines. The top 5 health problems cited for use of CAM were back pain, neck pain, anxiety, arthritis, and joint pain. Other than the use for migraines/severe headaches, these top 5 were the same among adults with and without migraines/severe headaches. In a separate question, for both adults with migraines/severe headaches and those without, the main reasons reported for CAM use were: general wellness/disease prevention, family/friends recommendation, and to improve/enhance energy (Figure). Adults with migraines/severe headaches used CAM more often than those without because their provider recommended it (31.3% vs 23.3%), conventional treatment was ineffective (21.0% vs 12.8%), and conventional treatment was too expensive (11.1% vs 5.2%) ( $P < .0001$  for all comparisons) (Figure). Overall, only 43% of all CAM users discussed their CAM use with their health care provider. Adults with migraines/severe headaches had a somewhat higher disclosure rate than those without (47% vs 42%,  $P < .0001$ ).

**Correlates of CAM Use Among Adults With Migraines/Severe Headaches.**—Independent correlates of higher CAM use among adults with migraines/severe headaches included higher educational attainment, a history of anxiety, joint or low

back pain, light or heavy alcohol use, and living in the western USA. (Table 3). Factors independently associated with a lower likelihood of CAM use included being male, non-Hispanic black or Hispanic, being foreign born, having Medicaid, a history of hypertension, or low physical activity.

## DISCUSSION

Nearly 1 out of 2 US adults with migraines/severe headaches use CAM, a substantially higher rate than that observed among adults without these conditions. Mind-body therapies (eg, deep breathing exercises, meditation, and yoga), are used most frequently, whereas alternative medical systems (ie, homeopathy and acupuncture) are used the least. Despite frequent CAM use, less than 5% of respondents reported using CAM as a treatment specifically for migraines/severe headaches. Besides their treatment of migraines/severe headaches, adults with migraines/severe headaches used CAM most commonly to treat back pain, neck pain, anxiety, arthritis, and joint pain. Adults with migraines/severe headaches are more likely than those without to report using CAM because their provider recommended it or because they perceived conventional treatments as ineffective or too expensive. More than 50% of adults with migraines/severe headaches did not discuss CAM use with their health care provider. Significant correlates of CAM use

**Table 3.—Independent Correlates of CAM Use Among Adults With Migraines/Severe Headaches (n = 2707†)**

Factors	Adjusted‡ Odds Ratio	95% Confidence Interval
Sex		
Male	0.67	[0.53, 0.85]
Female	1.00 (reference)	
Race/ethnicity		
Non-Hispanic white	1.00 (reference)	
Non-Hispanic black	0.51	[0.38, 0.68]
Hispanic	0.60	[0.44, 0.83]
Asian	1.01	[0.59, 1.73]
Other	1.57	[0.73, 3.34]
Education		
<High school	1.00 (reference)	
High school	1.42	[1.04, 1.92]
>High school	2.09	[1.56, 2.80]
Region of residence		
South	1.00 (reference)	
North-east	1.08	[0.83, 1.40]
Mid-west	1.33	[0.99, 1.78]
West	1.63	[1.24, 2.14]
Being foreign born	0.60	[0.42, 0.86]
Anxiety	1.61	[1.27, 2.04]
Hypertension	0.77	[0.61, 0.97]
Joint pain	1.67	[1.37, 2.05]
Low back pain	1.33	[1.06, 1.66]
Insurance		
Private	1.00 (reference)	
Uninsured	0.97	[0.73, 1.28]
Medicare	0.90	[0.54, 1.47]
Medicaid	0.58	[0.38, 0.88]
Other	1.33	[0.94, 1.87]
Physical activity level		
Low	0.44	[0.35, 0.55]
Moderate	0.78	[0.59, 1.04]
High	1.00 (reference)	
Alcohol intake		
Abstainers	1.00 (reference)	
Light	1.32	[1.05, 1.66]
Moderate	1.16	[0.76, 1.75]
Heavy	1.83	[1.05, 3.19]

†Model was based on observations with complete data; 179 observations were excluded because of missing data on 1 or more covariates.

‡Adjusted for sociodemographic characteristics, illness burden, access to care, and health habits.

CAM = complementary and alternative medicine.

among adults with migraines/severe headaches include a history of anxiety, joint or low back pain, alcohol use, higher education, and residing in the western USA.

The prevalence of migraine in NHIS is consistent with previous reported national estimates.<sup>1</sup> The unad-

justed prevalence of CAM use among adults with migraines/severe headaches in this survey (49.5%) also falls within the wide range of published rates (29-84%) for adults with headaches/migraines.<sup>5,9-11,13,14</sup> Most previous studies have examined the lifetime prevalence of CAM use and not prevalence in the past year. Of the few prior surveys that reported both the lifetime and last-year prevalence,<sup>5,10</sup> the prevalence of use in the previous year was notably lower than lifetime CAM use (31% vs 17% and 29% vs 10%, respectively). Thus, our findings that about 1 out of 2 adults with migraines/severe headaches have used CAM in the previous year reflect a substantially higher prevalence than those reported previously. Furthermore, use of specific therapies differed from previous findings, ie, prior surveys examining CAM use showed acupuncture and homeopathy to be the most commonly used therapies among adults with headaches.<sup>5,12</sup> The variation in prevalence estimates is likely due to methodological differences including different definitions of CAM use, different study locations (eg, specialty headache clinics vs general population; countries<sup>22</sup>) and in different types and severities of headaches examined. However, beyond these methodological differences, the prevalence of CAM use in adults with migraines/severe headaches is higher than that found in similar analyses among the general population (38%),<sup>23</sup> overweight/obese adults (36%),<sup>24</sup> or adults with cardiovascular disease (36%).<sup>18</sup> Furthermore, our findings in adults with migraines/severe headaches are similar to those previously reported among adults with other common neurological conditions, although the overall prevalence of CAM use is higher among adults with migraines/severe headaches.<sup>8</sup> The higher CAM use found among adults with migraines/severe headaches compared with other populations likely represents a multitude of different factors, such as the significant disease burden, the lack of 100% effective conventional treatments, and the perceived benefit of CAM therapies for migraine/severe headache sufferers. Similar to other studies, we found that CAM use was higher among women and those with higher education and incomes.<sup>8,17,18</sup>

While our findings demonstrate CAM use is high among adults with migraines/severe headaches, few

adults reported using CAM to specifically treat migraines/severe headaches. This finding conflicts with prior surveys showing rates of 29-84% of CAM use for the specific treatment of headaches/migraines.<sup>5,9-11</sup> However, most of these estimates are based on patients seen in dedicated headache centers, where more patients have severe headaches; those with more severe headaches are more likely to seek out CAM therapies.<sup>5</sup> Additionally, in the USA, patients may view their use of CAM as holistic rather than for the specific treatment of a medical condition. Our findings show that individuals with migraines/severe headaches cited the main reason for CAM use as general wellness/disease prevention. For example, stress is a well-known trigger for headaches,<sup>25</sup> and pharmacological treatments often do not address stress. Thus patients with migraines may seek non-pharmacological treatments for stress-reduction and relaxation to improve their general health.<sup>11,26</sup> Furthermore, the most frequently used CAM therapies (deep breathing exercises, meditation, herbal/other supplements) are both self-administered and low-cost treatment options. The most common therapies used by adults with migraines/severe headaches are similar to those reported in the general population<sup>23</sup> and in other select populations.<sup>8,18,24</sup>

While CAM use among adults with migraines/severe headaches is popular, evidence to support its use for migraines is limited, except for mind-body medicine, which has the strongest evidence.<sup>27</sup> Furthermore, relaxation therapies and biofeedback are recommended by the US Headache Consortium Guidelines for the treatment of migraines.<sup>28</sup> Evidence for the guidelines is based on the Agency for Health Care Policy and Research Technical Review, which evaluated the evidence for behavioral and physical treatments for migraine and found relaxation training (progressive muscle relaxation, autogenic training, meditation or passive relaxation), electromyography (EMG) biofeedback, and thermal biofeedback combined with relaxation training to have high quality (Grade A) evidence from well-performed research studies for the prevention of migraine.<sup>29</sup>

There is a discrepancy between reported CAM use and evidence-based CAM therapies. For example, the number of NHIS respondents with migraines/

severe headaches who reported using biofeedback was insufficient to compute a reliable estimate, despite the strong evidence to support the use of biofeedback for migraine. Likewise, although a recent Cochrane review of acupuncture for migraine prophylaxis concluded that migraine patients may benefit from acupuncture,<sup>30</sup> we found only 2.4% of adults with migraines/severe headaches reported using acupuncture. While there is some evidence for the use of CoQ10,<sup>31</sup> feverfew,<sup>32</sup> and butterbur,<sup>33</sup> very few adults in this survey reported use of CoQ10 or feverfew; use of butterbur extract (*Petasites hybridus* root) was not queried. Conversely, use of massage was reported in 15.1% of adults with migraines/severe headaches, and while a survey has shown that massage is perceived to be one of the most efficacious CAM treatments for migraines,<sup>5</sup> controlled trials evaluating the efficacy of massage for migraine are lacking.

Reasons for the discrepancies between what CAM therapies patients are using and the evidence to support their use for migraines remain unclear, and may represent factors at the patient, practitioner, and systems level. For example, the underuse of biofeedback may relate to a lack of guideline dissemination to practitioners, the limited availability of biofeedback, or the high level of patient participation and commitment required for its success. Furthermore, the notable use of massage among adults with migraines without scientific evidence of its efficacy is important to recognize. This may reflect either a therapy that patients find beneficial that has not yet been studied rigorously, or a possible therapy that may provide benefits that are not otherwise addressed in headache management. Recognizing these discrepancies is important and may help guide physician discussions with patients as well as identify areas in need of future research.

Another important finding is that most adults with migraines/severe headaches do not discuss their use of CAM with their providers. Clinicians should make an effort to ask patients about their CAM use, considering many adults with migraines/severe headaches use CAM because they feel conventional treatments are ineffective or too expensive (over 30%) and thus may be non-adherent to conventional interventions. Furthermore, clinicians should be aware of

all treatments that their patients use. Many patients use CAM because it is congruous with their values and beliefs about health and life,<sup>34</sup> and addressing patients' underlying goals and beliefs about their health may improve patient–doctor communication and ultimately patient care. Further, providers can counsel their patients on the evidence for CAM therapies for migraines, address potential options that may aid in the successful treatment of migraines, and monitor for side effects. Finally, the risks of CAM therapies in migraine patients need to be addressed. For example, patients need to be made aware of herb-drug interactions, and this can only occur if physicians query patients about their use of herbs and supplements. St. John's wort (*Hypericum perforatum*), an herb commonly used to treat depression, increases serotonin levels and may increase the risk of serotonin syndrome when taken concurrently with triptans.<sup>35</sup> The US Food and Drug Administration alerted providers in 2006 regarding the risk of serotonin syndrome when triptans are combined with serotonergic agents.<sup>36</sup>

As a cross-sectional study, NHIS is limited in that it relies on self-reporting, and is susceptible to misclassification bias and ability to recall. Because both migraines and severe headaches are asked in a single survey item in NHIS, our analyses cannot discern the 2 conditions. Our analyses may underestimate the prevalence of adults with migraines/severe headaches, as well as adults using CAM for migraine treatment, as participants were asked to report on migraines/severe headaches experienced in the prior 3 months. We may also underestimate the prevalence of CAM use in the USA as not all CAM therapies are captured by NHIS. Moreover, respondents may have different interpretations of CAM therapies asked about in NHIS, such as deep breathing exercises. It is surprising that nearly 50% of adults with headaches use CAM, and yet so few attribute their CAM use to headaches. This may be due to limitations of the survey query process. It is also unclear how migraine/severe headache sufferers interpret this question. It is possible that they attribute their CAM use to another comorbid condition that may also be related to their headaches (eg, anxiety). Despite these inherent limitations, our findings are the most recent data available

on CAM use in adults with migraines/severe headaches in a nationally representative sample that is generalizable to the US adult population.

In summary, CAM use is significantly more common in US adults with migraines/severe headaches than those without, although few report use of CAM to treat migraines/severe headaches. Mind–body therapies are the most frequently used CAM therapy in adults with migraines/severe headaches. Given the high prevalence of use of CAM therapies in adults with migraines/severe headaches and the suggestive preliminary data, definitive randomized controlled trials are needed to understand the potential therapeutic benefits, mechanisms, side effects, and risks of CAM therapies in adults with migraines/severe headaches.

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## SUPPORTING INFORMATION

Additional Supporting Information may be found in the online version of this article:

**Table S1.**—Characteristics of Adults by Migraines/Severe Headaches Status†

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# Herbal Treatment of Epilepsy and Migraine

## Karta Purkh Singh Khalsa, DN-C, RH

Brain disorders are some of the most confounding conditions seen in clinical practice. They present in many different ways, with a cacophony of often confusing or contradictory symptoms and they commonly defy convenient or consistent diagnosis. Yet persons with these conditions often report dissatisfaction with conventional medical approaches and herbalists would be well served to develop familiarity with these disorders and their treatments.

Here we examine two of the most common neurological conditions seen in the clinic. In the United States, migraine and epilepsy are the most common disorders for which people present for neurologic consultation.<sup>1</sup>

Although epilepsy and migraine are challenging to treat with natural healing methods, such treatments have much lower potential for toxicity and adverse reactions, while promising a substantial degree of success and much improved patient comfort.

### Two Cold Conditions

Traditional herbal systems would definitely draw a parallel between these two groups of patients. Generally, both conditions are concentrated in the segment of the population with cold and dry physiology. People with this category of constitution tend toward nerve and brain disorders in general, and especially those of metabolic instability, lack of homeostasis, movement or motor disorders and pain syndromes. Epilepsy is characterized by dysregulated movement, and migraine manifests with a sudden onset, both typical of conditions experienced by those with cold, dry bodies. These people often have constipation.

Migraine and epilepsy are heterogeneous families of chronic conditions with markedly variable clinical features, natural histories, and treatment response patterns.<sup>2</sup> Each is characterized by episodes of neurologic dysfunction, sometimes accompanied by headache, as well as gastrointestinal, autonomic, and psychological features.<sup>3</sup> The aura is a potential feature of each condition. Each has an internationally recognized classification system.<sup>4</sup>

Historically, in the conventional medical paradigm, epilepsy and migraine have not generally been thought to be medically related, and conventional treatments are historically dissimilar. A potential association between the two diagnoses has been long discussed, but was not rigorously studied until the 1990s.<sup>5 6 7</sup> In the last decade, however, researchers have begun to report a seeming substantial overlap in these two disorders.

Statistically, because migraine is more common than epilepsy, the risk of epilepsy patients developing migraine is much higher than the risk of migraine patients developing epilepsy.

In 1994, Columbia University researchers found that migraine and epilepsy are strongly associated, independent of seizure type, etiology, age at onset, or family history of epilepsy.<sup>8</sup> They evaluated 1,947 patients with epilepsy over the age of 18, as well as 1,423 relatives of the patients, as part of a large study on the relationship between migraine and epilepsy. Findings indicated that more than 20 percent of people with epilepsy have migraines, compared to 11 percent of the general population.

The prevalence of epilepsy in people with migraine ranges from 1% to 17%, depending on study methodology, with a median of 5.9%, which is considerably higher than epilepsy's population prevalence of 0.5%.<sup>9</sup> Migraine risk was highest in patients with epilepsy due to head trauma.

Using proportional hazards analysis to control for years at risk and gender, the data confirm that rate ratio for migraine in epilepsy patients was 2.4. (Migraine is 2.4 times more common in people with epilepsy than in the general population.) These same researchers posit that the comorbidity of migraine and epilepsy may be the consequence of a state of neuronal hyperexcitability that increases the risk of both disorders.<sup>10</sup>

Among the epilepsy patients in the study who were diagnosed as having migraines, 56% had not been diagnosed with migraine by the physician treating their epilepsy. The researchers recommend that clinicians treating patients with either condition should be sensitive to the symptoms and familiar with the diagnostic practices for both disorders.<sup>11</sup> In the case of comorbid migraine and epilepsy, therapy with agents effective for both conditions should be considered. (Of course, the traditional herbal therapeutics perspective is that these conditions have similar cofactors and can be treated similarly in a constitutional approach.)

In 1996, Columbia University scientists looked at the possibility of a shared genetic susceptibility between epilepsy and migraine. With the exception of a positive association of increased risk of epilepsy in sons of females with migraine, the pattern of results was inconsistent with the hypothesis of a shared genetic susceptibility to the two conditions.<sup>12</sup> By 1999, researchers publishing in *Cephalgia* had found that fourteen percent of adult patients with seizures were identified with a diagnosis of migraine. They also found a direct relationship between migraine and epilepsy (a migraine-induced epilepsy) in 1.7% of the patients with seizures. Patients were at increased risk for both conditions if they had migraine with aura and catamenial epilepsy.<sup>13</sup>

As the years progressed, evidence for an association accumulated. By 2003, Bigal, Lipton and Silberstein at Columbia were reporting epidemiologic evidence that migraine and epilepsy are associated.<sup>14</sup> Further papers discussed the link and expanded the understanding of the association and the clinical features.<sup>15</sup><sup>16</sup><sup>17</sup> One of the most interesting angles has been the increasing use and effectiveness of anticonvulsant drugs in migraine.<sup>18</sup>

In 2006, Ludvigsson et al reported that children with migraine with aura have a substantial increased risk to develop subsequent epilepsy.<sup>19</sup>

### **The Recent View**

The contemporary point of view has come around to the same conclusion as traditional practitioners (albeit not based on the same rationale or constitutional perspective) - migraine and epilepsy are highly comorbid.<sup>20</sup><sup>21</sup> The cutting edge science is quite clear on this association, but physicians in the trenches have been slow to catch on.<sup>22</sup> It is now accepted that patients with one disorder are at least twice as likely to have the other.<sup>23</sup><sup>24</sup><sup>25</sup><sup>26</sup><sup>27</sup> In conventional medicine, comorbid disease presents challenges in differential diagnosis and concomitant diagnosis. In comorbid cases, the standard of diagnostic parsimony is not applicable. Individuals with one disorder are more likely, not less likely, to have the other.<sup>28</sup> From the traditional herbal point of view, though, the holistic overview is an advantage. The clinician can search for underlying constitutional similarities and treat the whole person.

In 2006, researchers writing in *Headache* studied one-hundred thirty-seven children and adolescents consecutively diagnosed with idiopathic migraine with and without aura and concluded that there is a clinical continuum between some types of migraine without aura and epileptic syndromes as entities, due to altered neuronal excitability with similar genetic substrates.<sup>29</sup>

More recent work has strengthened the genetic connection. A 2007 study looked at a large family with occipitotemporal lobe epilepsy and migraine and found a conclusive linkage of the traits to a single locus, suggestive of a common monogenic gene defect.<sup>30</sup>

Epilepsy and atypical migraine may share symptoms and even be difficult to differentiate on EEG.<sup>31</sup><sup>32</sup> Patients with comorbid epilepsy and migraine may not be aware of their headaches because the headaches are being effectively treated with an antiepileptic drug, obscuring a diagnosis of migraine. On the other hand, diagnostic interviews may lead to the over-diagnosing of migraine in some patients who actually have epilepsy.

### **Mechanism of an Association**

And how might these diseases be connected? Perhaps it is a simple unidirectional causal explanation. Migraine may precipitate epilepsy by inducing brain ischemia and injury. In that case, we would expect the incidence of migraine to be elevated before, but not after, the onset of epilepsy. Then again, epilepsy may initiate migraine by activating the trigeminovascular system. That would lead us to expect an excess risk of migraine after, but not before, the onset of epilepsy. The data, however, show an excess risk of migraine both before and after seizure onset, suggesting a rejection of both unidirectional causal models.<sup>33</sup><sup>34</sup><sup>35</sup>

Shared environmental risk factors may account for comorbidity. Head injury is a risk in both disorders. Risk is also significantly increased in people with idiopathic or cryptogenic epilepsy, so known environmental risk factors cannot account for the entire association.<sup>36</sup> Analyses of genetic factors are equivocal regarding possible genetic links, but so far the data seem to reject the idea that genetic susceptibility accounts for comorbidity.<sup>37</sup> Likely the observed comorbidity is multifactorial, but it seems probable that that an altered brain state (increased excitability) might increase the risk of both migraine and epilepsy and mainly account for comorbidity.

## Clinical Considerations and Comparisons

Health history is the chief means of differentiating between migraine without aura and epilepsy.<sup>38</sup> Migraine and epilepsy share many symptoms. Certain features are useful in distinguishing them.

Commonly, migraine attacks are of more gradual onset and longer duration than epileptic seizures. The first symptoms of migraine may not even include headache.<sup>39</sup> Nausea is more commonly associated with migraine, while prolonged confusion or lethargy after the episode suggests epilepsy.

Tonic or clonic movements are absent from migraine with aura, but differentiating it from epilepsy still can be tricky. The characteristics of the aura may help.<sup>40</sup> For example, the aura generally lasts longer than 5 minutes in migraine and less than 1 minute in epilepsy. The aura symptom profiles also differ. Positive motor features, and alteration of consciousness indicate an epileptic aura. A mix of positive and negative features, such as a scintillating scotoma (a spot of flickering light in the center of the visual fields that obscures vision and then expands into shimmering arcs of light), favors migraine.<sup>41</sup>

Colorless glittering scotomata and black-and-white zigzag patterns are typical of migraine. The regular angular patterns in the photopsias (perceived flashes of light) that accompany migraine correspond to the cortical structures that generate them.<sup>42 43 44</sup> In migraine, the sensory disturbances are paresthesias (pins and needles) that typically begin in the hand and move into the face and tongue over a period of 10 to 15 minutes.

In contrast, visual auras in epilepsy are primarily multicolored, with a circular or spherical pattern.<sup>45</sup> Epileptic visual auras last for only seconds, limiting the patient's opportunity to scrutinize and describe the hallucinations.<sup>46</sup> The aura is often concurrent with head or eye movement and alteration of consciousness.<sup>47</sup> The sensory aura in is briefer and often experienced as burning, cramping, stinging, aching, electric, or throbbing.

## Clinical Features of Migraine and Epilepsy

Clinical Features	Migraine	Epilepsy
Family History	Frequently positive for migraine	At times positive for epilepsy
Episode Onset	Gradual	Abrupt
Episode Duration	Hours	Minutes
Consciousness	Typically clear	Typically clouded
Aura	Sensory (typically visual), 20% of cases	Variable
Visual	Black and white, zig zag	Colored, spherical
Sensory	Paresthesias	Burning, throbbing
Nausea	Common	Uncommon
Diarrhea	Common	Uncommon
Olfactory	Less common	More common
Vertigo	More common	Less common
Memory Loss	Uncommon	Common
Postevent Lethargy	Common	Common
Depersonalization	Uncommon	Common
Aphasia	Uncommon (speaking is painful)	Common
Tonic or Clonic Movements	Uncommon	Common
EEG	Nonspecific abnormalities	Spikes and sharp waves

Table 1 Clinical Features of Migraine and Epilepsy

## Epilepsy

Epilepsy is a group of related disorders characterized by a tendency for recurrent seizures. By definition, seizures are abnormal movement or behavior and are caused by unusual electrical brain activity. Virtually any type of behavior that happens repetitively may indicate a seizure.

Fundamentally, it is brought on by recurrent, excessive, abnormal discharge of neurons. The disorder is characterized by sudden, brief attacks of altered consciousness, motor activity, sensory phenomena or inappropriate behavior. Seizures are a symptom of epilepsy, but not all persons who experience seizures have epilepsy, and not all persons diagnosed with epilepsy experience recognizable seizures. This nomenclature a bit slippery, and there is a fair amount of confusion surrounding appropriate diagnosis and the clinical features of



epilepsy. It is important to remember that epilepsy is a clinical diagnosis, and is not strictly defined by neurological measurements. Patients with abnormal brain electrical activity may have no symptoms that impair their lives.

Seizure disorder is a general term that describes any condition that involves seizures, but the term is so general as to not useful. “Seizure disorder” is often used as a euphemism for epilepsy.

Seizures are pretty common. Otherwise healthy people may have seizures under certain circumstances. About 9% of Americans will have at least one seizure of some type during their lives, while the lifetime risk of having a non-febrile epileptic seizure at some point in an average lifetime is between 2 and 5%.<sup>48</sup> As a chronic condition, epilepsy is relatively common, affecting 0.5% to 1% of the population. About 2.5 million Americans have epilepsy.

Provoked seizures are single seizures resulting from trauma, hypoglycemia, hyponatremia, high fever or substance abuse. Febrile seizures manifest during infancy, but children usually outgrow them by age six. Individuals who experience a single seizure may not need treatment, although it is imperative that a careful evaluation be undertaken to assess the risk of recurrence.

Non-epileptic seizures (*pseudoseizures*) are not accompanied by abnormal electrical activity in the brain and may be initiated by psychological stress. Lifestyle counseling or psychological intervention may be the most appropriate treatment.

Type 1, Idiopathic Generalized Epilepsy, often, but not always, includes a family history of epilepsy. It tends to appear during childhood or adolescence. No nervous system abnormalities other than the seizures are identified. The brain is structurally normal on brain MRI scan. Patients have normal intelligence. EEG may show epileptic discharges affecting the entire brain (generalized discharges). The types of seizures may include myoclonic seizures (sudden and very short duration jerking of the extremities), absence seizures and generalized tonic-clonic (grand mal) seizures.

Type 2, Idiopathic Partial Epilepsy (benign focal epilepsy of childhood), begins in childhood and may have a family history. It is almost always outgrown by puberty and is never diagnosed in adults. Seizures tend to occur during sleep. Patients exhibit very specific EEG brain wave patterns.

Type 3, Symptomatic Generalized Epilepsy, is caused by widespread brain damage, usually from injury during birth. In addition to seizures, these patients often have other neurological problems, such as mental retardation or cerebral palsy. Multiple types of seizures are common in these patients and can be difficult to control.

Type 4, Symptomatic Partial Epilepsy (focal epilepsy) is the most common type of epilepsy that begins in adulthood, but it does occur frequently in children. It is caused by a localized abnormality of the brain, which can occur from strokes, tumors, trauma, congenital brain abnormality, scarring or “sclerosis” of brain tissue, cysts or infections.

### Generalized Seizure Types and Symptoms

Generalized Seizures	Symptoms
Grand Mal (Generalized tonic-clonic)	Convulsions, muscle rigidity, unconsciousness
Absence	Brief period of unconsciousness
Myoclonic	Sporadic, jerking movements
Clonic	Repetitive, jerking movements
Tonic	Muscle stiffness, rigidity
Atonic	Loss of muscle tone

Table 2 Generalized Seizure Types and Symptoms

### Epilepsy Symptoms

All areas of the brain cortex are involved in a generalized convulsion, or grand mal, seizure. The patient loses consciousness, usually collapses, may cry out, stiffen for several seconds, have rhythmic movements of the arms and legs and often be confused briefly afterward. The generalized body stiffening (“tonic” phase) lasts for 30 to 60 seconds, followed by violent jerking (“clonic” phase) for 30 to 60 seconds, after which a deep sleep occurs (“postictal” phase).

In partial, or focal, seizures, only part of the brain is involved, so only part of the body is affected. Perhaps only the hand may show rhythmic movements or jerking.

In absence, or petit mal, seizures, which are most common in childhood, impairment of consciousness is present with the person often staring blankly. Commonly, these seizures begin and end abruptly, are brief, lasting only seconds, and there may be many, perhaps dozens, of these in a day. Children are usually not aware that they are having a seizure, although they may be aware of “losing time.”

Complex partial seizures include impairment of awareness. Patients seem to be out of touch or “staring into space”. There may also be some automatisms, which consist of involuntary but coordinated, purposeless and repetitive movements, such lip smacking, chewing, fidgeting and walking.

### Epilepsy Causes

The etiology of epilepsy is frequently multifactorial, so it is difficult to attribute an exact cause. About 60-70% of all epilepsies have no clear cause and are referred to as cryptogenic epilepsies.<sup>49</sup> Seizures with a known cause are referred to as secondary or symptomatic epilepsy. Etiologies are cerebrovascular disease 15%, cerebral tumors 6%, alcohol-related seizures 6% and post-traumatic seizures 2%. Other causes were rare.<sup>50 51</sup> For some women, the pattern of epileptic seizures is directly affected by normal hormonal cycles. *Catamenial epilepsy* refers to seizures that are affected by a woman's menstrual cycle. About 10% to 12% of women with epilepsy have this. When estrogen levels are higher than progesterone, it can make the nervous system “excitable”, bringing greater risk for seizures. In general, women with epilepsy do not ovulate as regularly as women without epilepsy and women with epilepsy have more anovulatory cycles than other women.

### Epilepsy Causes

Tumor
Chemical imbalance (hypoglycemia, hyponatremia, etc.)
Head injuries
Certain toxic chemicals or drugs of abuse
Alcohol withdrawal
Stroke including hemorrhage
Birth injuries

Table 3 Epilepsy Causes

### Conventional Treatment

The majority of epileptic seizures are controlled with drugs. Diet may also be used in some cases. In certain refractive cases, surgery may be used. The type of treatment indicated will depend on the frequency and severity of the seizures as well as age, overall health, and medical history.

In patients with migraine, a history of epilepsy should be taken before tricyclic antidepressants, neuroleptic or anti-nausea drugs are used, because these may lower seizure thresholds.<sup>52</sup> Some anticonvulsant drugs, such as gabapentin and topiramate, work as treatments for both migraine and epilepsy, providing a therapeutic two-fer. The anticonvulsant divalproex sodium (Depakote, valproate) is approved by the FDA for migraine prophylaxis. Its efficacy has been supported by open and double-blind placebo-controlled studies.<sup>53 54</sup> <sup>55 56</sup> The doses used in migraine are generally lower than those effective in epilepsy.

Most of the time, seizures become easier to control as people get older. Problematically, some types of anticonvulsant medications can cause bone loss when taken over a long period of time.

### Ayurvedic Herbs for the Mind and Brain

Ayurveda theory and therapy encompasses positive and negative sides of every aspect of living, including behavior and conduct. These principles are designed specifically to achieve and maintain internal and external balance. Given due importance are the body (*sharira*), the senses (*indriya*) and the mind (*manas*).

Medhya is a concept that implies intellect, or wisdom. It is mental development, or mental therapy. Medhya means something that is mighty, vigorous and pure, as well.

There are many ways to bring medhya into play in the mind. Anything that promotes the sattva guna can be applied. The yamas and niyamas of yoga are aimed at this. Ayurvedic herbal medicines play a role, and bhasma preparations containing emeralds, gold and diamonds are important.

Medhya herbs and therapies are typically thought of as those that promote the capabilities of the Western world calls the mind. Medhya herbs engender and summon intelligence, memory and mental perception. They make the mind worthy of sacrifice to the Divine.

For medhya, anything that promotes the sattva guna can be considered. Ayurvedic alchemical bhasma preparations, including panna (emerald), swarn (gold) and heera (diamonds) can be considered.

Herbs are very powerful tools to heal the mind and emotions. More powerful than food, they are safer than drugs. Yogis have classified certain herbs that have a particularly positive effect on the mind. They can improve cognition, learning capability and neurological function.

Ayurveda makes little distinction between remedies for the mind and the body. Holism is the keyword. According to American spiritual teacher Baba Hari Dass, “to fix the head, cure the stomach first”.<sup>57</sup>

“Losing connection with our inner beauty is par for the course in our hectic, day-to-day world,” says Kat James in *Better Nutrition*.<sup>58</sup> Beauty is in the things we invite into our minds, bodies and lives. True physical and neurological beauty isn’t about doing the right things. It’s a quality-of-life issue.

Beauty director Mikki Taylor, of *Essence* magazine, says that an Ayurvedic health regime produced fascinating results. Her energy level is at an all-time high, and her aggravating chronic symptoms have disappeared.<sup>59</sup> She says that Ayurveda gives us a deeper understanding of our essential selves. Turning within through this ancient practice helped me her reach higher ground. In her opinion, many of us are seeking to understand ourselves better and to truly reach total well-being. Ayurveda helps her make this connection.

Ayurvedic literature is rife with hyperbole. While this is good, in the sense of promoting optimism, it can be somewhat confusing for those less acquainted with the details and daily practical use of herbs. This is especially so when we talk about therapies for the mind. In Ayurveda text, the modern category of epilepsy may be referred to ambiguously as “insanity”- a catchall term for a wide range of mental and neurological disorders. According to Ayurvedic herbalist Prashanti de Jager, we should take it with a grain of salt when the classic texts talk about curing “insanity”.<sup>60</sup> Nonetheless, many of these therapies are very effective, and can help substantially in managing brain illnesses. Perhaps a better way to interpret this translation would be an effort toward “brain balancing”. The author has found many of these remedies that refer vaguely to insanity to be applicable in the vata/kapha derangements of epilepsy (and other conditions, including autism), when applied with proper energetic differential diagnosis.

Bitter taste for example, is said to be composed of air and ether elements, the same elements that predominate in the mind. Herbs with bitter taste generally open the mind, increase the sensitivity of awareness and improve mental function. Bitter tasting herbs are cooling, calming and mind expanding, so they combat mental dullness. Bitter mind herbs are chamomile and gotu kola. Sweet taste, composed of earth and water elements, is grounding and calming. Sweet herbs for the mind include ashwaganda and licorice.

When seeking herbs to balance the brain, four herbs stand out- gotu kola, brahmi, shankpushpi and jatamansi. Most folks would profit from long term use of one or more of these at modest doses, and they are go-to herbs for the first steps in treating neurological conditions, including migraine and epilepsy.

Consider ghee, whose benefits increase with its age. Aged ghee (up to a hundred years) reduces all three doshas and dispels blockages in the srotas.<sup>61</sup> Since it has a special ability to clear the manovaha srota (mental channel), it used for mental diseases, namely epilepsy and psychosis.

Mental difficulties can arise from any dosha, but commonly vata dosha is the culprit. The thrust of many mind therapies is to control vata, the dosha that regulates the nervous system. Dashmula (an Ayurvedic formula containing ten warming roots) is a prime vata pacifying remedy, taken as powder, tea or as an enema. Dashmula decoction, with ghee or meat soup, or with white mustard is useful for the ambiguously termed “insanity”.

Baba Hari Dass talked about consuming pumpkin seeds for craziness.<sup>62</sup> Of course, now that we know that the brain is a tremendous user of essential fatty acids, we can see how right he was.

Jatamansi is an outstanding sattvic rasayana herb that opens and cleanses the srotas and brings in prana. The five parts of the lotus- stem, seed, stalk, stamen, and leaves, especially when taken with gold and milk, promote strength and intelligence.<sup>63</sup>

Amla, one of the three herbs in the widely used triphala combination, is a first rate general herb for the mind. Having the rare profile of having five of the six tastes, it has wide uses, especially for pitta conditions. Many authorities say that amla is the best for preserving youth and preventing senility.<sup>64</sup> Used with sesame, honey and ghee in morning, it is a rasayana that heightens mental balance. One of its names is Dhatri, the nurse, a nod to its broad healing effects.

Another triphala herb, haritaki, brings long life and a healthy brain. Use it with raw sugar, honey, dried ginger, pipali and salt.

Ashwaganda is a paramount herb for the nervous system. Used consistently over years, it brings a calm and grounded quality to thinking and to life. Ashwaganda and shatavari, mixed with mandukaparni and shankpushpi, represents a classic combination to promote brain function and intellect over the long term.<sup>65</sup>

You can think of bala as a cooling version of ashwaganda.<sup>66</sup> One of the varieties of bala, white bala, is given with milk for “insanity”.

Pepper is used in Ayurveda as an anti-kapha herb that burns up ama. Its warming nature balances cold herbs in formulas. It is ideal for conditions such as kaphaja epilepsy.

Kustha is an herb better known in Chinese medicine. It is closely associated with the treatment of skin diseases. (Kustha is the general term for skin diseases.) It is given to children to develop healthy skin. Kustha is also generally indicated for a wide array of mental disorders.

A few other miscellaneous herbs are worth mentioning. Juniper berry with barley, cooked in milk and water, with added ghee, honey and oil is employed as an enema to enhance digestion, strength and brain function.<sup>67</sup>

Saffron (*kesar*) is a tridoshic nervine. The author’s mentor, Yogi Bhajan, prepared this as a tincture with camphor, and dispensed it by the drop.

Datura is a low dose herb that contains tropane alkaloids. It is used in Ayurveda for certain mental conditions. However, it must be prepared properly and used very carefully, and the dose is low.

Finally, an Ayurvedic tip: Use shirodara, a slow, relaxing stream of warm herb oil on the forehead. It is relaxing and helps to manage stress. Bring back that beautiful inner glow.

Do not treat epilepsy casually. It is a serious and complicated condition, with many causes, and a collection of associated family and social issues. Herb doses should be carefully titrated to achieve the best clinical effect, and least side effect, as the doses sometimes need to be quite high.

### **(Expanded version available by email from presenter)**

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## **SINGLE DRUG THERAPY IN ARDHAVABHEDAKA WITH SPECIAL REFERENCE TO MIGRAINE – A REVIEW**

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### **ABSTRACT**

Ardhavabhedaka told in Ayurveda can be co-related with the Migraine headache. According to WHO, headache disorders are the most common disorders of the nervous system. It has been estimated that almost half of the adult population have had a headache at least once within a year. Among them 30% or more is Migraine. Due to its high incidence and severity it needs a better management. Conventional methods used in migraine are symptomatic and have some limitations. Ekamoolika prayoga (Single drug therapy) is a simple, economical and effective method of treatment. Single drug therapy told for Ardhavabhedaka in Ayurveda has many such drugs like Chakramarda (*Cassia tora*), Shirisha, (*Albezia lebeck*), Vacha (*Acorus calamus*), Brahmi (*Bacopa moneri*), Pippali (*Piper longum*), Moolaka (*Raphanus sativa*) etc. These drugs are administered as Nasya (Nasal route of administration), to provide better absorption and quick results. The Drugs having Katu – Tikta pradhana Rasa, Laghu – Rooksha – Teekshna guna, and Kapha- Vatahara or Tridosahara quality are useful in Ardhavabhedaka.

**Keywords:** Ardhavabhedaka, Migraine, Ekamoolikaprayoga, Nasya.

### **INTRODUCTION**

Shiras is the uttamanga where Prana along with indriyas resides<sup>1</sup>, so the prime focus is to make it free of ailments. Ardhavabhedaka is one among the 11 shirorogas<sup>1</sup>. Sushruta Acharya mentioned headache which is present in the right or left halves of head, which is splitting, pricking or churning in nature and appearing in intervals of Seven days, Ten days, Fifteen days, Thirty days or at any interval of time, due to tridosha prakopa is called as Ardhavabhedaka<sup>1</sup>.

Acharya Charaka and Vagbhata told that pravridha Ardhavabhedaka will cause Badhirya or Andhata<sup>2</sup> which tells about the severity of the disease. According to WHO study<sup>3</sup>, migraine on its own was found to be the sixth highest cause worldwide of years

loss due to disability. Headache disorders collectively were third highest. Headache disorders impose a recognizable burden on sufferers including personal suffering, impaired quality of life and financial cost. Repeated headache attacks and often the constant fear of the next one, damage family life, social life and employment. The long-term effort of coping with a chronic headache disorder may also predispose the individual to other illnesses. For example, anxiety and depression are significantly more common in people with migraine than in healthy individuals. Headache disorders are associated with personal and social burdens of pain and damaged quality of life due to the symptoms like severe pain,

Nausea, Vomiting, photophobia etc. Pain killers used in Migraine act momentarily without any permanent solution<sup>3</sup>. Because of the high incidence and severity an effective medication for Headache is a need of the hour.

Ardhavabhedaka has many Ekamoolika prayoga in different Classical texts. As Ardhavabhedaka is a grievous condition which needs better management and Ekamoolika prayoga is simple and easily adoptable by any population irrespective of economical status of the suffering mankind. So here is an attempt to compile the single drug therapies told for Ardhavabhedaka in Ayurveda and help the sufferers.

#### Review

Some single drugs used in Ardhavabhedaka according to Ayurvedic classical texts are<sup>1,2,5</sup>

1. Aparajita – (*Clitoria ternatia*)<sup>4</sup>
2. Mundi ( *Spheranthus indicus* )
3. Shigru ( *Moringa olifera*)<sup>6</sup>
4. Jyotishmati – (*Celastrus paniculata*)
5. Shalaparni (*Desmodium gengaticum*)
6. Chakramarda (*Cassia tora* )
7. Shirisha, (*Albezia lebeck*)
8. Vacha (*Acorus calamus*)
9. Brahmi (*Bacopa moneri* )
10. Pippali (*Piper longum*)
11. Moolaka (*Rafanus sativa*)
12. Madhuka (*Glycerihiza glabra*)<sup>7</sup>
13. Vamsha (*Bambusa arundinaceae* )
14. Apamarga (*Achyranthus aspera* )
15. Dronapushpi (*Leucas cephalotus*)
16. Purana ghrita
17. Navaneeta

Other than these some Folklore claims like Haritamanjari (*Acalypha indica*) and Morata (*Clematis gouriana*) etc. in Nasya form are told for ardhavabhedaka.

#### Method of administration of single herbs:

1. Moola and phala of Aparajitha is soaked in water and triturated and a drop is instilled through nostril. Moola of aparajitha is tied around ears which subsides Ardhavabhedaka<sup>4</sup>.

2. Brahmi (*Bacopa moneri*), Mundi (*Spheranthu indicus*), Shigru (*Moringa olifera*), Shirisha, (*Albezia lebeck*), Jyotishmati (*Celastrus paniculata*), Vamsha (*Bambusa arundinaceae*), Vacha (*Acorus calamus*), Apamarga (*Achyranthus aspera*), Shalaparni (*Desmodium gengaticum*), Pippali (*Piper longum*), Moolaka (*Raphanus sativa*), Madhuka (*Glycerihiza glabra*), Dronapushpi (*Leucas cephalotus*) are used as Avapeedaka Nasya (*Nasal instillation*)<sup>1,2</sup>.

3. Kalka of Chakramarda (*Cassia tora*) is used for Lepa (topical application) over head<sup>1</sup>.

4. Purana ghrita and Navaneeta are used for both internal administration and Nasya<sup>2</sup>.

5. Haritamanjari (*Acalypha indica*) and Morata (*Clematis gouriana*) stem is used for Avapeedaka nasya by folklore practitioners.

#### Observations:

Ayurveda explains the drug action through Rasapanchaka. Hence knowing it is essential to understand the mode of action of the drugs in Ardhavabhedaka.

**RASAPANCHAKA OF FEW EKAMOOLIKAS USED IN ARDHAVABEDHAKA<sup>5</sup>**

Sl. No.	Drug	Rasa	Guna	Virya	Vipaka	Prabhava	Doshaghna ta
1.	Vacha ( <i>Acorus calamus</i> )	Katu, Tikta	Laghu, Teekshna	Ushna	Katu	Medhya	Kapha-vata shamaka
2.	Pippali ( <i>Piper longum</i> )	Katu	Laghu, Teekshna, Snigdha	Anushna	Madhura	-	Kapha-vata shamaka
3.	Moolaka ( <i>Rafanus sativa</i> )	Katu	Laghu	Ushna	Katu	-	Tridosha Shamaka
4.	Madhuka ( <i>Glycerrhiza glabra</i> )	Madhura	Guru, Snigdha	Sheeta	Madhura	-	Vata-Pitta shamaka
5.	Vamsha ( <i>Bambusa arundinaceae</i> )	Kashaya, Madhura	Laghu Rooksha	Sheeta	Madhura	-	Vata-Pitta shamaka
6.	Shirisha ( <i>Albezia lebeck</i> )	Kashaya, tikta, madhura	Laghu, Rooksha Teekshna	Anushna	Katu	Vishaghna	Tridosha Shamaka
7.	Chakramarda ( <i>Cassia tora</i> )	Katu	Laghu, Rooksha	Ushna	Katu	-	Kaphavata shamaka
8.	Shalaparni ( <i>Desmodium gengaticum</i> )	Madhura, Tikta	Guru, Snigdha	Sheeta	Madhura	-	Vata-Pitta shamaka
9.	Shigru ( <i>Moringa olifera</i> )	Katu	Laghu, Rooksha, Teekshna, Sara	Ushna	Katu	-	Kapha-vata shamaka
10.	Jyotishmati ( <i>Celastrus paniculata</i> )	Katu, Tikta	Teekshna, Sara, Snigdha	Ushna	Katu	-	Vata -kapha shamaka
11.	Brahmi ( <i>Bacopa moneri</i> )	Tikta, Kashaya, Madhura	Laghu, Sara	sheeta	Madhura	Medhya	Tridosha shamaka
12.	Dronapushpi ( <i>Leuca scephalotus</i> )	Katu, Lavana, Madhura	Guru, Rooksha, Teekshna	Ushna	Madhura	-	Kapha-vata Shamaka Pitta sam-shodhaka
13.	Apamarga ( <i>Achyranthus aspera</i> )	Tikta, katu	Sara, Teekshna	Ushna	Katu	-	Kapha-Vata shamaka
14.	Aparajita ( <i>Clitoria ternatia</i> )	Tikta	shita	Sheeta	Katu	-	Tridosha shamaka

15.	Mundi ( <i>Spheranthu sindicus</i> )	Tikta, katu	Laghu, Rooksha	Ushna	Katu	-	Tridosha shamaka
16.	Navaneeta	Madhura, Kashaya	Sheeta, snigdha	sheeta	Madhura	-	Vata –pitta shamaka
17.	PuranaGhrita	Katu, Tikta	Teekshna	Sheeta	Madhura	-	Tridosha shamaka

Among these 17 drugs told, 7 drugs have Kapha-Vatahara property, 6 drugs have Tridosahara property and 4 drugs have Vata-Pittahara property.

## DISCUSSION

1. In Ardhavabhedaka samprapti, it is clearly told that Vata alone or along with Kapha dosha dislodged in shiras cause the disease and few authors consider it as Tridoshaja. Observations on rasapanchaka of these drugs revealed some similarities in Doshahara karma. Most of these Ekamoolikas are either vata- kaphahara or tridosahara. 7 drugs have Kapha -Vata hara quality and 6 have tridosahara quality.

2. Most of the drugs are administered through nasal route as it is considered as best route of administration for Urdwajatru vikaras.

3. In Ardhavabhedaka most of the drugs are administered as Avapeedana Nasya according to classical texts. Incidentally mode of administration of most of these single drugs also says the same.

4. Maximum drugs have Katu, Tikta rasas which help in pacifying Kapha-Vatadoshas involved in Ardhavabhedaka.

5. Most of the drugs have Laghu, Rooksha, Teekshna gunas which are useful in Kapha - Vataja condition.

6. Observations regarding Virya and Vipaka of these drugs revealed equal distribution of both types. Which shows Virya and Vipaka have no direct roll with respect to these drugs in treating Ardhavabhedaka.

7. In modern science the drugs acting on vasoactive neurotransmitters, anti-inflammatory, analgesics are used in Migraine treatment. Many of these drugs are having anti-inflammatory, analgesic and nootropic activity due to the secondary metabolites like Alkaloids, Flavonoids, glycosides, Volatile principle etc. This may help in curing the pathology of Migraine and reducing the pain. To establish the mode of action, individual drugs can be studied for antimigraine activity.

## CONCLUSION

1. Most of the drugs used here are simple and economical with successful utility. Thus cumbersome use of conventional medicines and its undesired effects on the body can be avoided.

2. Most of the drugs are administered through nasal route in order to ensure better absorption, quick relief and also smaller dosage.

3. Most of the drugs are Kapha –Vatahara or Tridosha hara and help in Ardhavabhedaka, which happens to be a tridoshaja or Kapha-Vataja Disease.

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# Identification of Novel Drug Leads for Receptors Implicated in Migraine from Traditional Ayurvedic Herbs Using *in silico* and *in vitro* Methods

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## Abstract

**Background:** Migraine is a chronic neurological disorder characterized by headaches along with several physiological and autonomic nervous system symptoms. Research suggests that migraine is a result of multi-gene mutation in combination with psycho-social and environmental factors.

**Method:** Mutated mammalian serotonin hydroxytryptamine receptor 2 (HTR2) implicated as factor causing migraine were retrieved from the National Centre for Biotechnology Information (NCBI), its 3D structure were determined by homology modelling. The 3D structures of phyto-compounds (from Ayurvedic herbs) were retrieved from various databases. The pharmacophore hypothesis was generated for the existing ligands and the phytocompounds were screened against the generated pharmacophoric hypothesis. Ligands were shortlisted based on their fitness score. The selected phytocompounds were screened against HTR2 receptor.

**Results:** The phytocompound having the best docking score and most interactions with the receptor are validated using receptor-ligand binding assay studies with HTR2 receptor in-vitro.

**Conclusion:** Phytocompounds selected as per receptor-ligand binding assay studies.

**Keywords:** Migraine; Serotonin; Ayurveda; Modeling; Pharmacophore; Docking; Rapid eye movement (REM); Binding assay

## Background

The current manuscript is a continuation work of manuscript titled “Selecting the best ligand for Migraine Protein 5-hydroxytryptamine (serotonin) receptor 2A (HT2A) from the Compounds of *Valeriana wallichii*, *Asparagus racemosus* and *Acorus calamus*” by Somashekhar R, Bagchi P et al., 2014.

**Rapid eye movement sleep behavior disorder (RBD)** is a sleep disorder that involves abnormal behaviour during rapid eye movement (REM) sleep [1]. REM is the stage of sleep during which most vibrant dreaming occurs. The loss of motor inhibition leads to a wide spectrum of behavior during sleep. Migraine is a type of REM disorder [2]. Studies suggest that genetics, prenatal care with environment, combined with psychological and social factors are important causes of migraine. Research suggests that migraine is caused by actions of several mutated genes [3]. Migraine is the most frequent neurological disorder in the adult population worldwide. Headache is the primary clinical symptom and it has been associated with a hereditary or dependence of neurovascular reactions to cyclic changes in the central nervous system. Amongst the many neurotransmitters in the brain, the serotonergic (serotonin, 5-HT) system from the brainstem raphe nucleus has been most believably implicated in migraine pathophysiology [4]. The mammalian HT2 receptor is the main excitatory receptor subtype among the (G protein-coupled receptor) GPCRs for serotonin. HTR2 may also have an inhibitory effect [5,6] on certain areas such as the visual cortex and the orbitofrontal cortex. Serotonin (5-hydroxytryptamine (5-HT)<sub>1</sub>) is a major neurotransmitter that is involved in multiple physiological functions such as the control of endocrine secretion, motor behavior, mood, pain, sleep, thermoregulation, and appetite and is indicated as causal factor for several allied neuronal disorders [7,8].

Mutation in mammalian serotonin hydroxytryptamine receptor 2 (HTR2), implicated as factors causing migraine, is taken in this study

[3,4]. The use of phytochemicals as novel, potential lead drug molecules for HTR2, a GPC receptor was tested *in silico* and *in vitro* in this study by matching the pharmacophoric features of a known ligand myristicin with the phytocompounds from Ayurvedic herbs (The psychotropic property of the herbs used in this work are based on practical studies carried out at Satsang Herbal Research Laboratory, Satsang, Deoghar, India) (Table 1). Myristicin is an agonist pertaining to HTR2 receptor [9]. It is a natural product isolated from parsley oil [10]. This volatile oil, myristicin, comprises a mixture of allylbenzene derivatives and terpenes [11].

## Methodology

### Predicting the 3D structure of the receptors

The amino acid sequence of the HTR2 receptor was retrieved from the National Center for Biotechnology Information (NCBI). Using Basic Local Alignment and Search Tool (BLAST) search engine against Protein Data Bank (PDB) the homologous templates for the receptor was selected and their crystal structure was downloaded from PDB. Using these homologous templates, the 3D structure of the receptor was generated by modeler [12].

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3-O-Acetyl-a-boswellic acid	Phyllanthin	Rubiadin	Corosolic acid
Demethoxycurcumin	Eupalitin	18 $\alpha$ -Glycrrhetic acid	3,3',4,4'-Tetrahydroxy-2-Methoxychalcone
Lutein	Asiaticoside	Berberine chloride dihydrate	
14-Deoxy-11,12-didehydroandrographolide	Picroside I	Rutin	Hypophyllanthin
Mangiferin	Eupalitin-3-O-galactoside	18 $\alpha$ -Glycrrhetic acid	Crocetin dialdehyde
3-O-Acetyl-11-keto- $\beta$ -boswellic acid	Agnuside	Bisdemethoxycurcumin	Ursolic acid
1,9-Dideoxyforskolin	Picroside II	Serratol	4-Hydroxyisoleucine
Marmelosin	Eclalbasaponin II	Glycrrhizin ammonical hydrate	Curcumin
3-O-Acetyl- $\beta$ -boswellic acid	Allylpyrocatechol 3,4 diacetate	Boeravinone B	Vasicinone
Diosgenin	Piperine	Sesamin	3'-Hydroxy,4'-methoxyglabridin
Methylgallate	Eicosyl caffeate	Guggulsterone	Caffeine
Apocynin	trans-Anethole	A-Boswellic acid	Vicine
Docosyl caffeate	Protocatechuic acid (3,4 dihydroxybenzoic acid)	Ahatavarin IV	Isoforskolin
Methyl eugenol	Epocatechin	Gymnemagenin	Campesterol
1'-Acetoxychavicol acetate	Aristolochic acid 1	Betaine	Vasicine
2',3'-Dehydrosalannol	Estragole	$\beta$ -Sitosterol	Isoeugenol
3-O-Methylellagic acid	Artemisinin	$\beta$ -Glucogallin	Capsaicin
4-Allylpyrocatechol	Psoralen	Betulinic acid	Vanillylacetone
7-O-Methylwogonin	Ferulic acid	Galangin	Isoformononetin
3,3'-Di-o-methyl ellagic acid	Atlantone	Caffeic acid	Caryophyllene
4'-O- $\beta$ -D-Andrographolide	Punicalagin ( $\alpha+\beta$ )	Stigmasterol	Wedelolactone
	Forskolin	Geraniol	Jujubogenin isomer of bacopasaponin C
Maslinic acid	Bacopasaponin C	Catechin	Bacopasaponin C
xylopyranoside	Pterostilbene	Stevioside	Cedrol
Andrograpanin	Furanoeudesma-1,3-diene	Geranyl acetate	Withanolide A
Methanol	Bacopaside II	Catechin-5-O-gallate	Kaempferol
I Deoxyojirimycin	Pyrogallol	Tetrahydrocurcumin	Chrysophanol
Apigenin	Formononetin	Harmalin	Withaferin A
Menthyl acetate	Bacopaside I	Chebulagic acid	11-keto- $\beta$ -boswellic acid
Elemonic acid ( $\alpha+\beta$ )	Piperlyne	Trigonelline HCl	1,8-Cineole
Arjunetin	Gallic acid	Harmalol	Withanolide B
Neandrographolide	Bacoside A3	Chebulinic acid	L-Dopa
Elemonic acid ( $\beta$ )	Quercetin dihydrate	1,3,6-Trigalloyl- $\beta$ -D-glucose	Cirsiilineol
Arjunic acid	6-Gingerol	Harmine	Withanone
Negundoside	Bacoside A	Chlorogenic acid	Lupeol
Arjungenin	Rebaudioside A	Tribulosin	Cinnamic acid
Ellagic acid	8-Gingerol	Hexahydrocurcumin	Withanoside IV
Oleanolic acid	Bacosine	Colchicine	Luteolin
ar-Turmerone	Reserpine	Trigoneoside IV a	m-Coumaric acid
Embelin	10-Gingerol	Hydroxycitric acid Calcium	Withanoside V
1-Octacosanol	Bakuchicin	Salt	Licochalcone A
Eugenol	Rosamarinic acid	Corilagin	Deacylgymnemic acid
$\alpha$ -Asarone	Glabridin	$3\beta$ -Taxaxerol	12-Deoxywithastramonolide
Panduratin-A	Bakuchiol	Hydroxycitric acid lactone	Lycopene
Epocatechin-3-gallate	Para methoxyethylcinname	Epigallocatechin 3-gallate	Asiatic acid
$\alpha$ -Asarone			

Source: Natural Remedies, Bangalore, India.

**Table 1:** List of phyto-compounds from traditional ayurvedic herbs.

## Model quality assessment

Modeller [12] generated five models. Using Structural Analysis and Verification Server (SAVES)'s PROCHECK Module, (this stereochemical check was applied to verify if the  $\phi$  and  $\psi$  dihedral angles were in available regions of the Ramachandran plot) the best protein model was selected [13].

## Phyto-compounds from traditional ayurvedic herbs

### Ligand preparation

The 3d structures of the above phyto-compounds were downloaded

from PubChem, a database of chemical molecules maintained by the NCBI and various other online databases.

### Generating phase database

Now using Application $\rightarrow$ Phase $\rightarrow$ Generate Phase Database module of Maestro software phase database of the phyto-compounds was done [14].

### Selection of ligands for HTR2 receptor

Ligand-based pharmacophore model was selected by extracting the common features of the three-dimensional structures of compounds

which are known to interact with the target protein (known ligand). Known ligands were loaded in the Maestro workspace and by using Applications→Phase→Create Hypothesis module pharmacophore features of the known ligands were noted [14].

## Docking

**Protein preparation:** The modeler generated protein is not suitable for immediate use in docking or other molecular modeling calculations. By using Protein Preparation Wizard of Maestro9.1 the modeler generated protein was uploaded for optimization and energy minimization [14].

**Binding site generation:** The binding site position of the protein was determined by SiteMap module of Maestro [14].

**Ligand preparation:** The ligands were selected in Maestro workspace. Using ligprep, the ligands were minimised prepared for docking studies. LigPrep is tool to prepare high quality 3D structure for large number of molecules taking input as 2D or 3D structures and giving output as a single, low energy 3D structure [14].

**Receptor grid generation:** The receptor was loaded in workspace. Using Glide → Receptor Grid Generation the binding site region of the receptor was specified and the receptor was prepared for docking.

**Glide docking:** Using module Glide → Ligand Docking module of Maestro the receptor was docked with the selected ligands [14].

## ADME screening

ADME is an acronym in pharmacokinetics and pharmacology for absorption, distribution, metabolism, and excretion. Using QikProp module the ADME properties of the above ligands was determined [14].

## Generation of stable cell line expressing HTR2

Synthetic HTR2 gene (Geneart, Germany) was cloned into pcDNA3.1 vector (Invitrogen) between BamHI and XbaI sites. Clones were confirmed by sequencing. Human Embryonic Kidney (HEK 293) cell line (National Centre for Cell Sciences, Pune, India) were transfected with pcDNA3.1-HTR2 and grown in the presence of 1mg/ml Geneticin (G418). Cells resistant to 1mg/ml G418 were selected, expanded and used for receptor ligand binding assay. The expression of HTR2 in stable cell line was confirmed by RT-PCR using specific primers.

## Receptor-ligand binding assay studies

Binding efficacy of the phytocompounds colchicine and hypophyllanthanin with the HTR2 receptor was tested *in-vitro* by measuring agonist stimulated calcium signalling using Fluo-4 Direct calcium assay kit (Invitrogen). 5HT (Sigma), a known agonist of HTR2 was used as positive control for the test.  $1 \times 10^4$  cells in 50  $\mu$ l of DMEM (Dulbecco's Modified Eagle's Medium)-10% FBS (Fetal Bovine Serum) were seeded in 96 well tissue culture plate and grown overnight at 37°C/5% CO<sub>2</sub> in humidified incubator. 50  $\mu$ l of 2X Fluo-4 direct calcium reagent loading solution was added and incubated for 60 seconds at 37°C. Different concentrations of agonist were added in duplicate wells and incubated for 4 hours at 37°C. Fluorescence was measured with excitation at 494 nm and emission at 516 nm using Fluorimeter.

## Results and Discussion

The HTR2 receptor was selected from the NCBI database (Table 2). The 3D structure of HTR2 receptor was modelled by Modeller [12].

Protein & NCBI Accession Number	Homologous Templates	Identity
HTR2 (NP_001159419)	<b>2VT4A:</b> Turkey Beta1 Adrenergic Receptor With Stabilising Mutations And Bound Cyanopindolol	E-value-8e-28
	<b>2Y00A:</b> Turkey Beta1 Adrenergic Receptor With Stabilising Mutations And Bound Partial Agonist Dobutamine	E-value-2e-28
	<b>3SN6A:</b> Crystal Structure Of The Beta2 Adrenergic Receptor-Gs Protein Complex	E-value-2e-26

**Table 2:** Proteins with the NCBI accession number and their template information.

	Number of residues in most favoured region	Number of residues in additional allowed region	Number of residues in generously allowed region	Number of residues in dis-allowed region
Model 1	314 (88.0%)	33 (9.2%)	7 (2.0%)	3 (0.8%)
Model 2	319 (89.4%)	32 (9.0%)	4 (1.1%)	2 (0.6%)
Model 3	331 (92.7%)	19 (5.3%)	2 (0.6%)	5 (1.4%) (selected)
Model 4	319 (89.4%)	31 (8.7%)	2 (0.6%)	5 (1.4%)
Model 5	328 (91.9%)	20 (5.6%)	3 (0.8%)	6 (1.7%)

**Table 3:** Values of 5HT2A protein obtained in favoured, allowed and disallowed region using Ramachandran Plot (SAVES server).

Identified ligands	Fitness score	Plant
Colchicine	2.121	<i>Colchicum autumnale</i>
Hypophyllanthanin	1.713	<i>Phyllanthus amarus</i>

**Table 4:** Ligands which matches with the pharmacophore of Myristicin and their fitness score.

## Predicting the 3D structure of HTR2 receptor

The 3d structure of HTR2 receptor was modeled since the crystal structure of HTR2 receptor was not available in the PDB. Using BLAST search against PDB templates or homologous proteins related to HTR2 were selected.

This best aligned template is taken for homology modeling studies by using modeler (Table 2). Ramachandran plot analysis of the best generated model gave 92.7% residues in the core region, 5.3% in allowed region, 0.6% in generously allowed region and 1.4% disallowed region (Table 3, Figures 1 and 2). This model was selected as the best model since it had most residues in the favoured region.

The three dimensional structure provides valuable insight into molecular function and also enables the protein-protein interaction to be analyzed.

## Pharmacophore studies

Ligand-based pharmacophore models are selected by extracting the common features of the three-dimensional structures of the known ligands. To do this, possible conformers of compounds should be previously enumerated.

Then, we superpose our target compounds by overlapping the three-dimensional structures' common substructures as molecular graphs among the other parts of compounds. So, in this method, since we do not have to enumerate all the conformers of a compound, we usually save much computational time by ligand-based pharmacophore modeling [15].

The pharmacophore features of all known 5-HT ligands, were generated but none (except myristicin) of the phytocompounds showed any common feature with the pharmacophore of the known 5HT ligands.

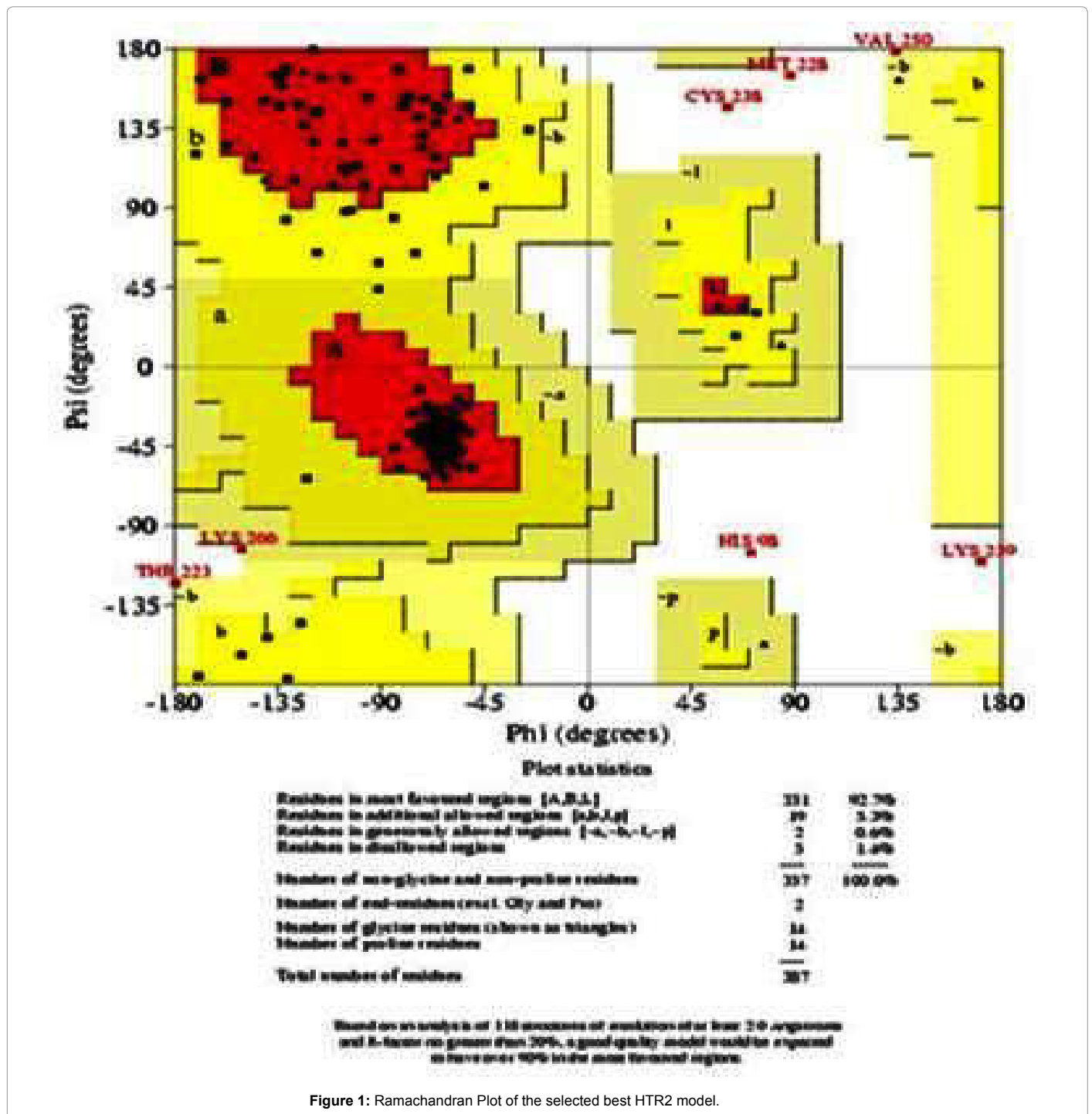


Figure 1: Ramachandran Plot of the selected best HTR2 model.

## Myristicin

Myristicin is a known serotonin agonist, psychoactive drug, acting as an anticholinergic, and gets metabolised to 3-methoxy-4,5-methylenedioxyamphetamine (MMDA). Also, it has a weak monoamine oxidase inhibitor action and with elemicin that gets metabolised to an amphetamine-like compound which has hallucinogenic effects [16,17].

Myristicin was loaded in the Maestro workspace. Phase hypothesis gave pharmacophore features of Myristicin as A1, A2, A3, H4, H5 and R6 (Figure 3).

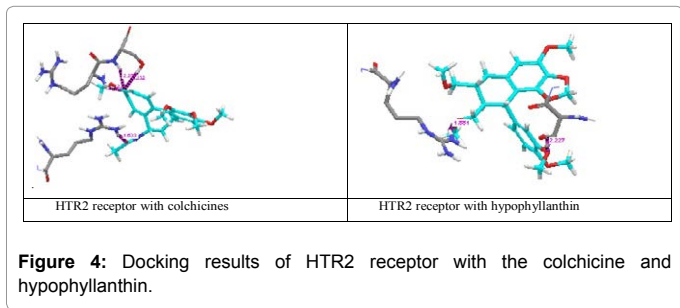
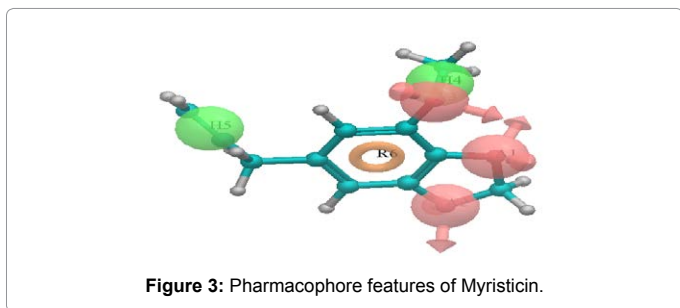
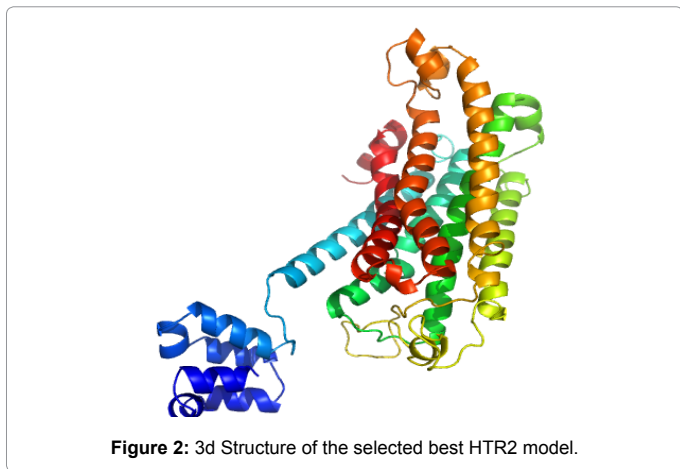
This pharmacophore features matched with the compounds in Table 4.

The above compounds were docked with HTR2 receptor.

## Glide ligand docking

Sitemap module was used to determine the binding site residues of the HTR2 receptor and as per the output sitemap\_site\_2 with SiteScore 1.004 (2<sup>nd</sup> highest score) and size 231 was used to determine the binding site of the modelled protein.





SER305, ALA306, CYS313, LYS316, PHE299, TYR303, VAL291, PRO293, ALA290, THR302, LEU298, ASN300, LYS320, GLU317, ASN376, ASP375, ALA372, LYS301, ASN318, ASP378, PRO321, TYR286, ILE174, TYR170, THR173, MET166, THR106, ARG89, LEU172, ILE168, THR169, MET166, THR106, PHE109, ILE165, ALA192, ALA195, ARG191, LYS107, LEU110, SER104.

The binding site region of the receptor was assigned and grid for the receptor was generated using Receptor Grid Generation module.

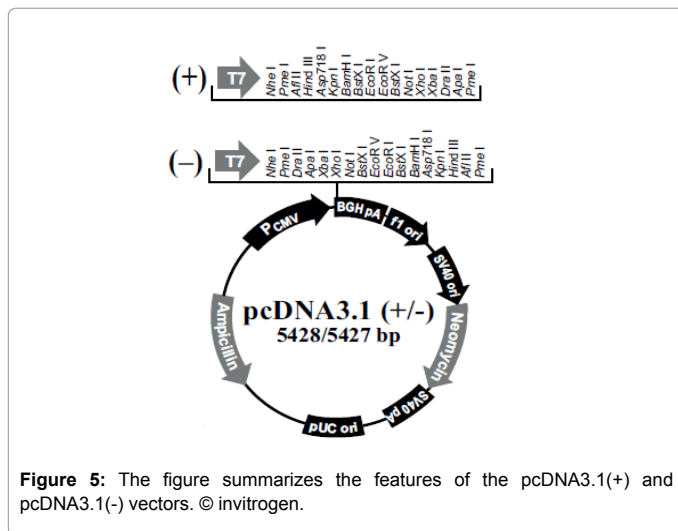
The HTR2 receptor was docked with colchicine and hypophyllanthin (Figure 4 and Table 5) [18,19].

### ADME screening

ADME is an acronym for absorption, distribution, metabolism, and excretion. QikProp is a quick, accurate, easy-to-use ADME prediction program designed by Professor William L. Jorgensen. QikProp predicts physically significant descriptors and pharmaceutically relevant properties of molecules [14].

Ligand	Docking score/ glide g score	Doner	Distance in Å	Interaction
Colchicine	-7.191	ARG388	2.207	ARG388(OH)...O(UNK)
		SER389	2.250	SER389(OH)...O(UNK)
		ARG185	1.633	ARG185(OH)...O(UNK)
Hypophyllanthin	-6.303	THR386	2.227	THR386(OH)...O(UNK)
		ARG393	1.881	ARG393(OH)...O(UNK)

**Table 5:** Docking results of HTR2 receptor with colchicine and hypophyllanthin [19].



QikProp generated the following output (Tables 6 and 7) [19]:

### Receptor-ligand binding assay studies

HEK cells were transfected with pcDNA3 containing HTR2 (Figures 5 and 6).

RT-PCR from total RNA isolated from stable cell line HEK- HTR2 confirmed the presence of HTR2 gene in the stable cell line. A band of 301bp was observed as expected (Figure 7).

Binding assay studies was done with HTR2 receptor with 5HT (known agonist for HTR2 receptor) [17], Colchicine and Hypophyllanthin using calcium assay buffer (Fluo-4 Direct reagent) [20].

Fluorometer reading at excitation at 494 nm and emission at 516 nm (done at Natural Remedies Pvt. Ltd., Bangalore, India) is given in Figure 8 and Table 8.

### Conclusion

Phytochemicals colchicine and hypophyllanthin binds to HTR2 receptor and exhibits activity. Colchicine exhibits maximum activity at 10µm concentration and hypophyllanthin exhibits maximum activity at 100µm. Hence, the phytochemicals colchicine and hypophyllanthin proves agonists to HTR2 receptor and further *in vivo* and clinical trials should be done for establishing these as drugs for migraine and other neurological disorders.

### Future Perspective

In this work the compounds colchicine and hypophyllanthin are already tested HTR2 agonist by *in silico* and *in vitro* methods. Currently



Figure 6: HEK DNA sequence p containing cDNA3 of HTR2.

Lead molecules	Molecular weight <sup>a</sup> (g/mol)	Molecular volume <sup>b</sup> (Å)	PSA <sup>c</sup>	HB <sup>d</sup> donors	HB <sup>e</sup> acceptors	Rotatable bonds <sup>f</sup>
Colchicine	399.443	1225.827	93.286	1.000	7.500	5.000
Hypophyllanthin	430.497	1319.288	54.254	0.000	7.150	7.000

A\* indicates a violation of the 95% range.

<sup>a</sup>Molecular weight of the molecule.

<sup>b</sup>Total solvent-accessible volume in cubic angstroms using a probe with a radius of 1.4 Å.

<sup>c</sup>Van der Waals surface areas of polar nitrogen and oxygen atoms.

<sup>d</sup>Estimated number of hydrogen bonds that would be donated by the solute to water molecules in an aqueous solution. Values are averages taken over a number of configurations, so they can be non-integer.

<sup>e</sup>Estimated number of hydrogen bonds that would be accepted by the solute from water molecules in an aqueous solution. Values are averages taken over a number of configurations, so they can be non-integer.

<sup>f</sup>Number of rotatable bonds.

Table 6: Principal descriptors calculated by Qikprop simulation [19]. (Range 95% of Drugs).

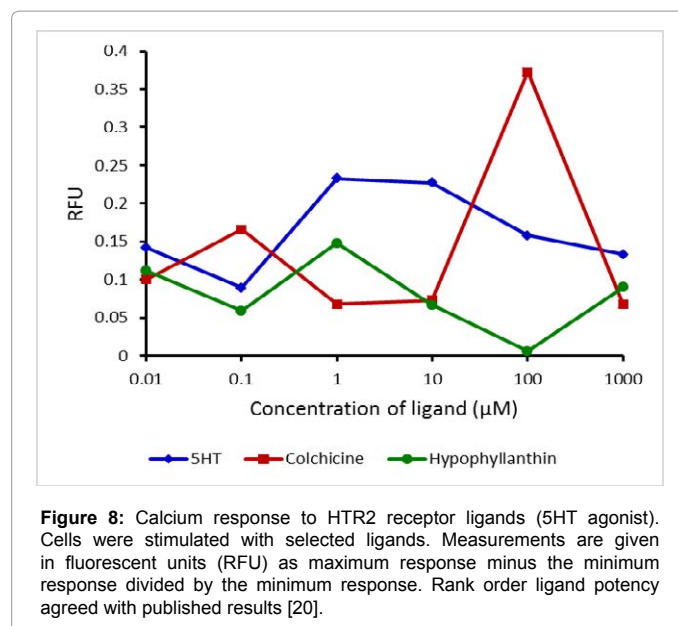
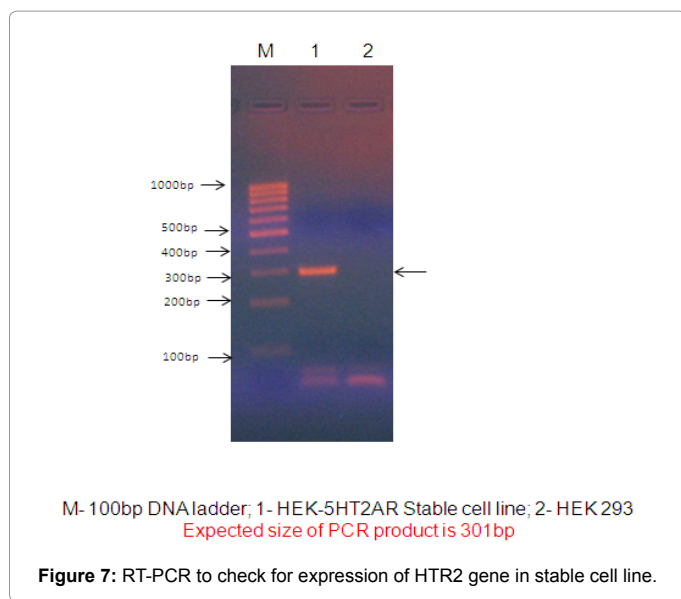
Lead molecule	QP log P(o/w) <sup>a</sup>	QP log S <sup>b</sup>	QP PCaco <sup>c</sup>	QP log HERG <sup>d</sup>	QP PMDCK <sup>e</sup>	% Human oral absorption <sup>f</sup>
Colchicine	2.545	-3.809	550	-3.180	483	91
Hypophyllanthin	3.160	-5.407	9906	-4.994	5899	100

A\* indicates a violation of the 95% range.  
 An M indicates MW is outside training range.  
<sup>a</sup>QP log P for octanol/water (-2.0, -6.5)  
<sup>b</sup>Predicted aqueous solubility, log S. S in mol dm<sup>-3</sup> is the concentration of the solute in a saturated solution that is in equilibrium with the crystalline solid (-6.5, -0.5)  
<sup>c</sup>Apparent Caco-2 permeability (nm/s) (<25 poor, >500 great)  
<sup>d</sup>log HERG, HERG K<sup>+</sup>channel blockage (concern below -5)  
<sup>e</sup>Apparent MDCK permeability (nm/s) (<25 poor, >500 great)  
<sup>f</sup>% Human oral absorption in GI (± 20%) (<25% is poor)

Table 7: Physicochemical descriptors calculated by Qikprop simulation [19]. (Range 95% of Drugs).

0.00001 mM	0.142958252	0.10027043	0.112376405
0.0001 mM	0.08932646	0.166483563	0.059114341
0.001 mM	0.233351644	0.068463196	0.148440801
0.01 mM	0.2227140201	0.073174596	0.067015972
0.1 mM	0.158761514	0.373278121	0.005936787
1 mM	0.133704471	0.068494887	0.0903617
	5HT	Colchicine	Hypophyllanthin

Table 8: Fluorometer reading of HTR2 receptor with ligands at different concentrations at excitation at 494 nm and emission at 516 nm.



there is no animal model for migraine. Based on the present results, the authors would develop an animal model to test the compounds colchicine and hypophyllanthin to test *in vivo*.

#### Acknowledgement

- 1) *In silico* work was performed at Department of Bioinformatics, SRM University, Chennai, India – which is being gratefully acknowledged.
- 2) Natural Remedies Pvt. Ltd., Bangalore, India.

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alone, and six dropped out (two during run-in, three belonging to group A and one to group B). A total of 28 completed the study. Seven of 13 (53.8%) patients in group A and 3 of 15 (20%) patients in group B were responders (<15 days per month with headache) ( $p=0.142$ ). No significant differences between groups were found regarding the number of days with headache per month, MIDAS and Zung scores and analgesic consumptions.

**Conclusions:** Acupuncture added to traditional pharmacological therapy in the treatment of chronic migraine in our high selected patients did not add further improvements from a statistical point of view. Involving only patients with a new diagnosis and with ineffective pharmacological treatment during the run-in limited the sample size. A trend favouring the use of acupuncture versus the pharmacological treatment alone is however evident. Our result needs further confirmation.

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#### OP-060

##### Ayurveda as a promising treatment for chronic migraine

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**Background:** Chronic migraine (CM) is a considerable social and economic problem affecting almost 10% of migraine sufferers. Treating CM patients is challenging since prophylactic drugs often have inadequate response or unacceptable side effects. Studies on acupuncture and chiropractic therapy showed controversial results.

**Aim:** The aim of our study is to verify the safety and efficacy of Ayurvedic therapy (including physical therapy, abhyanga and education about modifiable lifestyle factors) for CM patients, both alone or combined with conventional prophylactic treatment.

**Methods:** Ten patients (median age 42 years, 80% female) affected by CM according to International Headache Society (IHS) criteria, resistant to preventive pharmacological therapies and in a 3 months stable clinical condition, were recruited at Headache Center of the Neurological Department in Milan, being free to choose between conventional or non-conventional treatment. Exclusion criteria included other severe diseases, psychiatric co-morbidities or any contraindication to massage. Patients underwent an interview for clinical history collection and definition of 'prakrti' and 'vikrti' according to Ayurveda. A headache assessment was done through a headache diary, Migraine Disability Assessment (MIDAS), Beck Depression Inventory (BDI), Short Form (36) Health Survey (SF-36) at baseline, at the end of treatment (at 1 month) and 3 months follow-up. According to Ayurveda, treatment is individualised according to a patient's 'prakrti'. However, in our 10 CM patients a 'vata-pitta' 'vikrti' was found; so, they were all treated with one outpatient session per week for 1 month consisting of 60'

'sarvanga' (with 'dhanvantaram' oil) and 10' 'siro picchu' (with 'brahmi' oil) by an expert certified Ayurvedic therapist.

**Results:** A significant reduction in the number of headache attacks and intensity ( $p<0.0001$ ) was evident, together with an overall improvement in health-related quality of life (general health, social functioning, role emotion and mental health SF-36 items) and a decrease in triptans and non-steroidal anti-inflammatory drug (NSAID) intake. The benefit was prolonged at 3 months in 70% patients. No side effects were reported and compliance was good.

**Conclusion:** Ayurvedic treatment may represent a safe and effective therapeutical option in CM patients with an overall significant saving on drug cost. 'Sarvanga' may be able to modify patient perception, probably modulating pain perception. A combined approach of conventional therapy with Ayurveda has to be considered in patients suffering from chronic conditions, to reduce the 'vata-pitta vikrti' often induced by prolonged illness.

<http://dx.doi.org/10.1016/j.eujim.2012.07.555>

#### OP-061

##### Treatment methods for acute and chronic pain syndromes in a private acupuncture clinic

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In most of the cases, we have used a combination of treatment methods: A) Main methods, classic acupuncture with syndrome differentiation using the divergent, sinew channels, ear acupuncture using the three phases of degeneration according to Nogier, electroacupuncture using special circuits especially for sciatic pain, ozone intramuscular or intra-articular injections according to the protocols of the Italian Scientific Association of Ozone Therapists (Milano, Italy), laser point therapy, ETPS neuropathic acupuncture.

B) Adjunctive methods: 1) Master Tung's acupuncture points, 2) dry needling and medical acupuncture using special homeostatic, symptomatic and paravertebral points. 3) Ryodoraku (Japanese acupuncture), 4) abdominal acupuncture, 5) prolotherapy, 6) neuro-acupuncture techniques and Koryo hand therapy. A total of 260 cases between the years 2006 and 2010 were addressed, which included cervical pain: 55 cases, lumbar pain: 170 cases and sciatica: 35 cases, with age 20–83 years. Duration of illness was from 4 days to 24 months. Frequency of treatment was once a day or twice a week, the total number of treatments: 5–7 (rarely 10–15 treatments). Conclusion: A combination of various acupuncture methods and related techniques is the best way to treat cases of acute and chronic pain.

<http://dx.doi.org/10.1016/j.eujim.2012.07.556>



# Changes in MIDAS, Perceived Stress, Frontalis Muscle Activity and Non-Steroidal Anti-Inflammatory Drugs Usage in Patients with Migraine Headache without Aura following Ayurveda and Yoga Compared to Controls: An Open Labeled Non-Randomized Study

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## Keywords

Integrative medicine · Ayurveda · Yoga therapy · Migraine · Pain · Disability · Stress

## Abstract

**Background:** There has been a significant increase in the use of complementary and integrative medicine to provide long-term healing solutions in migraine headache patients. Knowing the limitations of conventional medical approach, the present study evaluated the influence of two Indian traditional systems of medicine on migraine-related disability, autonomic variables, perceived stress, and muscle activity in patients with migraine headache without aura. **Methods:** Thirty subjects recruited to the Ayurveda and Yoga (AY) group underwent traditional *Panchakarma* (Bio-purification) using therapeutic Purgation followed by yoga therapy, while 30 subjects of control (CT) group continued on symptomatic treatment (non-steroidal anti-inflammatory drugs [NSAID's]) for 90 days. Migraine disability assessment score, perceived stress, heart rate variability (HRV), and surface electromyog-

raphy (EMG) of frontalis muscle were measured on day 1, day 30, and day 90 in both groups. **Results:** Significant reduction in migraine disability and perceived stress scores were observed in the AY group. The low-frequency component of the HRV decreased significantly, the high-frequency component increased and their ratio showed improved sympathovagal balance. The EMG showed decreased activity of the frontalis muscle in the AY group compared to the control group. **Conclusion:** The integrative approach combining Ayurveda and Yoga therapy reduces migraine-related disability, perceived stress, sympathetic arousal, and muscle tension.

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## Introduction

Migraine headache is a neurological disorder, prevalent across the world and is associated with varied degrees of disability, thereby affecting the work capacity and productivity of an individual. It is associated with comorbidities and modifiable risk factors [1].

Functional disability associated with migraine can lead to physical, mental, and social consequences [2], and it is commonly measured through the migraine disability assessment questionnaire (MIDAS) [3]. An episode of migraine is triggered by several factors including stress which is either physical or mental in nature [4]. The subjective perception of the impact of stress is measured through perceived stress scale, and studies show a higher incidence of perceived stress in migraineurs [5].

Stress can induce changes in the autonomic nervous system, which is measured non-invasively through heart rate variability (HRV). Migraine headache is known to induce autonomic imbalance. The sympathetic activity is heightened not only during the attacks but also during headache-free states [6].

Studies on headache patients also show an increased muscle activity compared to healthy controls [7], and cognitive stress is a known precursor for the same [8].

Conventional medicines used in migraine have always been derived from other class of drugs and showed limitations in providing satisfactory relief without side effects [9]. The treatment approach, therefore, has to be more than a prescription. Hence, an integrative approach to the management of migraine is essential.

Ayurveda and Yoga therapy are two ancient Indian systems of medicine which are used effectively in health and disease. Their integration offers a holistic approach, which would promote mind-body medicine in a comprehensive manner. Furthermore, Ayurveda therapies are known to influence physiological processes including autonomic modulation [10] and metabolic profiles [11]. In case of migraine headache, it was reported earlier that an Ayurveda-based polyherbal formulation administered for 90 days showed a significant decrease in migraine-related disability, frequency, and intensity [12]. However, no studies are available till date that demonstrate the underlying physiological mechanisms.

Also, there are more number of studies on Yoga compared to Ayurveda in stress and pain management. The beneficial effects of Yoga have been attributed to autonomic balance shifting towards vagal dominance, reduced biochemical markers of stress such as cortisol, reduced anxiety, and improved psychological well-being [13]. The evidence further shows that biofeedback and progressive muscular relaxation were also effective in reducing frontalis EMG activity in migraine headache patients [14].

Keeping in view the limitations of conventional treatment and the possible beneficial effects of Ayurveda and Yoga therapies, the present study aimed at evaluating the

role of an integrated traditional Indian medicine-based intervention in the management of migraine headache. The objective was to comprehensively understand its influence on autonomic variables, surface electromyogram (sEMG), perceived stress, and migraine-related disability.

## Methods

The subjects were recruited from Samatvam Holistic Health Center, Bengaluru, Karnataka in South India. The study protocol was approved by the Institutional Ethics Committee (RES/IEC-SVYASA/23/2013), and the study was conducted between 2015 and 2017. The study is registered with the Clinical Trials Registry of India (CTRI/2017/10/010074). A total of 86 individuals who were clinically diagnosed with migraine headache were screened based on inclusion and exclusion criteria, and 60 subjects were selected for the study. The recruitment was based on self-selection by the subjects to either Ayurveda and Yoga (AY) or Control (CT) groups. Subjects were explained about the study protocol, and a signed informed consent was obtained before recruitment. They were also given the choice to withdraw from the study at any stage. The sample size was calculated using the G Power software from a previous study [12], with an effect size of 1.31,  $\alpha = 0.05$  and power = 0.95. The required sample size was 19 subjects in each group. Considering the compliance-related issues, and to improve the statistical impact, a sample size of 30 subjects in each group was considered.

**Inclusion criteria:** Subjects belonging to both genders, between 18 and 46 years of age with a headache history for more than 1 year, 5 or more attacks of headache in 3 months, willingness to take oral Ayurveda medicine, practicing Yoga, following the dietary restrictions for 75 days, and completing the headache diary were included.

The diagnostic criteria were based on the International Classification of Headache Disorders (3rd edition) of the International Headache Society, 2013 [15].

**Exclusion criteria:** Subjects with primary psychiatric disorders (depression, anxiety, psychosis), major medical illness like renal, hepatic, neurological and cardiac diseases, pregnancy, pure menstrual migraine, subjects on Ayurveda or Yoga intervention for the past 6 months and subjects on conventional prophylactic treatment were excluded from the study.

The present study was a prospective matched controlled trial. Subjects were recruited as and when they approached the physician who referred them to an investigator. Subjects willing to undergo Ayurveda and Yoga interventions were allocated to the AY group, while the others who chose to continue with symptomatic treatment were recruited to the CT group. The groups were matched for age and gender. Subjects of the AY group and CT group were assessed on days 1, 30, and 90. The assessments were carried out in headache-free states and in non-menstrual phase in case of female subjects.

### Assessments

#### Migraine Disability Assessment

MIDAS is a short, self-administered questionnaire used to quantify headache-related disability in a span of 3 months. It has a set of 5 questions, and the total score is based on the number of

**Table 1.** The 4-point grading system for MIDAS questionnaire

Grade	Disability	Score
I	Little or no disability	0–5
II	Mild	6–10
III	Moderate	11–20
IV	Severe	21+

days marked against each question. The grades and respective scores are mentioned in Table 1. The reliability and validity of the questionnaire are assessed and well-established [3].

#### Perceived Stress Scale 10

Perceived stress scale 1 (PSS) measures the perceived level of stress as a function of objective stressful events, coping processes, and personality factors. PSS-10 was selected due to its superior psychometric properties [16]. Each item is rated on a 5-point scale ranging from never (0) to almost always (4). Items 4, 5, 7, and 8 are the positively stated items and they were reverse scored. The sum of all 10 items indicated the levels of perceived stress. Scores between 0 and 13 were considered as low stress, 14–26 as moderate stress, and 27–40 as high perceived stress.

#### Autonomic Variables and Surface Electromyography

An 8-channel fully integrated data acquisition system (Power lab 15T) from AD instruments, Australia was used for simultaneous recording of Heart Rate, Respiratory Rate, HRV, and surface electromyography (sEMG).

Assessments were done in a dimly lit, sound attenuated room. Subjects were asked to sit on an armless chair with back support by placing their feet on a non-conducting material. During recordings, they were instructed to close their eyes and maintain normal breathing. Heart rate, respiratory rate, and sEMG were recorded simultaneously for a duration of 3 min during frowning (by raising the eyebrows), which produced voluntary muscle contraction.

The electrocardiogram (ECG) was recorded using standard limb lead II configuration by placing clamp ECG electrodes with electrode gel. Data were acquired at a sampling rate of 1,024 Hz. The heart rate variability was derived from ECG by computing the successive RR intervals.

Respiratory rate was recorded through a piezo respiratory belt transducer. This was used to generate a voltage with a change in thoracic circumference due to respiration. The output range was between 20 and 400 mV, with a sensitivity of  $4.5 \pm 1$  mV/mm.

The sEMG of the frontalis muscle was recorded using 2 pre-gelled silver chloride electrodes placed on the forehead with a distance of 2 cm between them, and approximately 2.5 cm above each eyebrow along with a shared ground electrode [17]. The sEMG was recorded with a sampling rate of 1,000 Hz, bandwidth of 20–500 Hz, and a maximum input impedance of 5  $\Omega$ . A low pass notch filter was applied at 50 Hz.

#### Data Extraction

Lab Chart 8 software was used to extract the data offline. Heart rate, HRV, respiratory rate, and EMG were derived separately from the data collected on days 1, 30, and 90.

The noise-free ECG data excluding ectopic beats were selected for further analysis. Heart rate was obtained as beats per minute, averaging it across 3 min. The Lab chart software also processed the ECG signals by identifying successive RR intervals to extract both frequency domain and time domain measures of HRV. The low frequency (LF), high frequency (HF), and LF/HF ratio expressed as normalized units were used as frequency domain measures. While, the SD of RR Intervals, the square root of the mean squared differences of successive NN intervals, and the proportion derived by dividing NN50 by the total number of NN intervals (pNN50) were derived as time domain measures.

The respiratory rate was derived as the number of breath cycles per minute after averaging it across 3 min by computing successive inspiratory and expiratory cycles.

The sEMG recording obtained during the 3 min voluntary contraction was used to derive RMS EMG and integral EMG [18].

#### Interventions

Ayurveda treatment of *Virechana* (therapeutic purgation) followed by Yoga therapy was given to the subjects of the AY group. Following the assessments on day 1, *Deepana* (Digestive) *Hinguvachadi churna* (polyherbal powder) [20] was given for the first 3 days. From day 4, *Abhyantara snehapana* (internal oleation) with *Kallyanaka Ghrita* (a polyherbal preparation made with clarified butter) [19] was administered on empty stomach between 7 and 8 a.m. in increasing dosage ranging from 30 to 150 mL for 3–5 days until *Samyak Snighdha Lakshanas* (adequacy of internal oleation) were seen. Following this, *Sarvanga Abhyanga* (full body oil application) with *Shuddha Tila taila* (pure Sesame oil) and *Swedana* (steam bath) was administered for 3 days. The next day (maximum by day 12), *Virechana* (therapeutic purgation) was induced by administering *Trivrit lehyam* (polyherbal paste) [19]. The process of *Virechana* was reported earlier as safe and efficacious with no imbalance in serum electrolyte levels [20]. *Samsarjana krama* (dietary regimen) for 3–5 days (Day 12–14/16) was specified based on *Shuddhi* (degrees of cleansing).

*Shamana Oushadhi* (oral medication for pacification) was started between days 15 and 17 and was continued for a span of 75 days. *Pathyakshadhatradi Kashaya* (polyherbal decoction) [21], 15 mL, 30 min before breakfast and dinner with 45 mL of warm water was advised for oral use. *Kachoradi churna* (polyherbal powder) [22], topical use as a paste mixed with milk (at room temperature) on the forehead once a day. There was a special mention of *Pathya* and *Apathya* (Do's and Don'ts regarding diet and lifestyle). The composition of each polyherbal formulation and the dosage are mentioned in Table 2.

The subjects were allowed to take oral analgesics (Non-steroidal anti-inflammatory drugs, NSAID), as and when required based on the intensity of pain tolerable to them, and the same was noted in their diary for medication use.

*Yoga therapy*: The specially designed integrated Yoga therapy module for migraine included loosening exercises, breathing exercises, *asanas* (postures), *pranayama* (regulated breathing), relaxation techniques, and chanting. Yoga was practiced for 40 min daily, beginning from day 15 to 17 of the treatment for 7 days as personalized sessions under the supervision of a trained Yoga therapist. The subjects were asked to practice the same module at home, 5 days a week until day 90. Female subjects were advised not to practice yoga during the first 3 days of menstrual cycle. The yoga therapy module is detailed in Table 3.

**Table 2.** List of polyherbal preparations (with their botanical names) used across Ayurveda treatment period and their prescribed quantity in the formulation

**a. Hinguvachadi Churna** [19]. It is prepared with one part of each of the ingredients mentioned below. They are powdered separately and mixed together. Dosage: 2.5–5 g, 30 min before food with warm water

Sanskrit name	Botanical name
<i>Shuddha Hingu</i> (processed with Ghee)	<i>Ferula asafetida</i>
<i>Vacha</i>	<i>Acorus calamus</i>
<i>Vijaya</i>	<i>Terminalia chebula</i>
<i>Pashugandha</i>	<i>Cleome gynandra</i>
<i>Dadima</i>	<i>Punica granatum</i>
<i>Dippyaja (Ajwain)</i>	<i>Trachyspermum ammi</i>
<i>Dhanya</i>	<i>Coriandrum sativum</i>
<i>Pata</i>	<i>Cyclea peltata</i>
<i>Pushkaramoola</i>	<i>Inula racemosa</i>
<i>Shati</i>	<i>Hedychium spicatum</i>
<i>Hapusha</i>	<i>Sphaeranthus indicus</i>
<i>Agni</i>	<i>Plumbago zeylanica</i>
<i>Yavakshar</i>	Alkali preparation made of <i>Hordeum vulgare</i>
<i>Svarjika kshara</i>	<i>Sarjika kshara</i>
<i>Saindava lavana</i>	Rock salt
<i>Sauvarchala lavana</i>	Black salt
<i>Vida lavana</i>	Type of black salt
<i>Shunti</i>	<i>Zingiber officinalis</i>
<i>Maricha</i>	<i>Piper nigrum</i>
<i>Pippali</i>	<i>Piper longum</i>
<i>Ajaji</i>	<i>Cuminum cyminum</i>
<i>Chavya</i>	<i>Piper chaba</i>
<i>Tintidika</i>	<i>Rhus parviflora</i>
<i>Vetasamla (Amlavetasa)</i>	<i>Garcinia morella</i>

**b. Kallyanaka Ghrita** [19]. 12 g each of the below mentioned ingredients are used to make a medicated ghee (clarified butter)

Sanskrit name	Botanical name
<i>Haritaki</i>	<i>Terminalia chebula</i>
<i>Vibhitaki</i>	<i>Terminalia bellirica</i>
<i>Amalaki</i>	<i>Embllica officinalis</i>
<i>Vishala</i>	<i>Citrus chalcophyllus</i>
<i>Bhadra ela</i>	<i>Amomum subulatum</i>
<i>Devadaru</i>	<i>Cedrus deodara</i>
<i>Elavaluka</i>	<i>Prunus avium</i>
<i>Sariva</i>	<i>Hemidesmus indicus</i>
<i>Haridra</i>	<i>Turmeric</i>
<i>Daruharidra</i>	<i>Berberis aristata</i>
<i>Shalaparni</i>	<i>Desmodium gangeticum</i>
<i>Prishnaparni</i>	<i>Uraria picta</i>
<i>Phalini</i>	<i>Callicarpa macrophylla</i>
<i>Nata</i>	<i>Valeriana wallichii</i>
<i>Brihati</i>	<i>Solanum indicum</i>

Sanskrit name	Botanical name
<i>Kushta</i>	<i>Saussurea lappa</i>
<i>Manjishta</i>	<i>Rubia cordifolia</i>
<i>Nagakeshara</i>	<i>Mesua ferrea</i>
<i>Dadimaphalatwak</i>	<i>Punica granatum</i>
<i>Vella</i>	<i>Embelia ribes</i>
<i>Talisapatra</i>	<i>Abies webbiana</i>
<i>Ela</i>	<i>Elettaria cardamomum</i>
<i>Malati</i>	<i>Jasminum sambac</i>
<i>Utpala</i>	<i>Nymphaea stellata</i>
<i>Danti</i>	<i>Baliospermum montanum</i>
<i>Padmaka</i>	<i>Prunus poddum</i>
<i>Hima</i>	<i>Santalwood - Santalum album</i>
<i>Sarpi</i>	Ghee – 768 g

Manufacturer – Arya Vaidya Pharmacy, Coimbatore, India, a GMP certified company.

**c. Trivrit Lehyam** [19]. Trivrit – *Operculina turpethum*. Preparation – 25 g of the powder is added with 400 mL of water, boiled and reduced to 100 mL, filtered. To this Trivrit Kashaya, 25 g of Trivrit powder is again added, along with 50 g of sugar and mixed well. 25 mL of honey and 5 g each of cinnamon, cardamom, and cinnamon fine powder is added to obtain the sweet paste

Sl. No.	Ingredients	Quantity
1	<i>Trivrit Kashaya</i>	100 mL
2	<i>Trivrit Churna</i>	25 g
3	Sugar	50 g
4	Honey	25 mL
5	Cinnamon	5 g
6	Cardamom	5 g
7	Cinnamon leaves powder	5 g

Manufacturer – Arya Vaidya Pharmacy, Coimbatore, India, a GMP certified company.

**d. Pathyakshadhatradi Kashaya** [21]. Herbal decoction is prepared from 10 g each of the following herbs

Sanskrit name	Botanical name
<i>Pathya</i>	<i>Terminalia chebula</i>
<i>Aksha</i>	<i>Terminalia bellirica</i>
<i>Dhatri (Amla)</i>	<i>Embllica officinalis</i>
<i>Bhunimba</i>	<i>Andrographis paniculata</i>
<i>Nisha (Turmeric)</i>	<i>Curcuma longa</i>
<i>Nimba (Neem)</i>	<i>Azadirachta indica</i>
<i>Amruta</i>	<i>Tinospora cordifolia</i>

Dosage – 15 mL twice daily before breakfast and dinner mixed with 45 mL of warm water. Manufacturer – Arya Vaidya Pharmacy, Coimbatore, India, a GMP certified company.



**Table 2.** (continued)

e. *Kachoradi churna* [22]. Equal quantities of herbal powders mentioned below are used to make the powder

Sanskrit name	Botanical name
Kachora	Curcuma zedoaria
Dhatri	Emblca officinalis
Manjishta	Rubia cordifolia
Yashti	Glycyrrhiza glabra
Daru	Cedrus deodara
Silajitu	Asphaltum
Vedhi	Ferula foetida
Rohini	Andrographis paniculata
Tintrinisira	Tamarindus indicus
Kumkuma	Crocus sativus
Indu	Camphor
Varivaha	Cyperus rotundus
Roohanam	Mallotus philippensis
Bala	Sida cordifolia
Laja	Oryza sativa
Jala	Coleus zeylanicus
Usira	Vetiveria zizanioides
Pushkaramoola	Innula racemosa

Dosage – 1/2 tsp to be mixed with milk and applied on the forehead. Manufacturer – Arya Vaidya Pharmacy, Coimbatore, India, a GMP certified company.

#### Control Group

The subjects who agreed to participate in the trial but preferred to continue on oral analgesics (NSAIDs) for symptomatic relief as per the prescription of a general physician or neurologist were included under this group. They were asked not to practice yoga nor follow Ayurveda during the study period. They were given an option to undergo the same therapy protocol as given for the AY group after the study period.

Subjects of both groups were monitored once in 2 weeks over a telephonic call and visited the investigator once a month. The subjects were free to withdraw from the study at any stage if they felt the conditions were not conducive.

#### Data Analysis

The data were analyzed using Statistical Packages for Social Sciences (SPSS), version 23. The normality and homogeneity were assessed using Kolmogorov-Smirnov test. The missing values were replaced by intention-to-treat analysis. The data of individual variables were analyzed using a repeated measures analysis of variance with one within-subjects factor (Time) and one between subjects factor (Groups). Multiple comparisons were made across mean values using a post-hoc analysis with Bonferroni correction. The values were considered significant if  $p < 0.05$ .

## Results

The AY group comprised 30 (8 male and 22 female) subjects, with an average age  $\pm$ SD of  $33.83 \pm 6.84$  years. The CT group had an equal number of subjects matched

for age and gender, with an average age  $\pm$  SD of  $31.46 \pm 7.81$  years. The demographic and clinical characteristics are detailed in Table 4. There was one drop out in the AY group on day 90 and one each from the CT group on days 30 and 90. The RM analysis of variance with post-hoc analysis (with Bonferroni correction) showed significant differences within and between subjects.

**MIDAS:** There was a significant difference in both within-subjects factor (Time,  $p < 0.001$ ) as well as between subjects factor (Groups,  $p < 0.05$ ). Also, the interaction between Time and Groups was significant ( $p < 0.001$ ). The post-hoc analysis with Bonferroni correction suggested that there was a significant reduction in MIDAS scores for the AY group on days 30 and 90 compared to day 1 values ( $p < 0.001$ , for both comparisons; Table 4a).

When the degree of disability was compared across days 1, 30, and 90, the number of subjects with grade IV (severe disability) decreased from 16 (53.3) to 4 (13.3) to 1 (3.3%) subject, whereas those belonging to grade I MIDAS (little or no disability) increased from 6 (20) to 11 (36.6) to 20 (66.6%), respectively. The CT group showed no change across three assessment points.

**Perceived Stress Scale 10:** There was a significant difference in both within-subjects factor (Time,  $p < 0.001$ ) and between-subjects factor (Groups,  $p < 0.001$ ). Also, the interaction between Time and Groups was significant ( $p < 0.001$ ). The post-hoc analysis showed a significant reduction in PSS scores for the AY group on days 30 and 90 compared to the day 1 values ( $p < 0.01$ ,  $p < 0.001$ , respectively).

The scores of perceived stress in the AY group changed significantly across the three assessments (days 1, 30, and 90). The number of subjects with low stress increased from 3 (10) to 7 (23.3) to 18 (60%), while the number with moderate stress decreased from 25 (83.3) to 22 (73.3) to 11 (36.6%), and with high perceived stress decreased from 2 (6.6) to 1 (3.3) to 0 subjects (Table 4a).

**Heart Rate Variability:** There was a significant interaction between time and groups for LF, HF power values in normalized units as well as LF/HF ratio ( $p < 0.05$ ). The post-hoc analysis showed a significant reduction in LF power and LF/HF ratio, while HF power increased in the AY group on day 90 compared to their day 1 and day 30 values ( $p < 0.01$ ,  $p < 0.05$  respectively). There were no changes observed in the time domain measures of HRV (Table 4b).

**Heart Rate:** There was a significant difference in within-subjects factor (Time,  $p < 0.05$ ). The post-hoc analysis with Bonferroni correction showed no significant difference across multiple comparisons for both groups (Table 4c).

**Respiratory Rate:** There was no significant difference in both within-subjects factor and between-subjects fac-



**Table 3.** Details of the yoga program specially designed for the migraine patients are listed below. The description includes the category of practices, duration of each practice (s-seconds, min-minutes), number of repetitions, and the sequence of practices

Sl. No.	Practices	Number of rounds	Duration
1.	Loosening practices ( <i>Shithilikarana vyayama</i> ) Neck up and down movement Neck side to side movement Shoulder rotation – clockwise and anti-clockwise Shoulder cuff rotation – clockwise and anti-clockwise Head rolling – clockwise and anti-clockwise, up and down movement	5 rounds	5 min
2.	Instant relaxation technique	1 round	1 min
3.	Breathing practices Ankle stretch breathing Shashankasana breathing Tiger stretch breathing Uttanapadasana breathing – Single leg	5 rounds each	5 min
4.	Quick relaxation technique	1 round	3 min
5.	Postures ( <i>Asanas</i> )	1 round each	12 min
5a	Standing: Padahasthasana Ardha Chakrasana Ardhakati Chakrasana Trikonasana Relaxation in standing posture	30 s each approximately    30 s	2.5 min    30 s
5b	Sitting: Janushirasana Vajrasana Ushtrasana Shashankasana Suptavajrasana Vakrasana Relaxation in sitting posture	30 s each approximately    30 s	4 min    30 s
5c	Supine: Viparita karani/Sarvangasana Matsyasana Pavanamukthasana Naukasana Setubandhasana Relaxation in supine position	30 s each    30 s	2.5 min    30 s
5d	Prone: Bhujangasana Shalabhasana Dhanurasana	30 s each	1.5 min
6.	Deep relaxation technique		7 min
7.	Kriyas Kapalabhati		1 min
8.	Regulated breathing practices ( <i>Pranayama</i> )  Nadishodhana Pranayama Bhramari Pranayama Ujjayi Pranayama	1 min each  1 min each	3 min  3 min
9.	<i>Nadanusandhana</i> (chanting)		3 min

**Table 4.** Demographic and clinical characteristics of subjects belonging to the AY and CT groups

	AY	CT
Age, years, mean $\pm$ SD	33.83 $\pm$ 6.84	31.46 $\pm$ 7.81
Gender		
Male	8	8
Female	22	22
Clinical characteristics		
Severity of headache (intensity of pain)		
Moderate	9	12
Severe	21	18
Average duration of attack (in hours)	27.8	29.8
Associated with nausea and/or vomiting (number of subjects)	30	30
Number of subjects using analgesics	30	30

**a.** MIDAS score and PSS recorded on days 1, 30, and 90 in both AY and CT groups. Values are group mean  $\pm$  SD

	AY			CT		
	day 1	day 30	day 90	day 1	day 30	day 90
MIDAS	25.73 $\pm$ 22.07	10.76 $\pm$ 10.39***	5.48 $\pm$ 7.97***,†	21.00 $\pm$ 15.26	17.58 $\pm$ 12.40	20.24 $\pm$ 13.48
PSS	21.20 $\pm$ 4.83	17.03 $\pm$ 5.72**	11.96 $\pm$ 4.85***,†††	22.30 $\pm$ 3.36	21.34 $\pm$ 2.48	21.51 $\pm$ 3.34

\*\*  $p < 0.01$ , \*\*\*  $p < 0.001$ , †  $p < 0.05$ , †††  $p < 0.001$ , repeated measures ANOVA with post-hoc analysis.

\* Comparing the day 1 values with respective days 30 and 90 values, † comparing days 30 and 90 values.

MIDAS, migraine disability assessment; PSS, perceived stress score.

**b.** Frequency domain and time domain measures of heart rate variability recorded on days 1, 30, and 90 in both AY and CT groups. The values are group mean  $\pm$  SD

	AY			CT		
	day 1	day 30	day 90	day 1	day 30	day 90
LF, nu	54.86 $\pm$ 18.45	50.72 $\pm$ 17.25	41.26 $\pm$ 15.48**,†	43.51 $\pm$ 18.33	45.77 $\pm$ 16.40	46.04 $\pm$ 16.85
HF, nu	45.29 $\pm$ 18.22	48.90 $\pm$ 18.15	58.91 $\pm$ 15.43**,†	56.71 $\pm$ 18.30	54.36 $\pm$ 16.37	54.14 $\pm$ 16.87
LF/HF, ratio	2.06 $\pm$ 2.79	1.29 $\pm$ 0.86	0.84 $\pm$ 0.59†	1.04 $\pm$ 0.97	1.10 $\pm$ 0.98	1.09 $\pm$ 0.89
SDNN, ms	34.99 $\pm$ 18.86	33.43 $\pm$ 13.65	34.33 $\pm$ 18.47	34.41 $\pm$ 13.23	33.73 $\pm$ 20.27	34.37 $\pm$ 20.20
RMSSD, ms	25.49 $\pm$ 19.63	23.71 $\pm$ 14.38	28.16 $\pm$ 24.60	30.50 $\pm$ 20.70	30.41 $\pm$ 26.39	33.10 $\pm$ 27.05
pNN50, ms	8.43 $\pm$ 14.32	7.72 $\pm$ 12.41	6.35 $\pm$ 10.62	11.88 $\pm$ 18.74	9.82 $\pm$ 14.78	12.51 $\pm$ 19.23

\*\*  $p < 0.01$ , †  $p < 0.05$ , repeated measures ANOVA with post-hoc analysis.

\* Comparing day 1 with day 30 and day 90 values, † comparing day 30 with day 90 values.

**c.** The HR and RR recorded on days 1, 30 and 90 in both AY and CT groups. The values are group mean  $\pm$  SD

	AY			CT		
	day 1	day 30	day 90	day 1	day 30	day 90
HR (BPM)	82.95 $\pm$ 11.53	84.72 $\pm$ 12.63	78.53 $\pm$ 11.12	86.58 $\pm$ 9.74	87.05 $\pm$ 11.93	84.09 $\pm$ 14.24
RR (BrPM)	18.30 $\pm$ 3.03	17.03 $\pm$ 2.55	16 $\pm$ 2.59**	17.76 $\pm$ 3.72	18.03 $\pm$ 3.38	18.41 $\pm$ 3.87

\*\*  $p < 0.01$ , Repeated measures ANOVA with post-hoc analysis comparing the day 1 values with days 30 and 90 values. BPM, beats per minute; BrPM, breaths per minute; HR, heart rate; RR, respiratory rate.

**Table 4.** (continued)**d.** The integral EMG and RMS EMG recorded on days 1, 30, and 90 in both AY and CT groups. The values are group mean  $\pm$  SD

	AY			CT		
	day 1	day 30	day 90	day 1	day 30	day 90
Integral EMG, $\mu$ V	11.80 $\pm$ 8.49	8.74 $\pm$ 4.85	6.52 $\pm$ 2.77**. $\dagger\dagger$	9.31 $\pm$ 3.90	10.96 $\pm$ 5.42	12.04 $\pm$ 6.31
RMS EMG, $\mu$ V	133.43 $\pm$ 58.25	113.99 $\pm$ 68.61	75.44 $\pm$ 35.19***. $\dagger$	128.50 $\pm$ 69.53	159.41 $\pm$ 129.39	128.31 $\pm$ 65.87

\*\*  $p < 0.01$ , \*\*\*  $p < 0.001$ ,  $\dagger p < 0.05$ ,  $\dagger\dagger p < 0.01$ , repeated measures ANOVA with post-hoc analysis. \* Comparing day 1 with day 30 and day 90 values,  $\dagger$  comparing day 30 with day 90 values.

tor. The interaction between time and groups was significantly different ( $p < 0.05$ ).

The post-hoc analysis with Bonferroni correction suggested that there was a significant reduction in respiratory rate in the AY group on day 90 compared to day 1 values ( $p < 0.01$ ; Table 4c).

*Surface Electromyography:* The mean RMS EMG showed a significant difference in within-subjects factor (time,  $p < 0.05$ ), between subjects factor (groups,  $p < 0.05$ ) and the interaction between time and groups ( $p < 0.01$ ). The post-hoc analysis showed a significant reduction on day 90 compared to day 1 and day 30 values ( $p < 0.001$  and  $p < 0.05$ , respectively).

Integral EMG ( $p < 0.001$ ) showed a significant difference in the interaction between time and groups ( $p < 0.001$ ). The post-hoc analysis showed a significant reduction in integral EMG values in the AY group on day 90 compared to day 1 values ( $p < 0.01$ ).

The control group showed no significant changes across assessments (days 30 and 90, compared to day 1) for different variables ( $p < 0.05$ ; Table 4d).

*Medication (NSAID) Use:* The analgesic requirement on need basis, which was noticed in all 30 participants of the AY group (100%) on day 1 reduced to 14 participants (46.6%) by day 30 and was noticed in 6 participants (20%) on day 90 compared to the CT group where the requirement reduced from 30 participants (100%) on day 1 to 27 participants (90%) on day 30, and to 26 participants (86.66%) on day 90.

## Discussion

A combined Ayurveda and Yoga therapy intervention for 90 days reduced migraine-related disability, levels of perceived stress, and sympathetic arousal. The foremost treatise of Ayurveda, *Charaka Samhita* considers Yoga as an integral part of Ayurveda where the balance of *Doshas* (body humor) is achieved through Ayurveda and psycho-

logical well-being through Yoga therapy. Hence, we made an attempt to study the combined effect of Yoga and Ayurveda in individuals with migraine headache.

Migraine is a leading cause, among both men and women, for years spent with disability at physical, mental, and social levels [4]. The MIDAS scores which were high in the present study decreased significantly in the AY group. This can primarily be attributed to the reduced severity of pain, frequency of headache, and improved quality of life. Similar changes in MIDAS were reported earlier, where Ayurveda medicines were given along with regulated diet and lifestyle. Improved digestive fire (agni) and better acid-alkaline balance in the digestive system were the proposed mechanisms [12]. A mindfulness-based stress reduction program along with conventional prophylaxis also showed a significant reduction in migraine-related disability. It was speculated that improved emotional regulation, less pain catastrophizing, and increased pain acceptance are the reasons behind the positive results observed [23].

Stress is considered as an important factor for trigger and perpetuation of migraine headache [5]. The higher perceived stress scores observed in AY and CT groups indicate the impact of stress on the present study population. The severity of perceived stress decreased significantly in the AY group, with more than 60% of the participants moving to low perceived stress levels. Similarly, significant improvement in perceived stress, marked relief in pain, and reduction in salivary cortisol levels were observed in 24 women with headache or back pain following the practice of Iyengar Yoga, twice a week for 90 min duration [24]. A previous report implied that a single session of *Abhyanga* reduced subjective stress experience, lowered heart rate, and systolic blood pressure [25]. *Abhyanga* which was part of Ayurveda intervention for 6–8 days in the present study, was expected to relax and rejuvenate an individual physically and mentally.

The evoked autonomic changes were recorded during the 3-min frowning period. Reduction in the duration of

recording from standard 5 to 3 min was based on the subjective experience based on our pilot study where subjects expressed discomfort and were anxious about the onset of a migraine attack following frowning for 5 min. One such study validates the short-term HRV [26].

An increased HF and decreased LF component of HRV along with reduced heart rate and respiratory rate in the present study gives a clear indication of sympathovagal balance shifting towards vagal dominance in the AY group. A previous study on healthy undergraduate medical students showed a significant reduction in stress, decrease in LF component, and increase in HF component of HRV spectrum following 2 months of *pranayama* practice [27]. The changes were attributed to the inhibitory signals generated during the process of *pranayama* from cardiorespiratory system leading to modulation of autonomic system resulting in parasympathetic dominance. Heightened baroreflex sensitivity and improved oxygenation have been the proposed underlying mechanisms for the decreased heart rate, systolic blood pressure, and improved oxygen consumption observed in the study [28]. Brown and Gerbarg in a review reported that yoga-breathing interventions increase HRV, improve sympathovagal balance, and promote stress resilience. Coherent breathing and resonant breathing, using a fixed rate of 3 and a half to 6 breaths per minute (bpm), have been shown to increase HRV and parasympathetic nervous system activity [29].

Increased parasympathetic activity may cause reduced firing of the paraventricular nucleus of the medulla to locus coeruleus, and decreased stimulation of locus coeruleus could reduce norepinephrine output, resulting in relaxation, quiescence, and reduced respiratory and heart rates [30]. Using real-time functional MRI, attempts were made in healthy volunteers to modulate the activation of their own anterior cingulate cortex to alter their pain experience [31]. The association between increased cortical thickness in pain-related brain regions (including anterior cingulate cortex, bilateral parahippocampal gyrus) and lowered pain sensitivity in Zen meditators compared to non-meditators has added a probable supporting evidence for the underlying mechanisms [32]. Some meditation types such as mindfulness are associated with enhancements in cognitive control, emotional regulation, positive mood, and acceptance. Each of them play a role in pain modulation [33].

Streeter et al. [34], in a comprehensive review, have reported that *asanas*, *pranayama*, and meditation including chanting can shift sympathovagal balance to vagal dominance, enhance activity of the gamma-aminobutyric acid system, and reduce allostatic load. The authors have also hypothesized that the regulation of hypothalamic-pituitary-adrenal axis through the practice of yoga is one of the underlying mechanism.

Furthermore, stress is also known to increase muscle activation. In chronic pain, sympathetic activity due to nociceptive stimulation may cause disturbances of blood flow regulation in the affected muscle and enhance muscle activation [35]. A previous report on yoga in tension-type headache has shown to reduce EMG amplitude at rest and during mental activity [36]. Reduced sympathetic activity following the practice of yoga is also known to bring down muscle activity.

Hence, the present study demonstrated that the autonomic arousal and sEMG activity during frowning were substantially lower on day 90, inferring a positive role of Ayurveda and yoga in an attenuated stress response.

Two polyherbal combinations were used in the Ayurveda treatment protocol (*Kallyanaka Ghrita* for internal oleation and *Pathyakshadhatryadi kashaya* as oral medicine post *virechana*). *Kallyanaka ghrita* is one of the combinations mentioned in Bower manuscript and traditional Ayurveda texts and also assessed scientifically through HPTLC [37].

The orally administered decoction (*Pathyakshadhatryadi Kashaya*) used in this study for 75 days has 7 herbs. *Triphala* (3 herbs) has adaptogenic effects [38], *Azadirachta Indica* has anti-inflammatory, anti-proliferative properties, turmeric with the active ingredient curcumin has anti-inflammatory effect [39], *Tinospora cardifolia* has anti-oxidant, immunomodulatory properties [40], and *Andrographis paniculata* has shown hepatoprotective, antioxidant, and anti-inflammatory properties [41].

Hence, the present study illustrates that a combined intervention of traditional Ayurveda and yoga therapies can reduce migraine-related disability and perceived stress by establishing autonomic balance and reduced frontalis muscle activity over the forehead.

*Limitations and Future Directions*

Self-selection of intervention by the subjects was the major limitation of the study. Bigger sample size with a randomized controlled trial with a longer follow-up would offer more generalized results.

## Conclusion

Ayurveda and yoga therapy reduce migraine-related disability by reducing perceived stress, improving autonomic balance, and reducing muscle tension.

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## Author Contribution

Dr. Vasudha M. Sharma was involved in conceptualizing the study, reviewing the literature, planning Ayurveda intervention, recruitment of subjects and assessments, data analysis, and preparing the manuscript. Dr. Manjunath N.K. was involved in conceptualizing and designing the study, planning statistical analysis, and preparing the manuscript. Dr. Nagendra H.R. was instrumental in providing guidance for the whole study, designing the yoga therapy module, and preparing the manuscript.

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**Inventi:ep/118/10**

**MIGRAINE TREATMENT: AYURVEDIC V/S ALLOPATHIC**

*08-Aug-2010 Review Article July - September 2010*

*Chetan C Anajwala, Sanjay L Dakhara, Nirav A Singhal, Vidula S Selote, SM Vijayendra Swamy*

Migraine can be a challenging disease to diagnose because it is a clinical diagnosis based on symptoms that are subjective and verifiable only by the patient. Although migraine is a common disorder, there is no specific blood test that can confirm its diagnosis. This review deals with the medicinal herbs, ayurvedic medicine, allopathic drugs and other treatment of migraine in India and their earlier investigation. Because of the fact that the allopathic drugs have more side effects, there has been an increase in demand for the phytopharmaceutical products of herbal and ayurveda in Western countries. Many pharmaceutical companies are now concentrating on manufacturing of ayurvedic Medicines for treating migraine. Different type of plant parts used for the Ayurvedic formulation; overall out line of those herbal scenario and its market potentials are also discussed. In India most of them, where Ayurvedic treatment is frequently used, for their ailments and provides instructions to local people how to prepare medicine from the herbs.

## CLINICAL STUDIES ON MIGRAINE

What is a migraine and how is it different from other types of headaches? The migraine is one of the worse headaches a person can experience. It is described as a throbbing or pulsating pain that can be on one side of the head. It can begin in a specific area and then spread while it builds in intensity. A migraine is associated with nausea and vomiting. The person will also be sensitive to light, sounds and even certain smells. Sleeping can be difficult and many people become depressed. They can last for a couple of hours or for several days.

A person that suffers with migraine headaches will most likely have recurring episodes but they usually become less painful with age. There are two main types of migraines. The most common type is the “migraine without aura” and it can be felt on one side of the head or both. This type normally causes photophobia, nausea, vomiting, fatigue and mood swing.

The second type is the “migraine with aura”. Aura is a neurological phenomenon that is usually visual and they happen between ten and thirty minutes before the pain begins. The person will normally experience hallucinations or wavy images and bright shimmering lights at the edge of their vision. Some people experience a temporary loss of vision which is accompanied by dizziness, vertigo, numbness of the face, tongue and other extremities along with speech abnormalities and weakness.

Some of the other types of migraine headaches that are uncommon are called basilar artery, adomind, headache-free, carotidynia, ophthalmoplegic and status migrainosus. Some women suffer from menstrual migraines right before their cycle begin and some will develop this condition when pregnant or after they begin menopause.

### **To learn more about dealing with migraine headaches**

It is not known at this time what causes a person to have this type of headache but studies show that many times patients with this condition have a family history of migraines. They usually inherit sensitivity to the “triggers” that can cause inflammation in the nerves and blood vessels surrounding the scalp and brain. These triggers are what makes a person have the migraine for the first time and some of them include certain types of alcohol such as red wine, caffeine, over-exertion, fatigue, environment, perfume, stress and certain medications.

The treatment used for this condition will depend on the type of migraine the person experiences. Your medical history and attempt to create a treatment plan that will reduce the number of headaches you have, length of time you experience the problem and reduce the severity of the symptoms. The ultimate goal is to eliminate them completely if possible. A variety of the symptoms. The ultimate goal is to eliminate them completely if possible. A variety of medications used along with plenty of rest is the most common treatments. It's best to avoid the triggers that set off the headaches whenever possible.

## Ten Ways to Avoid Migraine

There isn't just one cause for the headaches and is a problem with migraine prevention. There are very many triggers for migraines and trying to avoid them all would be an exercise in hermitry. There are a few things you can do to avoid migraines and here are the top ten.

- 1) Cut the caffeine. Taking in too much can lead to a headache of monstrous proportions. Cut it back slowly.
- 2) While we're talking about caffeine, let 's also talk about nutrasweet. Aspartame has been the culprit for many people who have complained of migraines. Avoid it and you may well avoid a horrendous headache.
- 3) There are more reasons to give up smoking than you can count, but avoiding migraines is another reason to put on the list. Secondhand smoke is just as likely to cause a migraine headache as actual smoking. You do have the right to not have to be around their smoke, especially if their smoke is causing headaches .
- 4) Establish a regular pattern of sleeping and waking. In fact, get as anal-retentive as you can about this .a regular pattern of going to bed at the same time and getting up at the same time , on weekends as well as weekdays, can do wonders.
- 5) Give up the pill and try another form of contraception. Birth control pills and their effects on hormones can be a major hazard when it comes to migraine pain you may look on other forms of female contraception if you and your partner don't mind.
- 6) Change your lighting . very bright lights can often trigger very migraines. You might consider using the softer, filmy kind of light bulbs.
- 7) Cheese, chocolate and wine may sound like the ideal ingredients for a romantic picnic, but if you are prone to migraines the last thing you may be feeling is romantic following that afternoon getaway. Stay away from all three and find other ways to get in a romantic mood.
- 8) Use body wash to smell good instead of perfume or cologne. Keep yourself clean instead of daubing with the smelly-goods.
- 9) Being an aerobic exercise program. Exercising regularly helps to increase your cardiovascular capacity and improper blood flow is linked to recurrent migraines.
- 10) Driver or take a train when you can instead of flying. One easily avoided when the trip can be made by alternative means of transportation.

## Migrain Headache

Upto 90%of the general population reported experiencing headaches at some point in their lives. At any given point in time, up to 10%of the general population seeks medical treatment for the relief of disabling headaches, and over 40% of north Americans have experienced severe headaches at some point in their lives. Headache is a complex phenomenon , the pathophysiology of which is migrain.

Migraine sometimes has dramatic features of transient neurologic deficits, blinding headaches, nausea , and vomiting. Migraine is much more common in women then men , runs in families, and is usually a disorder of young , primarily healthy women . out of the several categories of migraine headaches.

Migraine with aura and migraine without aura is far more "common" than migraine with aura .aura are usually visual, but may auras should typically last from 5 to 60 minutes in most patients and represent progressive neurologic deficit with subsequent complete recovery. They usually precede the actual headache attack. Migraine headaches commonly begin early in the morning but may occur at any time of the day or night. Nocturnal headaches, awakening the patient from sleep , characteristically occur in cluster headaches but have also been reported with migraine . however , in a patient with the recent onset of nocturnal headaches, brain tumor and glaucoma should be excluded by thorough neurologic and ophthalmologic evaluation and with appropriate imaging studies.

During severe attacks, headache is lateralized in 60-70% of the patients followed by bi- frontal or global headache in up to 30%; occasionally other locations, including bi-occipital headaches are described. Pain is usually associated with nausea, photophobia, phonophobia, and occasional vomiting. Headache is usually gradual in onset and follows a crescendo pattern which persists typically for 4to 72 hours, with gradual but complete resolution. The headache is usually dull, deep and steady when mild to moderate and becomes throbbing or pulsatile when severe. Migraine headaches are worsened by rapid head motion, sneezing. Straining, constant motion or physical exertion thereby leading many migrain sufferers to lie down in a dark, quiet room. Some migraine sufferers can abort their headaches .

Phenomenon of prodrome should be separated from the aura . prodromes can last hours to days, and are usually associated with changes in mood, appetite, and fluid retention. Although autonomic features characteristically occur in cluster headaches, they can also occur in 10-20%of migraine patients. These symptoms may include nasal stuffness , rhinorrhea, tearing, skin color and temperature change, and changes in pupil.



## A LITERARY STUDY OF SHIROROGA W.S.R. TO ARDHAVABHEDAKA IN BRIHATRAYEE

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### ABSTRACT

*Ayurveda* is one of the oldest science, that when mankind started to suffer from various diseases due to *Pragnaparadha*, *Asatmyendriyarthasamyoga* etc. *Maharshis* were compelled to think in the direction of the search for cure of such ailments. In this manner *Ayurveda* came in the existence. *Ardhavabhedaka* is well known disease to science of *Ayurveda*. *Ardhavabhedaka* is mentioned as one of *Shiroroga* but according to *Acharya Vagbhata* it comes under *Vataja Shirahshula* which is limited to the half of the portion of head. *Ardhavabhedaka* has been explained as *Tridoshaja* by *Acharya*

*Sushruta*, *Vata-Kaphaja* by *Acharya Charaka* and *Vataja* by *Acharya Vagbhata*. But the different quality of pain such as *Toda*, *Bheda*, etc. describes the *Vishama* nature of *Vata dosha* mentioned by *Acharyas*. The great economist Adam Smith has told that the needs of human being are infinite but the availability is less to fulfill. Our life style has been drastically changed and our growing needs have no end. Speed and accuracy are the prime demands of modern era. To cope with this situation everybody have to face hectic, competitive and stressful life. People cannot pay attention to their physical and mental health by considering above dreadful complaints. In this article we have planned to study the complete review which was explained in the *Brihatrayee* and tried to conclude the *Ardhavabheda* disease. **Aim And Objectives:** To understand the *Ayurvedic* concepts and critical review of *Shiroroga w.s.r. Ardhavabhedaka* related to the symptoms and management according to *Brihatrayee*. **Materials and Method:** Complete Review of *Brihatrayee* on *Shirah shoola* and *Ardhavabhedaka*.

**KEYWORDS:** *Ardhavabhedaka*, *Brihatrayee*, *Nasya*, *Shiroroga*, *Shirah shola*.

## INTRODUCTION

*Ayurveda* is one of the oldest scientific medical systems of the world with long record of clinical experience. This science is based upon the observation of living beings and their actual response and reaction to the environment. The history of *Ayurvedic* medicine is as old as human civilization. The *Vedas* are most ancient and original source of medical knowledge. In *Ayurvedic* classics and *Sanskrit* literature word “*Shirah shoola*” has never been considered as major disease but it has been a separate disease. *Ardhavabhedaka* is a *Shiroroga* mentioned in various texts of *Ayurveda*. Some *Acharyas* has been classified as *Vataja*, *Vatakaphaja* and *Tridoshaja roga*. *Acharya Chakrapani* has described *Ardhavabhedak* as “*Ardhamastak Vedana*”<sup>[1]</sup> means Pain of half of the frontal region. In *Ayurvedic* classics some classics are most important in view of *Ayurvedic* community in twentieth century. *Brihatrayee* has three major classic of *Ayurveda* as *Charak Samhita* (Book of *Ayurvedic* medicine), *Sushruta Samhita* (Book of *Ayurvedic* surgery) and *Ashtanga Hridaya* (Book of Basic principles of *Ayurveda*).

## REVIEW OF LITARATURE

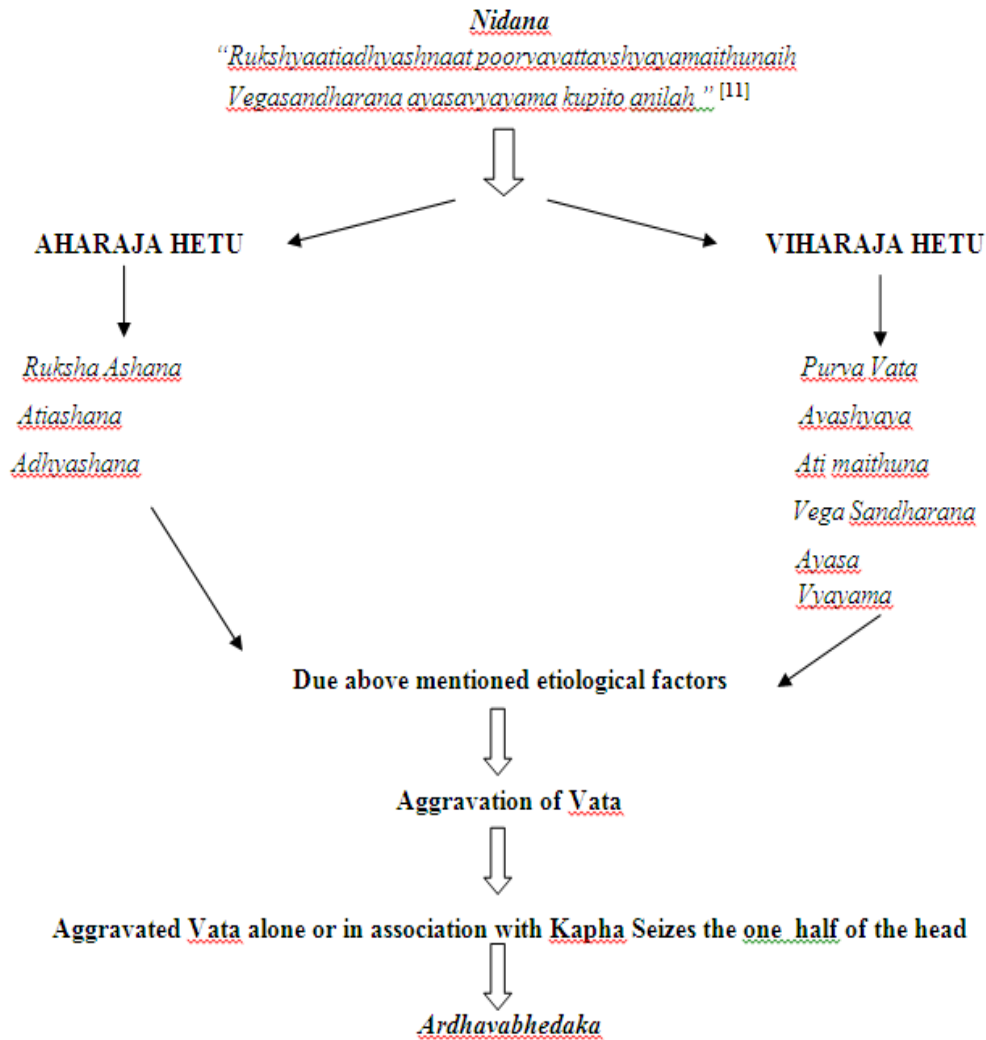
When mankind started to suffer from various diseases due to *Pragnaparadha*, *Asatmyendriyarthasamyoga* and *Parinaam*, causes the *hetu* for *vyadhi*.<sup>[2]</sup> *Ayurvedic* texts describe not only *Shirahshoola* as a symptom of various diseases but also as an independent disease entity as “*Shiro-roga*”. *Acharya Chakrapani* statement regarding *Shiroroga* - “*Shiroroga shabdenochyante, shirorogashabdasya shula eva rujakare vrittatvaat*”<sup>[3]</sup> *Shirahshoola* denotes *Shiroroga* the painful condition of head. The term *Shirahshoola* is limited only to the pain developed in the head. Though *Khalitya*, *Palitya* etc. occur in the head region they are not included in the *Shiroroga*. After assessing the above terminologies it can be concluded that “*the pain which arises in the head is termed as headache*”. *Acharya Chakrapani* further “*Shirorogapradhantvaadbhurishiroroghetutatvat cha pratishayaymeva tavadaha*”<sup>[4]</sup> described in *Chikitsa Sthan* that among the disease of various part of the head, it is the *Pratishyaya* which is the most important one because it gives rise to several other diseases of the head. The word *Ardhavabhedaka* has two components viz. *Ardha* and *Avabhedaka*. *Ardha* means half side, *Ava* suggest bad prognosis, *Bhedaka* means breaking through, perforating or bursting out type of pain. In this, pain affects half region of the head. *Chakrapani* statement regarding *Arddhavabhedka* runs as follows: “*Arddha Mastakavedana*”<sup>[1]</sup> i.e. *Vedana* in half of the portion of the head is called *arddhavabhedaka*. *Vagbhata's* statement regarding *arddhavabhedka* is “*Arddhe tumoordhanah*

*soarddhavabhedaka*".<sup>[5]</sup> Vedana in half of the portion of the head is called *Ardhavabhedaka*. According to Charaka, *Ardhavabhedaka* is mentioned as *Vata-Kaphaja pradhana*<sup>[6]</sup> and five types of *Shiroroga* viz. *Vataja*, *Pittaja*, *Kaphaja Sannipataja* and *Krimija*<sup>[7]</sup> in Sutrasthana. Four additional types of *Shiroroga* was explained. i.e. *Shankhaka*, *Ardhavabhedaka*, *Suryavarta* and *Anantavata* are mentioned in Siddhithana. Susruta told *Ardhavabhedaka* is *Tridoshaja pradhana vyadhi*<sup>[8]</sup> and eleven types of *Shirorogas*<sup>[8]</sup> was explained and their management are described in uttaratantra. But *Acharya Vagbhatta* told it comes under *Vataja Shirahshula*<sup>[9]</sup> which is limited to the half of the portion of head and explained ten types of *Shiroroga* and their management. He further mentioned nine types of disease of *Shirah kapala* as per *Ashtanga Hridaya*<sup>[10]</sup> similarly ten types of *Shiroroga* and their treatment and also nine types of *Shirah Kapala Roga* mentioned by *Ashtanga Sangraha*.

### NIDANA AND SAMPRAPTI

**Table No 1: There is a following Nidan tabulated below as Classics.<sup>[11]</sup>**

Sl.	Etiological Factors	Charak	Susruta	Vagbhatta
1.	<i>Ruksha Ashana</i>	+	-	-
2.	<i>Atiashana</i> (food in excess quantity)	+	-	-
3.	<i>Adhyashana</i> (intake of food before previous meal is digested)	+	-	-
4.	<i>Purva Vata &amp; Avashyaya</i> (exposure to the easterly wind as well as fog)	+	-	-
5.	<i>Ati maithuna</i> (excessive sexual indulgence)	+	-	-
6.	<i>Vega Sandharana</i> (suppression of the manifested natural urges)	+	-	-
7.	<i>Ayasa</i> (fatigue)	+	-	-
8.	<i>Vyayama</i> ( physical work)	+	-	-



Apart from the specific *Nidanas* mentioned by *Charaka*, the *Samanya Nidanas* (17<sup>th</sup> “*Kiyanta Shirsiya Adhyaya*”).<sup>[12]</sup> also are to be considered in the manifestation of the disease.

Majority of the causes are *Vata prakopaka*. *Pitta* and *Kapha Dosha* vitiating as well as *Rakta Dosha* vitiating are observed. *Acharya Susruta* did not mention about *Nidan* for *Shiroroga* (*Ardhavabhedaka*), he only described the *Lakshana* (symptoms) of *Ardhavabhedaka* (*Su.Ut.25*).<sup>[13]</sup> *Acharya Vagabhatta* did not describe about *Nidan* for *Ardhavabhedaka* but he considered the general *Nidan* of *Shiroroga* for the cause of *Ardhavabhedaka* too. *Acharya Susruta* and *Vagabhatta* did not mention *Nidan* for *Ardhavabhedaka* and didn't due to suppression of natural bodily urge while *Acharya Charaka* explained *Nidan* due to suppression of natural bodily urge i.e. *Kshavathu vega*. (*Cha.Su.7/16*).<sup>[14]</sup> *Acharya Charaka* have described *Samprapti* of *Shiroroga* (*Cha.Su.17*) and *Ardhavabhedaka* (*Cha. Si.9/75*). *Ardhavabhedaka* is not mentioned in detail in other *Ayurvedic* literature. *Acharya Charaka*

“Shankhabhedah Shankho Lalaateaikdeshastasya vedana” described the Ardhavabhedaka in Vataj Nanatmaja Vikara as Shiroruk (Headache), Shankha Bheda (Temporal headache) and Lalata Bheda (frontal headache) which are the main symptoms of Ardhavabhedaka. Dalhana told that ardhavabhedaka is due to aggravation of Vata and pitta. All Acharyas invariably accept the involvement of *Vata dosha* in the *Samprapti* of *Ardhavabhedaka*. This is justified by the cardinal feature pain.<sup>[15]</sup> *Ardhavabhedaka Roga* is mainly caused by vitiation of *Vata* followed by minimum to *Pitta* and *Kapha Dosha*. As per *Charaka Rakta* is the main *Dushya* in all types of *Shiroroga*(Ch. Su. 24/13).<sup>[16]</sup> It has also main role in *Samprapti*. Acharya Charaka has mentioned the involvement of *Shirogata Sira* in diseases occurring in head. He stated that the vitiated *Dosha* vitiate *Rakta* along with *Shira* situated in *Shirah* and produce *Shiroroga* (Ch. Su. 17/18- 22). So it means *Raktavaha Srotasa Dushti* occurs. Thus *Rakta* is the main *dushya* in *Ardhavabhedaka*.

#### PREDOMINANCE OF DOSHA IN ARDHAVABHEDA

*Charak:* —————> Vata/Vata pradhan Kaphajanya

*Susruta :* —————> Tridoshajanya

*Dalhana :* —————> Vata Pittajanya

*Vagbhatta :* —————> Vatajanya

**Adhithana:** The seat of disease is *Shirah* (head), *Mana* (mind).

**Vyaktisthana:** *Shirah* (head) and its appendages like *Manya*, *Bhru*, *Shankha*, *Lalata*, *Karna*, *Akshi*, can be considered as *Vyaktisthana* of *Ardhavabhedaka Shiroroga*.

**Agni:** The main *Agni* involved in this disease is *Jatharagnimandya*.

**Roga Marga:** *Madhyama Roga Marga /Marmasthi Sandhigata*.

**Srotodushti Prakara:** *Sanga, Vimargagamana*.

Hence all the above factors i.e. *Dosha Prakopa*, *Dushya Dushti*, *Agnimandya*, *Kha-vaigunya* and *Srotodushti* ultimately leads to *Sthana Samsraya* in *Shirah* and causes severe pain in *Shankha Pradesh (Shankhativedanam)*, *Lalate Pradesha (Lalate ativedanam)*, etc.

**Table No 2: Samprapti Ghataka.**

Dosha:	Vatapradhana /Vatapradhan Kapha/Vatapradhana Tridosha
Dushya:	Rasa, Rakta, Sweda
Srotasa :	Rasavaha, Raktavaha, Swedavaha, Manovaha
Srotodushti Prakara:	Sanga, Vimargagamana
Agni :	Jatharagnimandya



Udbhava Sthana :	Pakvashaya
Prasara:	Rasa-Raktavahini

### PURVARUPA

No specific Purvarupas are mentioned in Ayurvedic classics, for Ardhavabhedaka.

### ROOPA

**Table. No 3: There is a following Lakshanas tabulated below as Classics.**

Ardhavabhedaka symptom	Charaka (c.si.9/75-76)	Susruta (s.ut.25/15)	Vagbhatta (a.h.ut.23/4-8)
Excruciating Pain in the Sterno mastoid region	+	-	-
Excruciating Pain in the Eye-brows	+	-	+
Excruciating Pain in the Temples	+	-	-
Excruciating Pain in the Ears	+	-	-
Excruciating Pain in the Eyes	+	-	-
Excruciating Pain in the half side of fore-head	+	-	+
Excruciating Pain as caused by the injury of a weapon or arani i.e. churning wood used for bringing forth fire	+	-	-
If exceedingly aggravated, destroy the Eyes	+	-	+
If exceedingly aggravated, destroy the Ears	+	-	+
Tearing/Splitting pain appearing in bouts of i.e. intervals of either fortnight or ten days	-	+	-
Pricking pain appearing in intervals of either fortnight or ten days	-	+	-
Giddiness appearing in the intervals of either fortnight or ten days	-	+	-
Piercing pain appearing in the intervals of either fortnight or ten days	-	+	-
Sambheda etc. appearing suddenly without any known cause	-	+	-
Cracking sensation in the Nape i.e.Ghata	-	-	+
The central part of eye brow has burning sensation	-	-	+
The forehead burning sensation	-	-	+
pain and noise in the ear	-	-	+
Eye feels as though being pulled out	-	-	+
Giddiness/head reels	-	-	+
Feels loose in shirah joints	-	-	+
Excessive throbbing/pulsation in the network of Veins	-	-	+
Rigidity of the lower jaw and Shoulder	-	-	+
Intolerance to light	-	-	+
Running in the nose	-	-	+
relief of pain (headache) without any reason occassionally	-	-	+
Reduction in its severity by massaging, anointing with oil, fomentation and bandaging	-	-	+
appearing in either at (intervals of a fortnight or a month)	-	-	+
subsides of its own accord	-	-	+

Lakshana such as “*Manya ativedana*”, “*Bhru ativedana*”, “*Shankha ativedana*”, “*Karnaakshi ativedana*”, “*Lalate ativedana*”, “*Shastraraninibhaam Kuryaatativram*” etc. mentioned only by Charak and Vagbhatta equally, which is not available in Sushruta. Lakshana “*Pakshatkupyate Masadvaa*” (fortnight or a month and subsides of its own accord), “*Swayamev Shamyate*” mentioned only by Vagbhatta but Sushruta mentioned symptoms *Sambheda*, *Toda*, *Bhrama*, *Shula* suddenly after a *Pakshata* (fortnight) or *Dashahada* (ten days), “*Akasmaat*”(appearing suddenly). Sushruta mentioned lakshana *Bhrama* for *Ardhavabhedaka*. It is contributed by *Vata*, *Pitta* and *Rajas* (“*Rajah Pittanilat Bhram*”) and involves the *Raktavaha srotas*.

### Upashaya – Anupashaya

#### Upashaya

Such of the medicines, Diets, and Regimen as bring about happiness either by acting directly against the cause of the disease, and or the disease itself or by producing such effects indirectly are called *Upasaya*. *Vihara* – “*Mardavam Mardan Sneha Sweda Bandhaischa Jayat*” (A.H.Ut 23/6<sup>1/2</sup>) i.e. *Mardna*, *Svedana*, *Snehana*, *Bandhana*.

**Anupashaya:** The entire *Nidanasevana* mentioned earlier is *Anupashaya* for *Ardhavabhedaka*.

#### Sadhyasadyata

In *Samhitas* the *Sadhyasadyata* of *Shirahshula* is not described specially. The prognosis of a disease is usually depends upon its severity. The *Shirahshula* which is not chronic than one year and devoid of any major complications can be termed as *Sukhasadya*. On the contrary, when *Shiroroga* is having history of long chronicity with chances of relapses and is of chronic in nature, no improvement seeing even after undergoing all sorts of treatment can be termed as *Asadya*.

**Table No 4: The prognosis of various *Shirahshula* is as follows.**

No.	Types	Sadhyata
1.	<i>Vataja – Pittaja – Kaphaja</i>	Curable in first stage
		Chronic-cured by powerful treatment(Kashtasadya)
2.	<i>Tridoshaja</i>	Chronic-cured by powerful treatment(Kashtasadya)
3.	<i>Raktaja, Kshayaja</i>	Curable in first stage
		Not easily cured in the chronic stage
4.	<i>Krimija</i>	Not easily curable
5.	<i>Suryavarta</i>	Curable

6.	<i>Anantavata</i>	Not easily curable
7.	<i>Ardhavabhedaka</i>	<b>Curable</b>
8.	<i>Shankhaka</i>	Shankhaka Incurable

### Chikitsa

The Principle of treatment, the first and foremost principle is to *Nidana Parivarjana* (avoid etiological factors) which produce headache(Ardavabhedaka), however exact etiologically of the disease is unknown.

The specific line of treatment for Ardhavabhedaka Shiroroga as mentioned in different Ayurvedic classics are as follows:

### Charaka Samhita: (c.si.9/77-78)

For treatment of this ailment, the therapies to be used are as follows:-

- *Catuh-sneha* (four types of Sneha, viz., Taila, Ghrita, Vasa, Majja) to be taken in heavy dose.
- *Siro-virechana* (inhalation therapy for the elimination of morbid matter from the head)
- *Kaya-virechana* (emesis and purgation therapy for the elimination of morbid matter from the body).
- Nadi-sweda (a type of fomentation therapy).
- Jirna ghrita (10 year's old ghee).
- Niruha and Anuvasana types of medicated enema.
- Upanaha (application of hot poultices).
- Shirobasti (keeping medicated oil over the head with the help of a cap with open end).

According to some *Acharyas upanaha* consider as a form of shiro-basti which is called 'mastiska' according to them, for *mastiska*, eight *angulas* of cloth, and for *shiro-basti* twelve *angulas* of cloth should be used.

- Dahan (cauterization)
- Therapies prescribed for *Pratishaya* and *Shiro roga*.

### Susruta Samhita: (Su.Ut.26/31-35)

Generally line of treatment for *Ardhavabhedaka* also similar as *Suryaavarta* such as *Jangal mamsa*, *Ksheeranna bhojana*, *Ghrita sevana* are indicated. Commentator explained *Nasyakarmadi*.

**Avapidana Nasya**

- *Avapidana* prepared from fruit (seed) of *shirishmoola*, and *Madana phala*, *vach*, *manahshila*, *pippali* etc along with *madhu* etc.
- After the application of *Avapidana* i.e., At the end *Kakolayadi gana* is best for use as nasal drops.

Commentator explained *Anyaccha*-other remedies such as unction, blood-letting, pressed snuff, *Dipika taila* as mentioned under earache etc.

- *Sariva madhuka*, *kutha* and *utpala* macerated (Pounded) in a sour liquid added with ghee and oil and applied as paste on the head bestows comfort in both (the diseases *Suryaavarta* and *Ardhavabhedaka*).

Commentator explained *Lepah*-this paste should be applied in predominance of *Vata* and *Pitta*. The same treatment may be administered even in headache produced by *kapha*.

- *Siraveda* "*Upnashikelalatyampangayaam*"<sup>[17]</sup> i.e. near nose and in forehead and outer corner of eye is also indicated by Acharya Sushruta.

**ASTANGA SANGRAHA: (A.S.Ut.28:8)**

Generally line of treatment for *Ardhavabhedaka* also similar as *Vatika shiroroga* such as:

- The management should be as according to the *Vatavyadhis*.
- Patient kept in a place devoid of breeze.
- Head is anointed, and made to drink ghee or oil followed by milk as after-drink at night.
- Partake *Masa* or *Mudga* added with ghee followed by drinking warm milk.

*Shiroveshtana* with a thick *Utkarika* (poultices) made of meat of animals of *anupa desha* (Marshy region) cooked or *Yava*, *Taila*, *Masha*, *Kulattha*, *Kushta*, *Daru Haridra*, *Ativisha*, *Saindhava* should be done. Afterwards milk medicated with *Dashamula dravyas* can be useful for *Parisheka*.

- *Pinda sveda* or external application of paste -*Payasa* prepared from *Dashamula* can also be implemented. (A.S. Ut. 28/3).

**Nasya shirah Karnapurana**

- Muscle-fat of the tortoise buffalo, etc., added with *saindhava* be used for *nasya*, putting on the head and filling the ears.
- *Karpasamajja*, *Tvak*, *Musta*, and buds of *Sumana* macerated in hot water, used as *nasya* cures all types of headaches.

- *Marsha Nasya*: In shirahshula (caused by vata) associated with Pitta and Asra(blood) ghee boiled with a sharkra, kumkuma is beneficial.

In case of associated with aggravation of Pitta and Asra(blood); bloodletting should not be done because of fear, causes aggravation of vata.

- *Snaihika dhuma* should be inhaled
- *Shirobasti* should be done Bastikarma should be adapted.
- If no success in therapies then Daha(cauterisation) should be done in *Vataja* and *Shleshmaja*
- Specific remedies for ardhavabhedaka is such as:

### Nasya

- Juice of leaves of nirgundi added with scum of ghee and saindhava.
- Juice of root and fruits of Shirisa.

### Lepa

- Paste of sariva utpala, kusta, madhuka and pippali added with taila and sour liquid is used for external application.
- If there is no relief by above, then treatment needed, to the secondary doshas should be done.

### Ashtanga Hridaya: (A.H.Ut.24/9)

He also followed the same lines of *Sushruta*. He states that *Snigdha Nasya*, *Snigdha Dhuma*, *Shirahtarpanam* and *Shravanatarpanam* are helpful. He recommended the *Nasya* of Ghrita prepared from butter of Varunadi Gana Siddha milk.

- Generally line of treatment for *Ardhavabhedaka* also similar as *Vatika shiroroga* together with those relevant to the increased dosha should be done such as:  
The management should be as according to the *Vatavyadhis*.
- The head should be anointed and ghee should be consumed at night followed by drinking warm water.
- Masa, kulattha, or mudga may be consumed, or added with ghee, or taila or paste of tila may be consumed with milk.
- Application of poultices or fomentation with ball of meat and dhanya(corns) are beneficial.



- Pouring warm milk boiled with dashamula and other drugs mitigating *vata* should be done.
- *Snigdha nasya and Dhuma, Shirahatarpanam and Shravanatarpanam* are helpful.
- *Nasya* of Ghrita prepared from butter of Varunadi Gana Siddha milk. And madhurakadi gana.
- Medicated ghee prepared with drugs of varunadi gana added with milk and consumed along with sugar is beneficial.
- Karpasamajja, tvak, musta and buds of sumana macerated in hot water and instilled to the nose cures headaches of all types
- In shirahshula (caused by *vata*) associated with Pitta and Asra(blood )ghee boiled with a sharkra, kumkuma is beneficial.
- Application of paste of Kustha, Kutila, utpala and chandana added with ghee is suitable.
- ***Raktasravana niseda***-Bloodletting should not be done in these kinds for the fear of aggravation of *vata*.
- **Dahakarma**-If the disease does not subside by these, then burning by fire (thermal cautery) as prescribed for *vata* and *kapha* are desirable.
- Specific remedies for ardhavabhedaka are such as:

### Nasya

- Seeds of Shirisa, root of Apamarga added with Bida should be used for nasya
- The juice of sthira

**Lepa:** Prapunnada macerated with any amla dravyas should be applied over the head.

Our Acharyas have mentioned *Nasya* Therapy as the master key for all *Urdhavajatrugata vikaras*.

### Specific Shamanoushadhi in Ardhavabhedaka

#### ➤ Kashayam

- **Varanadi Kashayam:** (Ashtanga Hrudaya)

*Ingredients:* Varana, Sairyaka, Dhana, Morata, Vilva, Vishanika, Karanja etc

*Indications:* Shirashula, Gulma, Vidradhu, Medoroga etc

*Usage:* Internal

*Dosage:* 60ml twice daily on empty stomach.

- **Vidaryadi Kashayam:** (Ashtanga Hrudaya)

*Ingredients:* Vidari, Panchangula, Vrishchikali, Vrishchiva, Devahwa etc

*Indications:* Kshaya, Gulma, Shoola, Vata Pitta Vikaras

*Usage:* Internal

*Dosage :* 60ml twice daily on empty stomach.

➤ **Ghrita**

- **Mayura Ghrita:** (Charaka and Vagbhatta)

*Ingredients:* Dasamoola, Bala, Rasna, Triphala, Madhuka, Mayura pakshi etc

*Indications:* Shiroroga, Ardita, Urdhwajatru Rogas etc

*Usage:* Internal

- **Mahamayura Ghrita:** (Charaka and Vagbhatta)

*Ingredients:* Same like Mayura Ghrita, Added more Kalka like Triphala, Jeevaniya gana etc.

*Indications:* Shiroroga, Kasa, Swasa, Shosha etc

*Usage:* Nasya, Paana, Abhyanga, Vasti prayoga

- **Varanadi Ghrita :** (Ashtanga Hrudaya)

*Ingredients:* Varana, Sairyaka, Dhana, Morata, Vilva, Vishanika, Karanja etc.

*Indications:* Shirashula, Gulma, Vidradhu, Medoroga etc.

*Usage:* Internal.

➤ **Taila**

- **Rasnadi Taila:** (Charaka)

*Ingredients:* Rasna, Shaliparni, Prishniparni, Brihati, Kantakari, Gokshura etc.

*Indications:* Shiroroga.

*Usage:* Nasya.

- **Baladya Taila :** (Charaka)

*Ingredients:* Bala, Madhooka, Yashtyahva, Vidari, Chandana etc

*Indications:* Shiroroga, Urdhwagata rogas, Pitta Vikaras

*Usage:* Nasya.

➤ **Single Drugs**

- **Rasna**

*Usage:* Internal / Externally as Lepa can be applied.

- **Tila**

Usage: Tila mixed with milk and made into paste and applied over the head.

### **Pathya and Apathya In Ardhavabhedaka**

#### ➤ **Pathya**

**1. Kriyakala:** Swedana (Heating), Nasya Dhumpana, Virechana, Lepa, Vamana, Langhana, Shirobasti, Raktamokshana, Dahan (cautery) on frontal and supra orbital region, Upanaha etc.

**2. Diet:** Consuming old Ghrita, Shali, Shashtikshali, Yusha, Soup, Milk, Dhanvamansa, Madhumusta, Sanyab, Ghritapura.

**3. Vegetables:** Patolam, Shigru, Vastuka, Karvellaka etc.

**4. Fruits:** Mango, Aamlaki, Dadima, Matulunga, Lemon, Grapes, Coconut etc.

**5. Liquid Diet:** Milk, Oil, Coconut water, Kanji, Takra.

**6. Medicines:** Pathya, Kushta, Bhringaraj, Kumari, Musta, Ushira, Karpura etc.

#### ➤ **Apathya**

**1. Natural urges:** Holding of the natural urges like Sneezing, Yawning, Micturation, Sleep, Lacrimation, Stool excretion.

**2. Diet:** Consuming cooked and uncooked food, Impure water, Curd, Lassi, Cold drinks, Water of the rivers of Sahyadri, Vindhya, kapha producing diet etc.

**3. Activities:** Teeth brushing, (dhantadhavana); Day sleeping (divaswapana) etc.

### **DISCUSSION**

Any research work without being discussed about its nature, utility and importance is said to be incomplete. This helps in achieving the main objective of Āyurvedic research, which is to elaborate principles of Ayurveda in context to present era. As the balanced nourishment of root nurtures a tree, the considerate caring of head (Shirah) grows up the whole body. Life is defined as conjunction of body, soul, mind and senses. Each has been given due importance in the maintenance of health and prevention and cure of disease. In Ayurvedic classics body is divided in to six parts viz. head, two upper extremities, trunk and two lower extremities. Amongst them *Shirah* (head) is considered as Uttamanga i.e. supreme because all the *indriyas* (sensory organ) along with *Prana* of a individual resides in *Shirah*<sup>[18]</sup> and all the vital psychosomatic functions are regulated by it. As mentioned in conceptual contrive, it is enumerated that *Shirah* is also a place of *Manasa* – the *Udbhayatmaka Indriya*. In *Sushruta*

*Samhita* while defining “Swastha” – *Prasanna atimendriya Manah* is said to be the most important characteristic. So, health is defined as not only the normal functioning of *Dosha, Dhātu and Agni* along with proper excretion of Mala but, it also includes clarity of senses, mind and soul. In this way, *Shirah* is having the prime importance because on which the other body organs dependent for their function is *Shirah*. A most common complaint regarding *Shiroroga* is *Shirahshula* i.e. headache. Acharyas descriptions, classification, symptomatology, Complications and management in the *Samhitas*. In numbering of the *shirorogas* though there is a bit of difference of opinion as *Charaka* says only 5, *Sushruta* 11 and *Vagbhata* says 10, ultimate opinion about the *shiroroga* is the same, i.e. disease having headache as the cardinal feature. Among the total 11 *shirorogas* mentioned, 5 are doshaja and the others are *kshayaja, krimija, Ardhavabhedaka, Anantavata, Suryavarta and Shankhaka*. Acharya *Charaka* considered this disease is because of vitiation of *vata* or *vatakapha* because of its nidanatmaka factors aggravates the *vata* dosa and localised in the *shiras* that is the sthana of the *kapha* dosa, vitiated *vata* which again vitiates the *kapha* leads to *Ardhavabhedaka*. Acharya *Vagbhata* opines that this disease is due to the vitiation of *vata* alone because of its only *vata* nidanatmaka factors involved and based on the clinical features only. Whereas Acharya *Sushruta* considered this disease due to the vitiation of *tridosha* due to nidanatmaka factors of *shiroroga* which imbalance in *Vata, Pitta* with *Kapha*. *Ardhavabhedaka Shirahshula* is most frequently found as its causative factors like *Uchcha* and *Ati Bhashana, Prajagarana, Sheeta Marutasamsparsa, Vyavayadhikya, Veganigraha*, etc. are usually adopted by all human beings due to their busy life style. Other most common causative factors of *Ardhavabhedaka Shirahshula* are psychogenic which includes *Bashpa* (excessive weeping), *Manastapa, Anxiety* etc., Advancement of modernization, development of industrial phase, business competitions, excessive uses of internet, increase in unemployment are really capable to provide a man status of *Bhaya-Shoka - Trasa* etc. due to which *Ardhavabhedaka Shirahshula* caused by psychological factors is also most frequently observed. So, *Ardhavabhedaka Shirahshula* which is caused by psychogenic factors.

## CONCLUSION

In the present parlance following conclusion has been drawn. *Shirah* is seat for the substratum of life and all the sense faculties in living beings. So it is considered as supreme of all organs as consciousness is present in it. A tree grows properly when its roots are free from diseases, similarly a man whose head is free of disease, possess sound growth. *Shirahshula* denotes *Shiroroga* the painful condition of head. Different terminologies given

by different Acharyas are as follows: *Charaka-Shiroroga*, *Sushruta- Shirobhitapa*, *Vagbhata-Shirastapa*. Acharya Chakrapani told that shiroroga etc are to be caused as complication of *Pratisyaya*. They may also appear in a person independently (Svatantra).

*Ardhavabhedaka* has been explained as Tridoshaja by Acharya *Sushruta*, Vata-Kaphaja by *Charaka* and Vataja by *Vagbhata*. But the different quality of pain such as Toda, Bheda, etc. describes the Vishama nature of Vata dosha. *Dalhana* told that ardhavabhedaka is due to aggravation of Vata and pitta Only *Charaka* have described Samprapti of *Shiroroga* (C.Su.17) and *Ardhavabhedaka*(Cha. Si. 9/75). *Rakta* is the main *Dushya* in all types of Shiroroga Migraine headaches are the second most common type of primary headache. *Ardhavabhedaka* can be correlate with Migraine headache.

**Table No 5: Symptom of *Ardhavabhedaka* Vs Migraine is as follows.**

Sl.	The symptom of <i>Ardhavabhedaka</i>	Comparative symptom of migraine
1.	<i>Vyadhi janayanti shiro ardhabhage</i> (affects half of the head)	Mostly headache is unilateral
2.	<i>Pakshath va masaath kupyate</i> (attack in fortnight or in a month)	Episodic in nature
3.	<i>Prakasha asahisunatha</i> (unable to see the light)	Photophobia
4.	<i>Shabda asahisunatha</i> (unable to bare the sound)	Phonophobia
5.	<i>Sirajala Atisphuranam</i>	Pulsating\throbbing pain

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# Integration Of Concepts Of Ayurveda And Modern Medicine In The Diagnosis And Treatment Of Migraine

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# *Chikitsa*

## ◆ Principle of Treatment

*Charak* :

\* *Hetu* – Cause

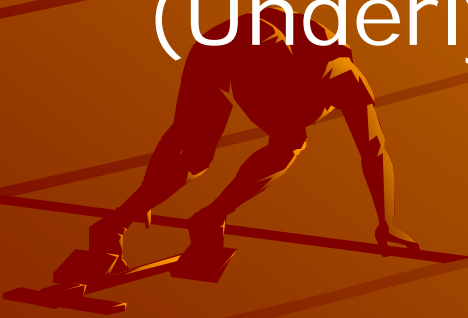
\* *Ling* – Sign / Symptoms

\* *Aushadh* – Treatment



# Hetu

- ◆ *Sannikrishta Hetu*  
(Upfront cause)
- ◆ *Viprakrishta Hetu*  
(Underlying Cause)





## Cause of the disease and treatment

- ◆ *Ayoga, heenatimithyoga and pragyaparadh of aahar, vihar, and aushadh*
- ◆ *Nidan parivarjanam*
- ◆ *Aahar, vihar, aushadh*



# Principle of Diagnosis

Hutchinson

1. Etiology
  2. Pathogenesis
  3. Structural & morphological changes
  4. Symptoms
  5. Diagnosis
- 

# Migraine / Modern medicine

- ◆ Etiology – unknown
- ◆ Treatment of symptoms
- ◆ Outcome
  - Persistent disease
  - Limitation of treatment
  - Side effect



# Co-relation between modern and ayurvedic concept for migraine vs *Amal Pitta*

*Hetu*

fo:)nq'VkEyfonkfgfiRRkizdksfiikukUUkHkqtk  
fonX/ke~A

fiRra Logsrq iqjk ;RRknEyfiRra izonfUr lUr%AA

*Linga*

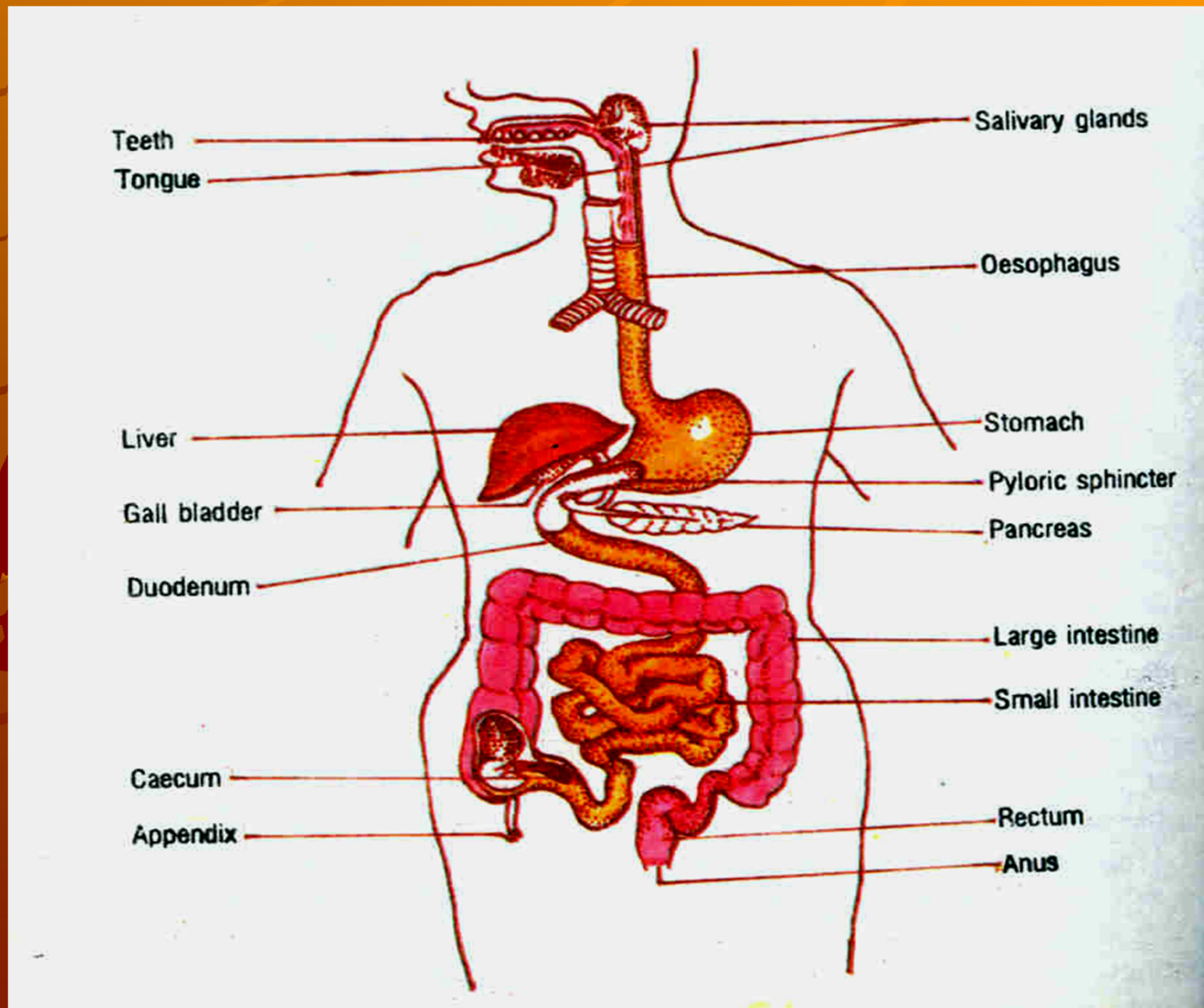
Hkzeks ewPNkZ:fp"NfnZjkyL;a p f"kjks:tkA  
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*Aushadh*

jksxks;eEyfiRrk[;ks ; kr~ laLkk/;s uo%A

fpjksfRFkrks Hkos|kI;% d`PNlk/;% l dL;fpr~AA

# Etiopathogenesis, structural & morphological changes causing symptoms of migraine/*amal-pitta*





# Ayurvedic Treatment Protocol

◆ Diet- 3 meal + 3 snacks

◆ Regulated *dincharya*

◆ Medicines

1.	<i>Narikel Lavana</i>	<i>Ras Tarangini</i>
2.	<i>Sootshekhar Rasa</i> + <i>Sitopaladi Churna</i>	<i>Siddha Yoga Sangraha</i>
3.	<i>Rasonvati</i>	"
4.	<i>Godanti Mishran</i>	"

# Observational Clinical Study

- ◆ Retrospective preliminary observation  
(1985- 2002)
- ◆ 1<sup>st</sup> Prospective Observational Clinical Study on  
Migraine Patients Using Integrated Treatment  
Protocol at Chandigarh  
(June 2002 to December 2004)
- ◆ II<sup>nd</sup> Prospective Observational Clinical Study on  
Migraine Patients Using Integrated Treatment  
Protocol at Various Centres in Karnataka  
(May 2005 to March 2006)

# Observational Research Vs Clinical Trial

- An approach getting wider acceptance
- Core strength of VCPC Research
  - ◆ Pilot study on MBAT & APML
  - ◆ Study on Nutritional Anemia
  - ◆ Chronic Disease - [Migraine](#)



# POSITIVISM

(a scientific model)

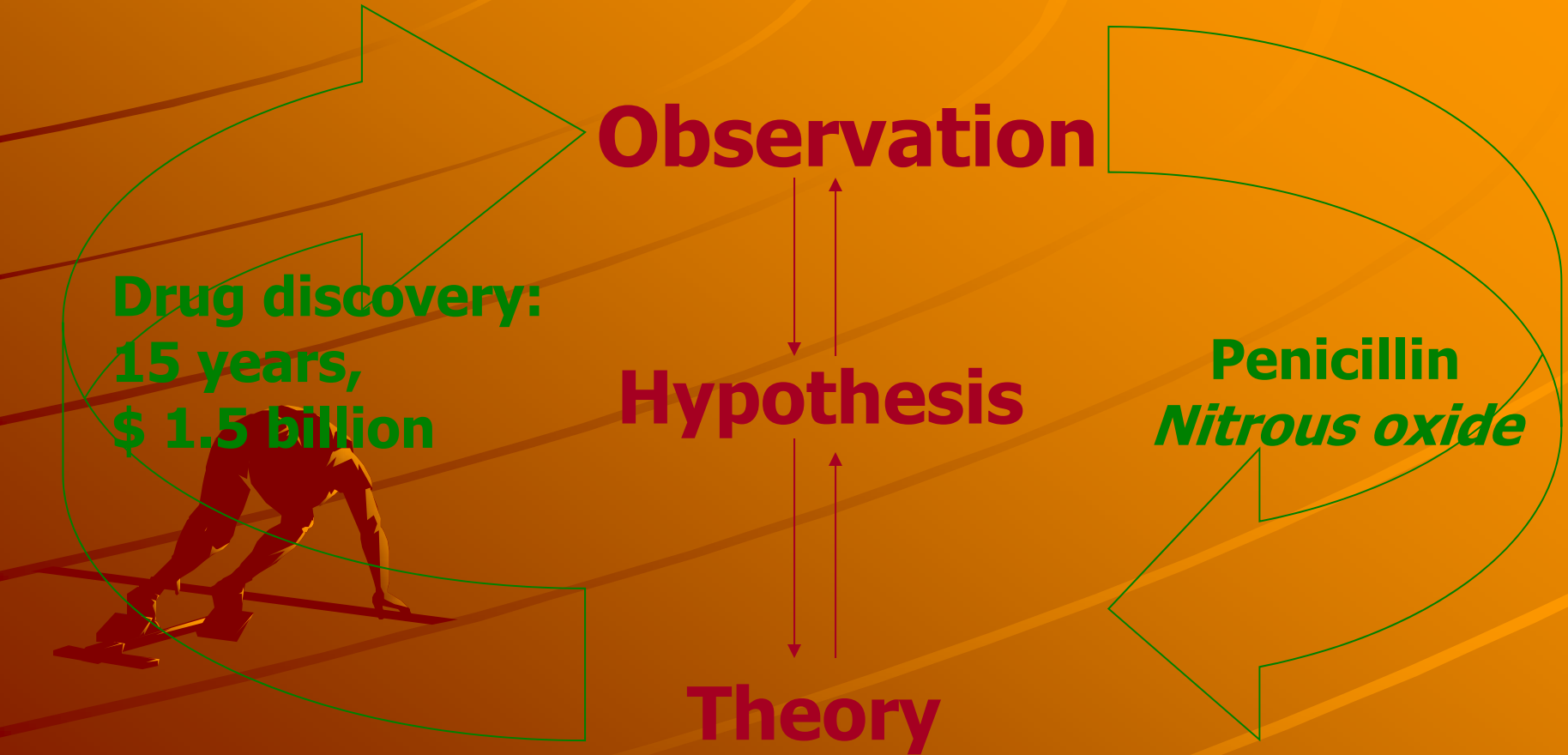
Observation

Hypothesis

Theory

Drug discovery:  
15 years,  
\$ 1.5 billion

Penicillin  
*Nitrous oxide*



# Observation

- Within set parameter (Prospective)
- Pre – requisite
  - ◆ Documentation
  - ◆ Data Analysis
  - ◆ Publication/ Presentation





# On Going Efforts

- Participation of Ayurvedic physician in the state of Karnataka under VCPCRF (SIROs)

Name	Place	No. of patients
Vd. Hiremath	Bangalore	210
Vd. Sunil	Tumkur	30
Vd. Suresh	Mysore	27
Vd. Hema Desai	Bellary	14
Vd. Savita	"	6
Vd. Jai Prakash Narayan	Bangalore	1
Poornaya Ayurvedic Hospital	"	4
Vd. Raghvendra Babu	Bangalore	53
Prasanna Venkatesh	Mysore	11
Vd. Shailaja	Bellary	17
Annual Report	Bangalore	1



# Achievements

- ◆ Membership to International Headache Society
- ◆ November issue of cephalalgia
- ◆ First ever ayurvedic reference in main stream medicine



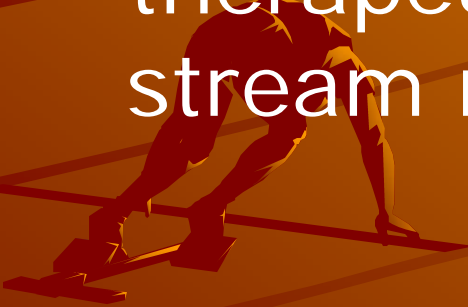
# Benefit

- ◆ Service to the society
- ◆ Promotion of evidence based ayurveda authorship
- ◆ Reward



# Aim

- ◆ Migraine free Karnataka
- ◆ Ayurveda Specialist
- ◆ To establish evidence based therapeutic ayurveda (EBTA) as main stream medicine





# Why Products from BBS (P) Ltd., Dehradun

- ◆ A manufacturing unit under quality assurance program of VCPCRF
- ◆ GMP for the preparation of *Rasa – aushadhies*
  - Standardization of Raw material
  - In - process quality control techniques
  - Reproducibility
  - Safe & effective
  - On going R & D



# In process quality control

1. Computer controlled particle size analyzer for the optimum of grinding
2. Computer controlled heat sensors on different *puta* for uniform heating
3. Bench marking at various levels
4. Chemical nomenclature using XRD, XRF

Thank you



## Migraine Headaches

From ayurveda perspective, migraine headaches are due to a disorder in tridosha - the mind-body constitution. Although it is possible to get headaches from disorders in vata, pitta, or kapha, migraines frequently occur when systemic pitta moves into the cardiovascular system, circulates, and affects the blood vessels around the brain. The blood vessels dilate due to the hot, sharp quality of pitta. This, in turn, creates pressure on the nerves, resulting in migraines. Pitta disorders are characterized by the red complexion and eyes, light sensitivity, burning sensation, anger, irritability, and nose bleeds. Liver and blood toxicity are often associated with these symptoms.

So, the treatment involves following the recommendations for pitta pacifying foods, herbs and lifestyle. Avoid hot, spicy foods, fermented foods, and sour or citrus fruits. A pitta-soothing diet is effective both for migraine relief and as a preventive measure.

Preventive Breakfast.

If you are one of those individuals who get migraines at midday, which then subside later in the evening, there is a preventive approach available from ayurveda. It is simple, but effective. (Recommended by Vasant Lad, an ayurvedia doctor.)

First thing in the morning, take 1 ripe banana. Peel it, chop it into pieces, and add 1 teaspoon warm ghee, 1 teaspoon date sugar, and a pinch of cardamom on top. This is delicious, and it will help to reduce pitta and prevent a headache from arising.

Herbal Remedy

The following herbal compound is beneficial in managing migraine. shatavari 5 parts brahmi 4 parts jatamamsi 3 parts musta 3 parts Prepare this mixture, and take 1/2 teaspoon twice a day, morning and evening, after breakfast and dinner, with a little lukewarm water. This formula is designed to pacify the aggravated pitta and help relieve migraine headaches. Purgatives (such as aloe vera gel, rhubarb, and fennel), liver cleansers (such as bhiamialaki and brahmi), sandalwood oil on the third eye, temples, heart, and under the nose, medicated oils or ghee, using gudachi, bala, and ashwagandha; fomentation, and saturating snuff are also advised.

Long-term healing includes chyavan prash, brahmi, and ashwagandha

Other Treatments

Avoid Direct Sun . Because migraine headaches are predominantly a pitta disorder, they are affected by the hot sun. When the sun rises, its hot, sharp, penetrating rays increase pitta in the cardiovascular system and cause the dilation of the blood vessels in the brain, which results in the painful headaches. So avoid direct exposure to the sun. If you have to go out, use an umbrella or wear a hat or other protection from the sun.

Nature walks :- Walks in the full moon and by water; and flower gardening reduce Pitta causes of migraines.

Soothing Nose Drops.:-

Once a headache has developed, putting about 5 drops of warm brahmi ghee in each nostril will help relieve the pain.

Head Massage :-

Shiro dhara (hot oil head massage) is also beneficial.

Recommended Yoga Postures. :-

Moon Salutation is especially good for migraines. Yoga postures such as the Hidden Lotus, Boat pose, Bow pose, Spinal Twist, Palm Tree pose, and Standing on the Toes are also good to combat migraines.

A Cooling Pranayama.:-

Do a cooling breathing exercise such as shitali. To do it, curl your

tongue into a tube. Inhale slowly through the curled tongue, swallow, and then exhale normally through the nose, keeping the mouth closed. You will feel the incoming air cool your saliva, your tongue, and the oral mucous membranes. This breathing exercise will lower the body temperature, and make the saliva cool. It also helps to quench thirst, and improves digestion, absorption, and assimilation. If you can't curl your tongue into a tube, an alternative way to perform shitali is with your teeth lightly clenched together and your tongue pressed up against the teeth. The air is then inhaled through the teeth. Some people feel pain when cool air is drawn through the teeth; keeping your tongue against your teeth will provide warmth and prevent this discomfort.

A Healing Yawn.:-

When you have a migraine, gently squeeze your earlobes, pulling the ear down, and do the act of yawning. This will relieve the pressure on the blood vessels and help to pacify the headache.

Avoid overexertion.

Migraines from Vata

Imbalance:

As mentioned migraines can also

originate due to imbalance in vata dosha. The symptoms of vata imbalance are: anxiety, depression, dry skin, constipation, and extreme pain. The recommended treatment is: triphata as a purgative, jatamansi, brahmi, and rest. Shiro dhara (hot oil head massage) is also recommended.

Migraines from Kapha Imbalance:

This condition is characterized by dull headache, heaviness, fatigue, nausea, white or clear phlegm, vomiting, and excess salivation. Respiratory disorders are often associated with these symptoms. The recommended treatment is: trikatu, brahmi, tulsi tea, inhaling eucalyptus oil, vomiting, exercise, nasal snuff of ginger or pepper. Shiro dhara (hot oil head massage) is also recommended.



<https://cureveda.com/news/ardhavabhedaka-migraine-cure-care-ayurveda/>

# Ardhavabhedaka (migraine): Cure & care by Ayurveda

## News

2 Years, 5 Months Ago

Type: News

0 Comments 1774 Views Share Moderator Shashikant

Dr. Imlikumba, Health Naturally Clinic, Mercy Building, Kevijau colony, Dimapur: Nagaland, (imlikumba@gmail.com) : Jan/21/2018 07:25:PM

(Migraine the only time taking a hammer to your own skull seems like an appropriate solution)

Migraine is a very common disorder characterized by repeated attacks of headache usually unilateral with different intensity. It is a highly prevalent headache disorder over the past decade having considerable impact on the individual and society. It can involve brain, eye and autonomous nervous system. Migraine results from blood vessel enlargement and the release of chemicals from nerve fibers. Due to the modern lifestyle, people are facing hectic, competitive life. All these habits together will act as the causative factors for many diseases including Migraine.

Migraine is described as Ardhavabhedhaka in Ayurvedic classics. The word Ardhavabhedaka is made of two words- Ardha + Bhedhaka. Ardha means half or half part. Bhedhaka means vidarana – piercing or breaking. Finally the word Ardhavabhedaka means a piercing or breaking type of pain in half part. In Ayurvedic Classics various procedures had been explained for treating Migraine. These therapies offer significant preventive measures of Migraine. As per Ayurveda Nasya is the best procedure to manage the migraine.

## Aetiology:

- Ruksha sevana- taking dry foods.
- Adhyasana- consuming food immediately before the digestion of previous food.
- Poorva vata- exposure to direct breeze.
- Avasyaya- exposure to cold or dew.
- Vega dharana- suppression of natural urges.
- Ati vyayama and ayasa- over exertion etc.
- Dhuma sevana- exposure to smoke.
- Atapa and tushara sevana- hot and cold climates.
- Ambu kreeda- swimming and water games.

- Atiswapna- excessive or continuous sleep.
- Atijagarana- night arousals.
- Bhashpa nigraha- suppressing tears.
- Rodana- weeping.
- Madyapana- drinking excess alcohol.
- Krimi- presence of worms.
- Asathmya gandha- unaccustomed smells.

**Triggering factors:**

- Allergic reactions.
- Bright lights, loud noises, and certain odors or perfumes.
- Physical or emotional stress.
- Changes in sleep patterns.
- Smoking or exposure to smoke.
- Skipping meals.
- Alcohol or caffeine.
- Menstrual cycle fluctuations, birth control pills.
- Tension headaches.
- Foods containing tyramine (red wine, aged cheese, smoked fish, chicken livers, figs, and some beans), monosodium glutamate (MSG), or nitrates (like bacon, hot dogs, and salami) Other foods such as chocolate, nuts, peanut butter, avocado, banana, citrus, onions, dairy products, and fermented or pickled foods.

**Symptoms:**

- Migraine headaches, which can be dull or severe, usually: Feel throbbing, pounding, or pulsating.
- Are worse on one side of the head.
- Last 6 to 48 hours.
- Symptoms accompanying migraines include: Nausea and vomiting
- Sensitivity to light or sound.
- Loss of appetite.
- Fatigue.
- Warning signs (auras) that can precede a migraine include seeing stars or zigzag lines, tunnel vision, or a temporary blind spot.

Symptoms that may linger even after the migraine has gone away include:

- Feeling mentally dull, like your thinking is not clear or sharp.
- Increased need for sleep.
- Neck pain.

Lifestyle modification: Migraine (Ardhavabhedaka) headaches can be prevented by following a healthy lifestyle. Maintaining a regular sleep schedule, eating routine and working habits and avoiding migraine triggers can reduce the frequency and severity of migraine headaches. Some of these healthy lifestyle include:

- Proper morning routine: Daily elimination to empty bowels, inspecting tongue for any coating, brushing/flossing teeth, massaging gums, cleaning nasal passages (neti pot), self-abhyanga (daily oil application on skin and massaging), massaging ears with oils, practicing meditation, washing eyes at least once per week.
- Proper sleep routine: Proper sleep pattern means that one must go to bed and rise according to the rhythms of nature. It is suggested that one go to bed by 10pm.
- Follow healthy eating guidelines: There are 8 factors that affect the quality of food (nature, processing, combination, quantity, habitat, time, rules of intake, responsibility). The general guidelines for healthy eating include eating food in the proper place, preparing food with loving hands in a loving way, saying Grace before meals, eating without distraction, eating with a proper frame of mind, chewing until it is an even consistency, making sure food is warm oily/moist. Food should not have opposite potencies. Drink only a small amount of fluids with meals and avoid cold drinks. Eat food with confidence and eat until 75% full. Always take some time to rest after meals and allow 3 hours between meals for foods to get digested.
- Stress (Sahasra) management: One must both avoid factors that induce stress and vitiate doshas and also learn coping mechanisms for life stressors. Stress inducing factors can include:
  - 1) Physical stress such as strenuous exercise, fasting, exhaustion, improper body postures, injury/trauma.
  - 2) Psychological stress such as anger, anxiety/nervousness, excitement, confusion, grief, fear.
  - 3) Environmental stress like high altitudes and prolonged exposure to the sun or heat. Stress avoidance is the best approach. However, some rasayana herbs which improve longevity along with physical/mental strength and immunity can be helpful. Several rasayana herbs show antioxidant, immunomodulator, hepatoprotective, antidepressant and anxiolytic effects. A few examples of such herbs are shatavari (*Asparagus racemosus*), brahmi (*Bacopa monnieri*), punarnava (*Boerhavia diffusa*), centella (*Centella asiatica*), shankha pushpi (*Convolvulus pluricaulis*), amla (*Emblica officinalis*), long pepper (*Piper longum*), kutki (*Picrorrhiza kurroa*), turmeric (*Curcuma longa*) and ashwagandha (*Withania somnifera*).
- Regular exercise: Several epidemiological studies have proven the effectiveness of regular daily exercise in reducing the intensity of migraine pain. This gives patients an opportunity to take an active role in their own treatment.

**Yoga for headaches:** Since stress is an important factor in creating both migraine and tension headaches, yoga can without doubt help in preventing these types of headaches. Yoga can also help with tension in the muscles of the neck, back and head which contribute to headaches. Yoga helps to release tight muscles and improve blood circulation in that region. Yoga helps relax the mind as well. Relaxation poses are of great importance in preventing migraine headaches. They can be done at the

beginning or at the end of a yoga session or at any time of the day when the body feels stressed or tired.

**Meditation:** Stress is a major contributor to both tension and migraine headaches. Breath meditation can reduce stress. In this meditation, sit in a comfortable position. There are many types of meditations available. One can focus on the mantra and/or awareness of breath and let thoughts fade away. With exhalation, silently and take a deep long inhalation filling your lungs and abdomen. In addition, keeping a proper posture and alignment of the head and neck during breathing meditation can help reduce tension and migraine headaches. Massage therapy, topical heat or cold and stretching exercises can also help minimize the severity and frequency of migraine headaches. It is very important that migraine get the proper amount of sleep. Balms/herbal pastes for headaches: A mixture of herbal essential oils can help to alleviate headache. Peppermint essential oil in massage oils and balm can help with migraine.

Pranayama (breathing exercises): Different types of breathing exercises have different effects on the body, mind and spirit. One can benefit from alternate nostril breathing (Anuloma Viloma).

Soothing nose drops (Nasya): Putting about 5 drops of brahmi ghee in each nostril can alleviate the pain of migraine headache. In vata-type headaches, placing 3-5 drops of warm ghee in each nostril can help to calm down the headache.

**Conclusion:** Migraine sufferers are seeking alternative (nonpharmacologic) therapies to alleviate migraine headaches. The healing science of Ayurveda opens new doors for treatment of migraine and other type of headaches. Ayurveda uses different modalities such as nutrition (based on individual 18 constitution), lifestyle modifications, herbs, panchakarma, yoga, meditation, relaxation techniques, pranayama (breathing exercises), aromatherapy, marma points to help treat migraine headaches. These treatment approaches create a balanced physiology. This state of complete balance in healing the body and mind can allow the illness to resolve and symptoms to disappear.

**NOTE:** Ayurvedic medicines and treatments should be taken under Qualified Ayurvedic Doctor/Physician. The drugs described in this article are for general information/educational purpose only. Anyone should not use these without consulting a qualified Ayurveda doctor/physician.

Source: [Ardhavabhedaka \(migraine\): Cure & care by Ayurveda](#)



## A CONCEPTUAL STUDY AND MANAGEMENT OF ARDHAVABHEDAKA WITH SPECIAL REFERENCE TO MIGRAINE

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### ABSTRACT

Ayurveda is the science of life. The main aim of Ayurveda is to maintain health in healthy individuals and cures diseases in diseased persons. Siras is the seat of Pranavata, Aalochaka pitta and Tharpaka kapha. It is described as Uttamanga and important due to the presence of sense organs, central Nervous system and 37 marmas. Our ancient Acharyas described 11 types of siro rogas. Ardhavabhedaka is one among them. Ardhavabhedaka symptoms manifest in the half part of the head. The diet, present life style, irregular diet habits, fermented, pickled foods, baked items, chocolates, dairy products and changes in sleep pattern like awakening in night times due to night duties and sleeping in day time are predisposing factors of Ardhavabhedaka. The treatment modern system of medicine has complications like drowsiness, insomnia, depression, extra pyramidal activities, constriction of blood vessels are predisposes of cardiac problems. The Aim of the present study is to undertake a conceptual and scientific study on preventive and curative aspects of Ardhavabhedaka w.s.r. to Migraine. Treatment principles were Sodhana therapies, Shamana therapies, Rasayana sevana, Brumhana dravya sevana, mainly Nasya karma and preventive measures. The treatment prescribed for Ardhavabhedaka w.s.r. to Migraine in Ayurveda controls secretion of serotonin and proved to be effective in prevention and management of Ardhavabhedaka. Changes in lifestyle, diet, exercise and meditation are important than drugs.

**Keywords:** Ardhavabhedaka, serotonin, Nasyakarma, Rasayana.

### INTRODUCTION

Ayurveda is the science of life. Ayurveda is mainly based on the Tridosha theory. The main aim of Ayurveda is to maintain health in healthy individuals and cures diseases in diseased persons<sup>1</sup>. The main principle of health according to Ayurveda is equilibrium of tridoshas<sup>2</sup>. Siras is told as Uttamanga. Siras is compared with root of the tree<sup>3</sup>. If we nourish the root, the trees become strong. In the same manner we nourishes the siras, the body will become healthy. If diseased we should treat immediately, otherwise complications will occur. Siras is the seat of Pranavata, Aalochaka pitta and Tharpaka kapha. It is important due to the presence of sense organs, central Nervous system and 37 marmas. Prana vaata maintains intelligence<sup>4</sup>, sense organs, heart, mind and blood vessels. Aalochaka pitta is responsible for eye sight. Sadhaka pitta is responsible for the achievement of one's aspiration through his buddhi, medha, abhimana etc. It is responsible for manas and its contact with indriyas making them to perceive the sense objects<sup>5</sup>. Tharpaka kapha nourishes the sense organs and brain<sup>6</sup>. Change in life style, irregular food habits, irregular sleep pattern, the seasonal changes, climatic changes, air pollution, contaminated water, stress and strain have an impact on the equilibrium of doshas in the body. Our ancient Acharyas described 11 types of siro rogas<sup>7</sup>. Ardhavabhedaka is one among them. Ardhavabhedaka is mentioned as one of the siroroga by Acharya Susruta. But Acharya Vagbhata described it as a bheda of Vataja siroroga. "ardhethu murdha: so ardhavabhedaka."<sup>8</sup> Ardhavabhedaka symptoms manifest in the half part of the head. Ardhavabhedaka is mentioned in siro rogas. Our acharyas mentioned the dinacharya<sup>9</sup> (daily regimen) and ruthucharya<sup>10</sup> (season wise regimen) elaborately. But as time passed, now a day's lot of changes taken place, inevitable in life style, social and religious customs and manners has an impact on tridoshas. The diet, present life style, irregular diet habits, fermented, pickled foods, baked items, chocolates, dairy products and changes in

sleep pattern like awakening in night times due to night duties and sleeping in day time are predisposing factors of Ardhavabhedaka. And other important factors are stress and strain are also predisposing factors. The treatment modern system of medicine has complications like drowsiness, insomnia, depression, extra pyramidal activities; constriction of blood vessels are predisposes the cardiac problems.

### Aims and Objectives

The Aim of the present study is to undertake a conceptual and scientific study on preventive and curative aspects of Ardhavabhedaka w.s.r. to Migraine. Objective is to treat by Sodhana and Shamana therapies; and to reduce frequency of attacks, and to improve vitality with simple measures like dina charya, ruthucharya, rasayana sevana.

### Nidana and Samprapthi (Etiology and Pathogenesis)

Ardhavabhedaka is tridoshaja but vitiation of vata and pitta are more. According to Vagbhata this is the one type of vataja shira: shoola manifesting symptoms in one half of the head.<sup>8</sup>

### Ratrijagarana

The aggravated vata and pitta with decreased kapha causes hormonal imbalance and changes in autonomic nervous system.

### Guru, amla and ruksha diet

Baked food, chocolates, dairy products causes amothpathi<sup>11</sup>, processed and fermented foods containing MSG-mono sodium glutamate are the trigger factors of Migraine.

### Avasyaya, Diwaswapna and Seetha sevana

Increase kapha and obstructed vata cause prathishyaya. Nasal blockage in sinusitis or common cold triggers migraine attacks.

### **Vega dharana**

Flow of vata is obstructed, so nerve pathways are affected causing disturbance in CNS-neural control of cranial circulation.

### **Adhyasana**

It creates Ama<sup>11</sup>, digestive disturbances resulting in dhathukshaya and vata prakopa. It impairs metabolism, immunity system causes allergies and allergic reactions. They can't tolerate bright lights, loud noises, and certain odors or perfumes. These are the rasa dhathu kshaya lakshanas.

### **Aayasa, vyayama, maidhuna**

It results in stress, strain and anxiety causing increased excitability of the cerebral cortex and abnormal functioning of neuro-transmitters.

### **Migraine-Modern Aspect**

Migraine is an episodic paroxysmal headache, as a triad of paroxysmal headache, and/or vomiting and an 'aura' of focal neurological events. Patients with all 3 of these features are said to have migraine with aura.<sup>12</sup>

### **Etiology**

Some people who suffer from migraines can clearly identify triggers or factors that cause the headaches, but many cannot. Potential migraine triggers include Physical or emotional stress.

- Changes in sleep patterns or irregular sleep
- Smoking or exposure to smoke
- Skipping meals or fasting
- Alcohol
- Menstrual cycle fluctuations, birth control pills, hormone fluctuations during peri menopausal period.
- Tension headaches

### **Incidence**

Migraine is believed to be a mixture of environmental and genetic factors. About 2/3 cases run in families. Migraine occurs 3 times more in women than men. Globally more than 10% of population is affected by Migraine at some point of life. 45 million Americans suffer from chronic headaches and 28 millions of them are victims of migraine. In global 35% of headaches are of migraines type.

### **Pathophysiology**

Migraine is neurovascular disorder caused by stress, anxiety, certain odours, perfumes and diet. This is related to intracranial excitability of the cerebral cortex and abnormal control of pain neurons in the trigeminal nucleus of brain stem. Pain originates from intra or peri cranial tissues and is due to depolarization of peri vascular sensory axons i.e. sensory nerves innervating cephalic blood vessels. Local axonal release of vasodilating and permeability promoting peptides cause sterile inflammation in target tissues. Serotonin is a hormone and neurotransmitter, plays role in regulation of mood, sleep and takes part in biochemistry of depression, migraine and anxiety. It probably represents a paroxysmal alteration in cortical modulation pathways from the brain stem (especially serotonergic projections). It occur in rare genetic disorders associated with mutation in calcium channel genes, suggests the possibility that the aura may be due to paroxysmal changes in the function of neuronal ion channels. The headache is caused by vasodilatation of extracranial vessels and may like the headache following an

epileptic seizure to be a non-specific effect of the disturbance of neuronal function.

### **Serotonin**

This is chemically known as 5 Hydroxy Triptamine. A monoamine, neurotransmitter synthesized in serotonergic neurons of CNS, platelets, entero chromaffin cells in gastro intestinal tract and pineal gland. It affects the vascular tone cranial arteries. A lack of 5HT in brain is the cause of migraine attacks.<sup>13</sup>

### **Types of Migraine**

1. Migraine without aura
2. Migraine with aura
3. Ophthalmoplegic Migraine
4. Retinal Migraine
5. Childhood periodic syndromes that may be precursors or be associated with Migraine.
6. Migraine with complications including status migrainous and migrainous infarction.

Of these 1 and 2 are common types. The risk is high in people who have migraine with aura. Aura: 1/3<sup>rd</sup> of people with migraine perceive an aura-warning sign for coming headache. Visual aura is sensitive to bright light, television, sensory aura consists of tingling or numbness of body parts represented in sensory cortex like lips, tongue and upper limb. Cortical spreading depression causes bursts of neuronal activity followed by a period of inactivity and flow to the cerebral cortex.

### **Pain**

Pain is due to CNS structures-brain stem and diencephalon. Role of peripheral activation of sensory nerves that surround the blood vessels of head and neck causing vasodilatation is significant.

### **Diagnostic criteria**

At least 3-5 attacks with-lasting 4-72 hours, unilateral location, pulsating quality, moderate to severe in intensity, aggravation by exercise. During headache nausea/vomiting or photophobia/phonophobia symptoms are present.

### **Treatment of Ardhavabhedaka w.s.r. to Migraine**

Sodhana therapies, shamana therapies, preventive measures, rasayana sevana, brumhana dravya sevana, nasya karma.<sup>14-17</sup>

### **Sodhana therapy**

Ghrutha pana with medicated ghee eg. Sukumara ghrutham, Mayura ghrutham. Vamana karma and virechana karma (Inducing vomiting and purgation depending upon doshas).

### **Nasya karma**

The best treatment for Ardhavabhedaka is Nasyam, nose is the gate way to brain. The olfactory nerves entering olfactory mucosa of nose carry the sheaths of dura, arachnoid and pia with them. They directly enter into the brain. Olfactory striae are extensively connected to the limbic system. Stimulation and nourishment of nerve endings through nasya alter the pathology of Migraine. Shadbindu thailam, Anu taila, gunja thaila, varanadigana ksheeraghrutham and dashamula thailam are mentioned for nasya in Ardhavabhedaka. Prathimarsha nasya<sup>18</sup> is devoid of complications and strict restrictions are



most beneficial. It is equal effective to nasya karma in long term use.

### Shamana therapies

#### Simple measures

Include consuming sugar with milk, sugar with coconut water, only cold water, ghrutha nasya. **Medicines** are Pathyadi shadanga quath, sira shooladi vazra ras, ardhha nareeswar ras, suta sekhar ras, godanthi bhasma, pravala pishti and Cephagrain dual pack (oral and nasal), are trying to bring back the vitiated doshas to normal level on long term use.

#### Lepas

Saribadi, Maricha Bhringaraja is effective to correct extra cranial, neuro-vascular pathways. Take these drugs and made into fine paste and to apply on the affected part. Take equal quantities of vidanga, Krishna tila made into fine paste and to apply on the affected part. And also use avapeedana nasya of these drugs.

**Siro dhara** with dashamoola siddha kshiram.

#### Medhya rasayanas and brumhana dravyas

Guduchi, yashtimadhu, sathavari, brahmi, shankhapushpi, vacha, tagara and aswagandha are best medhya rasayanas. They act as anxiolytic, anti depressant and strengthen CNS by maintaining proper excitatory and inhibitory post synaptic potentials. Meat of wild animals, cereals with milk and ghee, snehapana after food counteract for tentative evidence of benefits for Magnesium, Riboflavin with vitamin B12.

#### Preventive measures

1. A head ache dairy can help to identify triggers for nidana parivarjana.
2. Get up in "Brahmi muhurtha" because serotonin sets biological clock, controlled by thalamus. This is the equilibrium state of doshas and hormones to work right way.
3. Dinacharya and Ruthu charya – appropriate habit of diet, exercise, meditation and lifestyle which bring physiological function back into balance and harmony, no drug is needed. To follow some of these are Siro abhyanga, pada abhyanga, nasya karma, karna poorana, chatra dharana, etc.
4. Adopt suitable measures according to ruthu and dosha. Avoid divaswapna, guru, seetha dravyas in vasantha ruthu. Avoid excessive exercise, pickles in grishma ruthu.


5. By worshipping God, elders, repetition of one hundred and eight sacred names of God give positive health and vitality and help in normal secretion of neuro transmitters in CNS.
6. Following ethical regimen and code of eight conducts give balance and peace to mind. It is necessary for the maintenance of health of community.

### CONCLUSION

Ardhavabhedaka with special reference to Migraine can be cured or aggravated according to individual life style. Following the ethical regimen migraine can be controlled. Ayurveda presents a striking alternative to the biochemical model of modern medicine. The treatment prescribed for Ardhavabhedaka w.s.r. to Migraine in Ayurveda controls secretion of serotonin and proved to be effective in prevention and management of Ardhavabhedaka. Changes in life style, diet, exercise and meditation are important than drugs.

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Research Article

### A CLINICAL STUDY ON THE MANAGEMENT OF ARDHAVABHEDHAKA VIS-À-VIS MIGRAINAL HEADACHE

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#### ABSTRACT

Migraine is a common clinical problem characterized by episodic attacks of headache and associated with symptoms such as nausea, sensitivity to light, sound or head movement. Females are 3 times more likely to have Migraine than Males. Migraine may occur at any age, but it is most common between ages 30 and 50. The objective of the study was to assess the combined effect of Shadbindutaila Nasya for 7 days, along with shamana yogas selected for the study i.e abhrakabhasma- prawalapishti- godantibhasma, Shirashuladivajrarasa, Pathyadishadangkawatha in the management of Ardhavabhedaka. 50 patients were assigned in a single group and the intervention was for a period of 48 days. Data was collected before commencement of treatment, after Nasya karma, On 21<sup>st</sup> day, 35<sup>th</sup> day and on 48<sup>th</sup> day of the study period. Results were statistically analyzed before and after the treatment. Significant results were obtained on severity and duration of headache and frequency of attack. Significant relief was found in associated symptoms, and good improvement in stress scores was established at the end of treatment. Overall assessment showed complete relief in 24 patients, marked relief in 21 patients and 5 patients got moderate improvement. The Treatment modality adopted was highly effective on Ardhavabhedaka. Most of the patients experienced maximum benefits at the end of the treatment schedule.

**Keywords:** Ardhavabhedaka, Migraine, Shadbindu taila, nasya, abhrakabhasma, prawalapishti, godantiharatalabhasma, Shirashuladivajrarasa, Pathyadishadangkawatha.

#### INTRODUCTION

By coping up with speed and accurate type of modern lifestyle, people are facing hectic, competitive life, which are making them impossible to take care of their health. Along with this, irregular food habits, suppression of natural urges, lack of proper sleep and less time for relaxation are becoming the part and parcel of life. All these habits together will act as the causative factors for many diseases usually of psychosomatic origin; the commonest among them is Migraine. It is a common disabling paroxysmal headache usually characterized by severe pain on one or both sides of the head with nausea and/or vomiting (stomach upset) and focal neurological disturbance (usually visual).<sup>1</sup> It is far more common in women and there is a hereditary predisposition towards migraine attacks.<sup>2</sup>

The sufferers are usually in the age group of 30- 50 yrs. Ardhavabhedaka can be correlated with Migraine based on the similarity in etiology and symptoms. Treatment of this condition includes use of analgesics and vasodilators which

have found success, but have their own adverse effects. So in order to provide an effective ayurvedic management of ardhavabhedaka, a clinical study was conducted on 50 patients.

#### OBJECTIVES:

- To assess the role of digestive impairment in developing ardhavabhedaka.
- To evaluate the combined effect of Nasya with shadbindutaila<sup>3</sup>, Abhrakabhasma-prawalapishti - godantibhasma<sup>4</sup>, Shirashuladivajrarasa<sup>5</sup>, Pathyadishadangkawatha<sup>6</sup>, in the management of Ardhavabhedaka.

#### MATERIALS AND METHODS

All the medicines mentioned in the objective were procured from Sri Datta Ayurvedalaya, Mysore.

#### Source of Data:

Total 50 Patients of either sex diagnosed to be suffering from Ardhavabhedaka Vis-à-vis Migraine were selected incidentally from Dhanya ayurveda health clinic and

therapeutic yoga centre. Mysore. Patients were assigned in a single group consisting of 50 patients who comes under inclusion criteria.

**Inclusion Criteria:**

- Age: 16 – 70 years.
- Either sex.
- Both fresh and treated cases were selected.
- Patients having symptoms of Ardhavabhedaka vis-a-vis Migraine.i.e

Shoola in ardha parshwa( Unilateral) of shiras.  
Shula of Bheda/Toda type (Pulsating, throbbing type of pain). Pakshat, Dashahat, Akasmat (Paroxysmal). Prakaasha Asahishnuta( Photophobia).

**Exclusion Criteria:**

- Other types of shirashoola such as Anantavata, Suryavartha, Pittaja Shirashoola, Kaphaja shirashoola, dustapratishyaya, peenasa etc., were excluded.
- Referred pain in one half of the head due to disorders of eye, ear, nose, throat, teeth etc., were excluded.
- Patients with status migrainosus, ophthalmic Migraine, hemiplegic Migraine, retinal Migraine, basilar artery Migraine were excluded.
- Other systemic disorders which interferes with the course of the treatment were excluded.

**Diagnostic Criteria:**

The diagnosis was based on the criteria of Migraine provided by International Headache Society.

- Atleast 5 attacks in history.
- Headache attacks lasting 4-72 hours.
- Headache has atleast 2 of the following
  - Unilateral location.
  - Pulsating quality.
  - Moderate or severe pain intensity.
- During headache atleast one of the following
  - Nausea and/or vomiting
  - Photophobia and phonophobia
- Not attributed to another diseases

**Research Design:**

Total 50 patients were assigned in a single group. The study was an observational and single blind with pre and post test design.

**Intervention:**

- Patients were administered with Shadbindutaila Marsha Nasya ( 6 drops in each nostril ) for 7 days.-followed by
1. Tab shirashulavajrarasa 1tid for 48 days.
  2. Pathyadishadangkawatha 20ml bd for 48days.
  3. Abhrakabhasma- Prawlapishti- Godantibhasma mixed

together and administered in a dosage of 250mg Bd with Honey for 48 days.

Two follow-ups were carried out with an interval of seven days after the completion of the treatment.

**Parameters of the study:**

Severity of pain, duration of pain, frequency of attack, associated symptoms of Ardhavabhedaka were the parameters considered, for the assessment of the treatment.

**Table 1: Grading Used to Assess the Symptoms**

Sl. No	Symptoms	Grading
<b>1)</b>	<b>Severity of pain</b>	
	Intolerable pain	4
	Disturbs the routine work	3
	Do not disturb the routine work	2
	Pain tolerable	1
	No pain	0
<b>2)</b>	<b>Duration of pain</b>	
	Over 24 hrs or continuous	4
	13-24 hrs	3
	4-12 hrs	2
	1min – 3hrs	1
	No pain	0
<b>3)</b>	<b>Frequency of attack</b>	
	Continuous/daily	4
	Once in 1-10days	3
	Once in 11-20days	2
	Once in 21-30days	1
	No attack	0
<b>4)</b>	<b>Associated symptoms</b>	
	1 Nausea	Ab/Pr
	2 Vomiting	Ab/Pr
	3 Photophobia	Ab/Pr
	4 Vertigo	Ab/Pr
	5 Tinnitus	Ab/Pr
	6 Aura	Ab/Pr
	7 Phonophobia	Ab/Pr
	8 Numbness	Ab/Pr
	9 Visual disturbances	Ab/Pr
	10 ScalpTenderness	Ab/Pr
	11 Diarrhoea	Ab/Pr
12 Confusional /irritable state	Ab/Pr	

Data regarding the above factors were collected before, during and at the end of the treatment and were statistically analyzed before and after treatment for the improvement in symptoms. Improvement were graded and results were analysed using Chisquare test/configurancy table analysis, descriptive statistics, paired sample ‘t’ test and Paired Sample Correlations.

**RESULTS AND DISCUSSION**

**Table 2: Showing the Incidence of Age and Sex**

Age groups (in years)		SEX		Total
		Male	Female	
16-30	Frequency (%)	8 (42.1%)	12 (38.7%)	20 (40.0%)
31-45	Frequency (%)	5 (26.3%)	14 (45.2%)	19 (38.0%)
46-60	Frequency (%)	6 (31.6%)	5 (16.1%)	11 (22.0%)
Total	Frequency (%)	19(100.0%)	31(100.0%)	50(100.0%)

**Table 3: Showing the Incidence of Symptoms**

Swaroop(symptoms)	Frequency	Percentage
Spandana	35	70.0
Spandana,daha	6	12.0
Spandana,Sphutana	2	4.0
Spandana, toda	1	2.0
Spandana, veshtana	4	8.0
Spandana, manthana	2	4.0
Total	50	100.0

**Table 4: Showing the Incidence of Travelling Sickness**

Travelling Sickness	Frequency	Percentage
Absent	3	6.0
Present	47	94.0
Total	50	100.0

**Table 5: Showing the incidence of Chronicity**

Chronoicity	Frequency	Percentage
Below 1yr	11	22.0
1-10	21	42.0
11-20	12	24.0
21-30	4	8.0
31-40	2	4.0
Total	50	100

**Table 6: Showing the incidence and result on Severity of Pain (SOP)**

Grading		0	1	2	3	4	Total
Before	Count	-	-	-	44	6	50
	% with in BT_SOP	-	-	-	88.0%	12.0%	100.0%
After	Count	24	21	5	-	-	50
	% with in AT_SOP	48.0%	42.0%	10.0%	-	-	100.0%

**P 0.000HS**

Before treatment, Out of 50 patients, 44 patients (88%) had pain which disturbs routine work and 6 patients (12%) had intolerable pain. At the end of treatment, 24 patients (48%) had no pain; 21 patients (42%) experienced tolerable pain and

5 patient (10%) experienced pain which was not interfering their routine work.

The result on severity of pain showed highly significant statistically with P value 0.000

**Table 7: Showing the incidence and result on Duration of Pain (DOP)**

Grading		0	1	2	3	4	Total
Before	Count	-	-	-	44	6	50
	% with in BT_SOP	-	-	-	88.0%	12.0%	100.0%
After	Count	24	21	5	-	-	50
	% With in AT_SOP	48.0%	42.0%	10.0%	-	-	100.0%

**P 0.000 HS**

Before treatment, among 50 patients, 44 patients (88%) had DOP between 13-24 hours; 6 patients (12%) had pain continuous/over 24 hours during attack. After treatment, the DOP was completely reduced in 24 (48%) patients; 21 (42%)

patients remained with DOP between 1min-3hours and 5 (10%) patients experienced DOP between 4-12 hours.

The result on DOP showed highly significant effect with P value 0.000.

**Table 8: Showing the incidence and result on Frequency of attack/ Pain (FOP)**

Grading		0	1	2	3	4	Total
Before	Count	-	2	5	25	18	50
	% with in BT_FOP	-	4.0%	10.0%	50.0%	36.0%	100.0%
After	Count	24	12	12	2	-	50
	% with in AT_FOP	48.0%	24.0%	24.0%	4.0%	-	100.0%

**P 0.000HS**

Out of 50 patients, maximum of 25(50%) patients used to develop FOP between 1-10 days; FOP in 18(36%) patients was continuous/daily; FOP in 5(10%) patients was between 11-20 days and in remaining 2 (4%) patients was between 21-30days. After treatment, 24 (48%) patients did not experience

FOP; 12(24%) patients had FOP between 21-30 days; 12(24%) patients had FOP between 11-20 days and 2(4%) patients had FOP between 1-10 days. The result on frequency of attack showed statistically highly significant with P value 0.000.

**Table 9: Showing the incidence and results on Nausea and vomiting**

			Before Treatment	After Treatment
VOMITING	Absent	Count	12	49
		%(percent)	24.0%	98.0%
	Present	Count	38	1
		%(percent)	76.0%	2.0%
Total		Count	50	50
		%(percent)	100.0%	100.0%

**Symmetric Measures**

		Value	Approx.Sig
Nominal by Nominal	Contingency coefficient	0.604	.000

**P 0.000HS**

Before treatment 38 patients had nausea and vomiting and at the end of treatment period 37 patients got complete relief

from nausea and 1 (2%) patients was not relieved from Nausea and vomiting. The result on nausea and vomiting showed statistically highly significant effect with P value 0.000.

**Table 10: Showing the incidence and results on Photophobia**

			Before Treatment	After Treatment
Photophobia	Absent	Count	-	43
		%(percent)	-	86.0%
	Present	Count	50	7
		%(percent)	100.0%	14.0%
Total		Count	50	50
		%(percent)	100.0%	100.0%

**Symmetric Measures**

		Value	Approx.Sig
Nominal by Nominal	Contingency coefficient	0.656	.000

**P 0.000HS P 0.000HS**

Before treatment all 50 patients had photophobia and at the end of treatment period, 43 (86%) patients got complete relief

and 7 (14%) patients did not get relief from photophobia. The result on photophobia showed statistically highly significant effect with P value 0.000.

**Table 11: Showing the incidence and results on Phonophobia**

			Before Treatment	After Treatment
Photophobia	Absent	Count		47
		%(percent)		94.0%
	Present	Count	50	3
		%(percent)	100.0%	6.0%
Total		Count	50	50
		%(percent)	100.0%	100.0%

**Symmetric Measures**

		Value	Approx.Sig
Nominal by Nominal	Contingency coefficient	0.686	.000

**P 0.000HS**

Before treatment all 50 patients had phonophobia and at the end of treatment period, 47 (94%) patients got complete relief and 3 (6%) patients were not relieved from phonophobia.

The result on phonophobia showed statistically highly significant effect with P value 0.000



**Table 12: Showing the overall assessment after Treatment**

Overall Assessment	Frequency	Percentage(%)
Complete relief	24	48.0
Marked relief	21	42.0
Moderate relief	5	10.0
Total	50	100.0

**Chi- Square test**

Test Statistics	TOTAL- AT
Chi – Square	12.520
Df	2
Asymp.Sig	.002

Out of 50 patients, 24 patients got complete relief from all parameters, 21 patients got marked relief and in 5 patients moderate relief was observed after treatment period. Statistically, the result on overall assessment also showed highly significant effect with P value of 0.002.

**Probable Mode of Action:****ShadbinduTaila**

The ingredients like tilaitaila, Eranda mula, Rasna,yashti, vidanga, Jeevanthi, Bhingaraja and tagara all have vataprashamana, vedanasthapaka property and acts as nervine tonic.<sup>7</sup>

**Mode of Action of Nasyakarma**

In classics, nasa is mentioned as the gateway of Shiras and the drugs administered reaches the Shiras and eliminates morbid doshas responsible for producing the disease. i.e., drug administered through nostrils, reaches Shringataka by taking route of Netra, Shrotra, Kanta, Siramukhas etc.,scrapes the morbid Doshas and extracts them from the Uttamanga.<sup>8</sup>

The mucous membrane of the nose is highly vascular and the drug administered through nose is absorbed by capillaries.Nose, nasopharynx is the most accessible mucous membrane of the body,and are the best absorbing surfaces. The high vascularity of the nose facilitates the absorption, mucous membrane of nose can readily absorb many drugs; digestive juices and liver are bypassed. High lipid solubility for the drug favors its absorption. Mucous membrane absorbs lipophilic drugs. A lipid soluble drug diffuses by dissolving in the lipoidal matrix of the membrane and attains higher concentration in the membrane which diffuses quickly and absorb directly through the lining membrane of cell. Also lipid soluble drugs have delayed action and acts longer.<sup>9</sup>

It is also known that, where any type of irritation takes place in any part of the body, the local blood circulation increases. When provocation of doshas takes place in Shiras due to irritating effect of drug through nasya, it causes an increased blood circulation to brain. Hence, the morbid doshas are expelled out from even a small blood vessels and finally put out by the nasal discharge, tears and by salivation.<sup>9</sup>

By the above mentioned facts, we can assess that the nasya dravyas acts on the central nervous system.

Here, the Shadbindu taila used is highly lipid soluble and probably gets dissolved in the lipid of the cell membrane and based on the properties of the ingredients, they act as tridoshagnata, does preenana of dathus and provides bala of

the same which in turn develops immunity and so the pain subsides.

**Abhrakabhasma-Prawalapishti-Godantibhasma**

Abhrakabhasma acts as tridoshahara, rasayana, medhya, deepaka, paachaka, grahani rogahara,udarashulahara and other jataravyatha nivaraka.<sup>10</sup>

Pravala /Coral/Corallium Rubrum:

Researches proved that coral calcium reduces blood pressure, premenstrual syndrome, vascular headaches and psychiatric disorders. It cures by increasing calcium levels and improves body pH balance<sup>11</sup>. Prawalapishti acts as deepaka paachaka, balya, atisheetala and tridoshahara especially kaphavatahara.<sup>12</sup> Godantibhasma acts on vikruta pitta and kapha doshas and acts as shirashulahara.<sup>13</sup>

Based on these properties,when Abhrakabhasma-prawalapishti-godantibhasma, when administered in combination together, balances the tridoshas, rectifies digestive problems, soothes both body & mind and relieves headache.

**Shirashuladivajra rasa**

The combination of the dravyas in shirashuladivajra rasa is specially indicated in relieving headache. Most of the ingredients present in this gutika are having deepana, pachana, vedanasthapana and shothahara property and acts as balya and rasayana.<sup>5</sup>

**Pathyadishadanga kwatha**

The shat dravyas present in this kwatha are amalaki, hareetaki, bibhitaki,bhunimba,nisha and amrutha. These dravyas together in this combination acts on eyes, sinuses, ears,teeth and head,<sup>6</sup> thereby rectifying the imbalanced doshas as all the ingredients are having tridoshahara property and are rasayana. Intotal the combined use of all the medicines, effectively manages Ardhavabhedaka, by producing doshashamana, vedana shamana, dathu poshaka and dathu balya effects.

**CONCLUSION**

- Migraine is an episodic headache disorder, usually characterized by severe pain on one or both sides of the head. Usually associated with Stomach upset, nausea/vomiting & Sensitivity to light and sound.
- Ardhavabhedaka is a vata pitta pradhana tridoshaja shiroroga, the symptom complex of which very well correlates to that of Migraine.
- This is an observational study, conducted on 50 patients. Among them, maximum numbers of patients



were females and incidence was noticed more in the age group of 16-30years.

- Statistical results on all parameters shows highly significant effect at the end of treatment. The result of Paired sample Correlations on stress shows statistically significant effect with value of 0.019.
- Overall assessment showed that 24 patients got complete relief from headache with all parameters such as severity of pain, duration of pain, frequency of attack and associated symptoms.
- 21 patients got marked relief and 5 patients got moderate relief from the parameters considered in this study. Statistically, the result on overall assessment also showed highly significant effect with P value of 0.002.
- Ayurveda has the Nasya therapy as master key for Shiroroga, a method to rejuvenate the body and mind and to alleviate pain. Shadbindu taila has balya,preenana,brimhana properties which increases immunity of shirapradesha thereby reduces the pain.
- Shirashuladivajrasa relieves headache by its shulahara and rasayana properties.
- Pathyadishadanga kwatha is indicated in shirashula and acts as vedanasthapaka and shothahara.
- Abhrakabhasma-prawalapishti-godantibhasma together normalizes the doshas and helps in providing immunity enhanced health.
- Hence, the combined effect of all the above drugs used, has given the satisfied results in all the subjects.

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**MIGRAINE (ARDHAVABHEDAK) MANAGEMENT IN AYURVEDA- A REVIEW**Dr. Mamta Mittal\*<sup>1</sup> and Dr. Uma Pandey<sup>2</sup><sup>1</sup>RMO, Department of *Shalaky Tantra*, Govt. Ayurvedic College & Hospital, Patna.<sup>2</sup>Prof. & HOD, Department of *Shalaky Tantra*, Govt. Ayurvedic College, Patna.**\*Corresponding Author: Dr. Mamta Mittal**RMO, Department of *Shalaky Tantra*, Govt. Ayurvedic College & Hospital, Patna.

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**ABSTRACT**

The life style of the people of modern era has changed due to rapid urbanization. Due to changed work expectations for better life style, stress is causing increased incidence of acute and chronic disorders. Migraine is one of the chronic illness, which is widespread in the population with varying severity. It is a chronic neurological disorder characterized by recurrent moderate to severe headaches often in association with a number of autonomic nervous system symptoms affecting the daily life routine. In Ayurvedic texts there are several types of Shiro Rogas (head disorders) described by Acharyas. Amongst them the clinical features of Ardhavabhedaka are very much similar to Migraine. As in case of migraine mainly analgesics are prescribed which have side effects on the other organs. So in this article an Ayurvedic approach towards this illness is discussed.

**KEYWORDS:** Shiro Rogas, Ardhavabhedaka, Shirovirechan.**INTRODUCTION**

Ardhavabhedaka is described as Vataja or vatakaphaj<sup>[1]</sup> by almost all Acharyas but tridoshaj Shiro-roga<sup>[2]</sup> by Acharya Sushrut. In ardhavabhedaka there is cutting and churning pain in half of the region of head, cervical region, eyebrows, temporal part, ears, eyes, and frontal head which is very much similar to Migraine. Typically the headache is unilateral (affecting one half of the head) varied in intensity, frequency and duration, lasting from 2 to 72 hours commonly accompanied by nausea and vomiting. Some are associated with sensory, motor and mood disturbances.<sup>[3]</sup>

**Nidana (Aetiology) of Ardhavabhedaka**

Migraine is more common in women than men and occurs most commonly in the second and third decade of life. The cause of migraine is unknown. However, it is believed to be related to a mix of environmental and genetic factors. It runs in families in about two-thirds of cases and rarely occurs due to a single gene defect suggesting that migraine sufferers may inherit sensitivity to trigger factors that produce inflammation in the blood vessels and nerve around the brain causing pain. In Ayurveda, Acharyas have described the specific causes which can be classified into following groups for convenience.<sup>[3,4,5,6]</sup>

**1. Aaharaja Nidana (Dietary causes)**

- ❖ Excessive intake of Ruksha Bhojana (Dry and Coarse food)

- ❖ Adhyashan (Excessive intake of meal or eating during indigestion)
- ❖ Skipping meals/Fasting/Hunger
- ❖ Atiambupana (Excessive intake of water)
- ❖ Atimadyapana (Excessive intake of alcohol).

**2. Viharaja Nidana (Habitual and occupational causes)**

- ❖ Affliction with Pragavata (Easterly wind)
- ❖ Due to excessive exposure to frost
- ❖ Weather changes, High altitude, Barometric pressure changes
- ❖ Suppression of the natural urges specially of Mutravega, Purishavega, Kshavathuvega and Nidravega.
- ❖ Ayasa (Excessive exercise or Fatigue)
- ❖ Changes in sleep patterns as Diva Swapna (day sleeping) after taking meal or Ratrijagarana (overnight awakening)
- ❖ Atimaithuna (excessive coitus)
- ❖ Atibhasya (over talking)
- ❖ Excessive Exposure to Sun rays or bright light
- ❖ Asatmyagandha (Bad odour)
- ❖ Staying in unhygienic conditions.
- ❖ Hormonal (Menstrual cycle fluctuations, oral contraceptives pills etc.)

**3. Mansika Nidana**

- ❖ When psychological stress is involved the migraine attack occurs often.

#### 4. Shiroabhighata

- ❖ Mild associated head injury e.g. heading a football is a precipitating factor.

#### Rupa (Signs and Symptoms) of Ardhavabhedaka

Rupa is indicative of the prognosis of the disease. Rupa of Ardhavabhedaka can be grouped into following two categories.

#### 1. Pratyatma Linga of Ardhavabhedaka (Cardinal Symptoms)

In Ardhavabhedaka Roga, all the Acharyas have described one thing common i.e. Vedana (pain) in Ardhashirsha (half of the region of head). So the Pratyatma Linga of Ardhavabhedaka must be "Pain in the half of the region of head."<sup>[7]</sup>

#### 2. Samanya Lakshana of Ardhavabhedaka (General Symptoms)

According to different acharyas following are lakshanas:

- Cutting and churning pain in half of the region of Many (cervical region) Bhru (Eye brows), Shankha (Temporal region), Karna (Ears), Akshi (Eyes) and Lalata (Frontal head).<sup>[8]</sup>
- Tearing and throbbing intensity of pain with Bhrama (Vertigo/confusion).<sup>[2]</sup>
- The disease develops either at the interval of fortnight (15 days) or 10 days<sup>2</sup> or a month and subsides of its own accord.<sup>[9]</sup>
- Shankhamoola Darana (Tearing pain in temporal regions), Gandashotha (Swelling over Zygomatic area) and Chakshu-Virajyata (Redness of Eyes).<sup>[10]</sup>
- Ardhashirsha Vikara is elevated with the rise of Sun.<sup>[11]</sup>
- If the disease lasts for advanced, it may destroy the sight and the hearing.<sup>[8,9]</sup>

According to modern science also migraine typically present with self-limited, recurrent severe headache associated with autonomic symptoms. About 15-30% of people with migraine experience migraine with an aura and those who have migraine with aura also frequently have migraine without aura. The severity of the pain, duration of the headache, and frequency of attacks is variable.<sup>[3,6]</sup>

#### Management as per Ayurvedic Principles

The Ayurvedic line of management of Ardhavabhedaka can be classified in following groups.

#### A. Nidana Parivarjana (Avoidance of Causative Factors)

Nidana Parivarjana is the first and most useful method in the prevention and management of Ardhavabhedaka. The factors which are known to produce Ardhavabhedaka should be avoided.

#### B. Aushadh chikitsa

In this both panchkarma chikitsa and oral medication in form of shaman chikitsa is indicated. Under panchkarma

some Shodhana Karmas (for radical removal of causative morbid factors of the disease from the body) and some other procedures (for instant relief by using specialized techniques) are indicated. These include:

#### 1. Panchkarma procedures

##### ➤ Shirovirechana Karma (Nasya procedure)

In the Nasya Karma therapy the drug is administered through nostrils. Medicines used for this purpose include oils, prepared with drugs in the form of powder juice or paste of the drugs which may have irritant effect on nasal mucosa. Nasyakarma can be done for 7-21 days according to severity and chronicity of the disease. Preparations used in Shirovirechana Karma are:

Taila/Ghrita - Shadabindu Taila, Anu Taila, Dashmoola Taila, Gunja Taila, Goghrita, Devadarvadi Ghrita, Lakshadi taila, Kumkumadi Ghrita, kusthadi ghrita mixed with sharkara.<sup>[12,13]</sup>

Juice/Kalka - Shirishadya Avapeeda, anshamooladya Avapeeda, Madhukadya Avapeeda.<sup>[14]</sup>

Others single drugs used for nasya:

- Madanphala mixed with mishri and cow's milk should used before sun rise.<sup>[15]</sup>
- Powder of fruit and root of Shweta Aprajita mixed with water.<sup>[16]</sup>
- Vidanga powder and black tila paste mixed with water and extracted rasa (luke warm).<sup>[17]</sup>

##### ➤ Basti Karma (Medicated Enema)<sup>[18]</sup>

In Ardhavabhedaka, Niruha Basti prepared with Vatanashaka drugs should be given first, followed by Anuvasana Basti prepared of Ghrita, Taila etc.

##### ➤ Upnaha (Poultice)<sup>[18]</sup>

Poultice of Vatanashaka drugs like dashamoola, cotton seeds, mustard seeds etc. mixed with hot milk (wrapped in a cloth in the paste form) can be bandaged around the head.<sup>[19]</sup>

##### ➤ Shiro-Basti<sup>[18]</sup>

In Shiro Basti, a cranial pouch or cuff around the head is prepared and medicated oil is filled into this pouch for about 1 muhurta (48 minutes). In Ardhavabhedaka Vata or Vatakaphanashaka medicated oils like Dashmoola taila and four types of Sneha viz. Ghrita, Taila vasa, majja etc. are used.

##### ➤ Dahana Karma (Cautrization)<sup>[18]</sup>

Dahana Karma is indicated in last when the pharmacological approaches are not responded in Ardhavabhedaka. According to Acharya Charaka, Dahana Karma should be applied at Shankha and Lalata Pradesha, limited to dermal layer (Twaka Daha) with the help of Sharkandagra or Godanta. Acharya Bhela has prescribed Pippali for Dahana Karma.<sup>[20]</sup>

## 2. Shamana Chikitsa (Pacifiatory Therapy)

It is curative treatment. The drugs used in the treatment of Ardhavabhedaka are:

- ◆ **Rasa Aushadhi**-Chandrakanta rasa, Shirovajra rasa, Mahalaxmi vilasa Rasa<sup>[21]</sup>
  - ◆ **Kwatha (Decoction)**- Pathyadi Kwatha,<sup>[22]</sup> Dashmoola Kwatha, Dhatriyadi Kwatha
  - ◆ **Ghritapana**- Mahamayura Ghrita, Mayuradya Ghrita<sup>[23]</sup>
  - ◆ **Shirolepa (Head mask)** - Kumkuma Ghrita lepa,<sup>[13]</sup> Sarivadi lepa.<sup>[24]</sup>
- Other drugs for shirolepa are-
- 1) Process black pepper powder with bhringraja swarasa & keep it in a bottle after drying. Use with bhringraja swarasa during attack.<sup>[25]</sup>
  - 2) Black tila, jatamansi powder mixed with saindhava and honey.<sup>[26]</sup>

### • Do's

Aahara	Vihara
Oily substances- Purana Ghrita, Chatuhsneha (Ghrita, Taila, Vasa, Majja) in uttam matra Dhanya - Shalidhanya, Shathi dhanya, Yusha Vegetables -Patola, Shigru, Draksha, Vastuka, Karvellaka, Amra, Dhatri, Fruits -Dadima, Matulunga, liquids - Takra, Kanjika, coconut water, Drugs - Haritaki, Kustha, Bhringraja, Kumari, Musta, Ushir, Chandrika, Gandhasara	Treatment- Shiroabhyanga, Nasya, Dhoomapana, Virechana, Shirolepa, Shirobasti, Upnaha, Raktamokshana, Agnikarma Practice good sleep habits Exercise daily, and another relaxation technique Do Yoga, Pranayam (Anuloma - Viloma), Shavasana Loose excess weight

### • Dont's

Aahara	Vihara
Ruksha bhojana, Atimadyapana, Viruddhabhojana etc. Do not overuse pain medicine	Vegadharana, Atijalakrida, vriddhuajalakrida, Atimaithuna, Divaswapana, Ratrijagrana, Atibhasya, Adhyasana, Pragvata and Avashyaya sevana, Manastapa and Ativyayama etc

## CONCLUSION

The frequent use of medications in this illness may result in medication overuse headache, in which the headaches become more severe and more frequent. So Ayurvedic treatment should be preferred in case to migraine which not only reduce symptoms but prevent further side effects also.

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- ◆ **Shiro-Abhyanga (Massage over Head)**- with Dashmoola Taila, Mahamayura Ghrita, Prapondrikadi Taila.<sup>[27]</sup>
- ◆ **Specific drug**- Shudh Somal in very less quantity is effective but it should be used only when attack is suppressed. It is not indicated during migraine attack.<sup>[28]</sup>

## Prevention

Preventive treatment of migraine include: medications, nutritional supplements and lifestyle alterations. The goal for preventive treatment is to reduce the frequency, pain, duration of migraines, and to increase the effectiveness of therapy. Another reason is to avoid overuse of medication. This is a common problem and can result in chronic daily headache. So one should follow following do's and dont's.<sup>[29,30,31]</sup>

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## Conceptual Study of Migraine in Ayurveda (Ardhavybedhaka)

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### ABSTRACT

Migraine is one of the most common neurovascular disabling disorders encountered in Shalaky practice. Migraine can be defined as a paroxysmal affection having a sudden onset accompanied by usually unilateral severe headache. In Ayurveda, Migraine is described as Ardhaavybedhaka which is a major health issue among people of age group 30 to 50 years. According to WHO, migraine is the third most common disease in the world with an estimated global prevalence of 14.7% (around 1 in 7 people).<sup>1</sup> Chronic Migraine affects about 2% of world population<sup>2</sup> with female and male ratio 3:1.3 It is a widespread, chronic and intermittently disabling disorder characterized by recurrent headaches with or without aura. The attack gives warning before it strikes black spots or a brilliant zigzag line appears before the eyes or the patient has blurring of vision or has part of his vision blanked out. It is also called as "sick headache" because nausea and vomiting occasionally accompany the excruciating pain which lasts for as long as three days. Suppressing migraine pain with NSAIDs and analgesics gives short term relief and the pain can rebound. Dependence on medicines decreases the body's natural pain relief mechanism and long-term dependence can damage kidneys, liver or other vital organs. Ayurveda believes in treating the disease at its root cause from within. Therefore, treatments focus on balancing the vitiated Doshas in the digestive and nervous systems. This can be achieved by avoiding triggering factors and prescribing doshic specific diet, stress management, herbal formulas, lifestyle modification, Panchakarma, Kriyakalpa and other holistic modalities to create a balanced physiology.

**Keywords:** Migraine, Ardhaavybedhaka, Tridosha, Ayurvedic Therapies.

### INTRODUCTION

The Migraine Research Foundation considers Migraine is the 3<sup>rd</sup> most prevalent illness and 6<sup>th</sup> most disabling health illness in the world. Migraine sufferers have a higher chance of having depression, anxiety, sleep disorders, other pain conditions and fatigue.<sup>4</sup> It is a leading cause of disability throughout the world. It has a multi factorial background such as genetic, environmental, metabolic, hormonal and pharmacological.<sup>5</sup> These factors trigger the attacks of migraine vary between patients. However, it presents a common pattern of occurrence with peak incidence in adolescence and peak prevalence in middle age. Migraine is a widespread, chronic and intermittent disorder characterized by recurrent headaches attacks with or without aura usually unilateral with different intensity. About two third of the case run in the family. The headaches affect one half of the head and are throbbing and pulsating in nature, and last from 2 to 72 hours.<sup>6</sup> Changing hormone levels may also play a role as migraine affects more in boys than girls before puberty and two to three times more in women than men.<sup>7</sup> The pain is generally made worse by physical activity. Up to one third of people have an aura typically a short period of visual disturbance that signals that the headache will soon occur.<sup>8</sup> It is highly prevalent headache disorder over the past decade having considerable impact on the individual and society. It can involve brain, eye and autonomous nervous system. Migraines are believed to be a neurovascular disorder with evidence supporting its mechanisms starting within the brain and then spreading to the blood vessels.<sup>9</sup> The neurotransmitter serotonin (5-hydroxytryptamine) and hormone estrogens play vital role in pain sensitivity of Migraine. Serotonin selectively constricts cranial blood vessels and also induces a massive activation of



peripheral nerve endings which play a key role in triggering migraine headache. Estrogens mainly affects female of reproductive age group.<sup>10</sup>

Migraine headaches can be classified into several types but two are the most common types.

### 1. Migraine with aura (classic migraine):

Aura is a combination of sensations that occur before and sometimes during the pain of migraine. Aura means “wind” and just like the wind often is a sign of an approaching storm, an aura serves as a warning of an approaching migraine. Auras may include blurry vision, blind spots, bright flashing lights, temporary vision loss, wavy or jagged lines, numbing or tingling of the skin and muscle weakness.

### 2. Migraine without aura (common migraine):

This type of migraine very common and does not have any warning signs but some people may still feel some symptoms that indicate a migraine is coming. The pain of the migraine attack is still severe and nausea or vomiting might happen.

Migraine can be closely related to ardhavbhedak in Ayurveda due to its cardinal feature ‘half sided headache’ which is also explained by commentator Chakrapani as Ardhamastaka vedna and also its paroxysmal nature.<sup>11</sup> Vata-pitta vardhak Ahaar, irregularities in diet, allergic reactions, bright lights, loud noises, odors or perfumes, physical or emotional stress, changes in sleep patterns, smoking or exposure to smoke and alcohol are the triggering factors.<sup>12</sup>

### Ayurvedic causes of Migraine headache<sup>13</sup>

Headaches in Ayurveda are classified based on doshic involvement (body-mind-spirit). Ardhavbhedaka has been explained as Vata and Pitta predominant Tridoshaja Vyadhi, but it can also be triggered by any one of the individual doshas.<sup>14</sup> Acharya Charak told it Vata-kaphaj while acharya Vagbhata told it Vataja. Vata controls the nervous system and brain activity. Imbalance of vatadi doshas cause the disease which occurs due to improper diet and lifestyle. Ayurveda considers headache occurs because of two primary reasons – a sensitive nervous system and impaired digestion. The sensitive nervous system lowers the ojas which is the essence of all body tissues and provides strength to the nervous system and body. Similarly, improper diet and lifestyle causes aggravation of Pitta in the body which impairs digestion leading to the production of metabolic

impurities called ama. This ama mobilized to the head and neck region by vata and other Doshas causing headache. Ardhavbhedaka is of 3 types mainly:

1. **Vataja headache** - caused by Vata prakopaka ahaar (diet) and vihar (lifestyle) like sleeplessness, hurry, worry, indigestion, fasting, irregular food habits, fear, stress, extreme cool condition, suppression of natural urges, etc.
2. **Pittaja headache**- caused by Pitta prakopaka diet like hot spicy food, junk food, beverages, sunlight, heat, profuse sweating, stress, etc.
3. **Kaphaja headache**- caused by Kapha pakopaka practices such as guru ahara having high calorie foods, processed canned food and drinks, dairy products, fermented foods, meat products, lack of exercise, excessive sleep at day time, etc.

### Symptoms:<sup>15</sup>

- Migraine due to Vata dosha has constipation, dry skin and acute pain; Pitta dosha has Irritability, sensitivity to light, burning sensation in the eyes and Kapha dosha has Headache with throbbing pain, nausea and fatigue.
- Pain is usually Ardh shira (unilateral) in Manyu, Bhru, Shankha, Karna, Akshi and Lalaata.<sup>16</sup> Intensity of pain is severe stabbing or cutting type and increases with every pulse. It may radiate to the neck and shoulder of the same side.
- Migraine attacks are more often during the time of depression, irritability, menstrual period and loss of appetite. People with migraine get it at the frequency of once in a week or fifteen days or once in a month. The headache lasts for three to four hours but in worst cases the pain lasts for two to three days as well.

### Treatment of migraine through Ayurveda<sup>17</sup>

In contemporary science, management of Migraine is prophylactic only. But in Ayurveda, there are various treatment protocols explained by acharyas. Treatment can be achieved by avoiding triggers and prescribing doshic-specific diet, Stress management (meditation, relaxation techniques, breathing exercises, yoga and mantra), herbal formulations, lifestyle modification, panchakarma and other holistic modalities to create a balanced between body-physiology and body- mind to bring complete relief to migraine patients. In Ardhavbhedaka among Tridoshas, mainly Vata Dosha is vitiated. Treatment plan is considered according to Shiroroga Chikitsa and Vatvyadhi Chikitsa. Only herbal medications or other topical procedures are not

enough for the treatment. First of all Shodhana karma is required for pacification of vitiated Doshas such as Mridu Shodhan, Nasya, Basti, Shirobasti, Shirolepa, Shirodhara, Kavala Graha and other internal medications are planned as per vitiated Doshas.

### Sanshodhana Therapy<sup>18</sup>

Virechana is indicated in Shiroroga by all Acharyas. It is the first line of treatment. Particularly MriduVirechana is advisable due to vitiation of mainly Vata. Acharya Charaka mentioned Mridu Virechana in Vatvyadhi. Snehana and Swedana pre operative should be done before Virechana according to Prakriti and Agni of patient.

### Nasya<sup>19</sup>

In Ayurveda Nasya Therapy is considered as one of the most promising treatment for all the Urdhwajatrugata vikaras. There are three nasya-Virechana nasya, Brihan nasya, and Shaman nasya which help in the management of Ardhavbhedaka. This therapy is administered through the nasal route. Medical oils such as shidbindu taila or anu taila are put in the nostrils. Some other important measures are:

### Basti<sup>20</sup>

Acharya Charak described Ardhavbhedak in Trimarmiya Siddhi Adhyaya. Shira Marma is one of the most important Marma amongst all Trimarma. Basti is the best treatment for pacifying Vata as well as for Shiroroga.<sup>21</sup>

### Shirovasti<sup>22</sup>

Shirovasti is another effective ayurvedic therapy. The medicated oils that pacify vata and kapha doshas can be used for shirovasti. This therapy helps in curing diseases related to the brain such as migraine, throbbing pain and depression.

### Shirolepa<sup>23</sup>

Shirolepa is considered to be highly effective in curing migraines caused due to stress. It is a specific technique in which certain herbs are mixed to form pastes which are applied on the head and left for an hour and wiped off with warm water.

### Shirodhara<sup>24</sup>

Shirodhara is an excellent Ayurvedic therapy that has a profound impact on the nervous system. A thin stream of liquid (mostly, warm oil) is poured continuously over the shiro marma (forehead) the area

where our nerves are highly concentrated. The pressure of the oil creates a vibration on the forehead, which allows our mind and nervous system to experience a deep state of mental rest. The feeling is almost similar to that of meditation. This therapy is beneficial for pitta and vata doshas. In pittaja type Cow milk can also be used to perform shirodhara called ksheera dhara. Headache due to obstruction to the vata, buttermilk is used for shirodhara termed as takra dhara.

### Kavala Graha<sup>25</sup>

Kavala graha (oil pulling) is highly recommended in Ayurveda. It has a very powerful detoxifying effect. Chandanadi taila and mahanarayani taila are used to cure migraine attacks in clinical practice.

### Diet & Lifestyle<sup>26</sup>

According to Ayurveda, maintaining a good diet and Lifestyle are essential to restore stability and balance in the body. Depending on the symptoms, frequency and intensity of the attack, a healthy diet can manage migraine headache includes:

- A. Avoid hot, spicy foods, fermented foods, white sugar, white flour products, and sour or citrus fruits, because they aggravate the Pitta in your body.
- B. Drink more water and eat more fiber, fruits and vegetables, and whole grains.
- C. Avoid excessive sugar or salt, refined foods, animal products (meats and dairy), caffeine, tea and alcohol as they may lead to aggravation of Pitta.
- D. Avoid direct exposure to the sun, as migraine headaches are predominantly a Pitta disorder and can be triggered by the hot sun.
- E. Head massage with Manjisthadi taila and Balaaswgandhadi taila is also beneficial. This massage gives a calming effect to nervous system.
- F. Stress Management:
  - Simple yoga and meditation practices can rectify the imbalances that cause the onset of migraine attacks.
  - Maintaining regular sleep timing and sleep for enough time (7-8 hours).
  - Regular morning walk for 10 minutes in fresh air increase oxygen supply to the brain and reduce the chances of migraine attacks.
  - A well-disciplined lifestyle can help you keep away from this severe situation
- G. Headaches caused due to tension and worry can be alleviated through deep breathing and relaxation,

especially in a lying down position in a quiet place.

### Conclusion

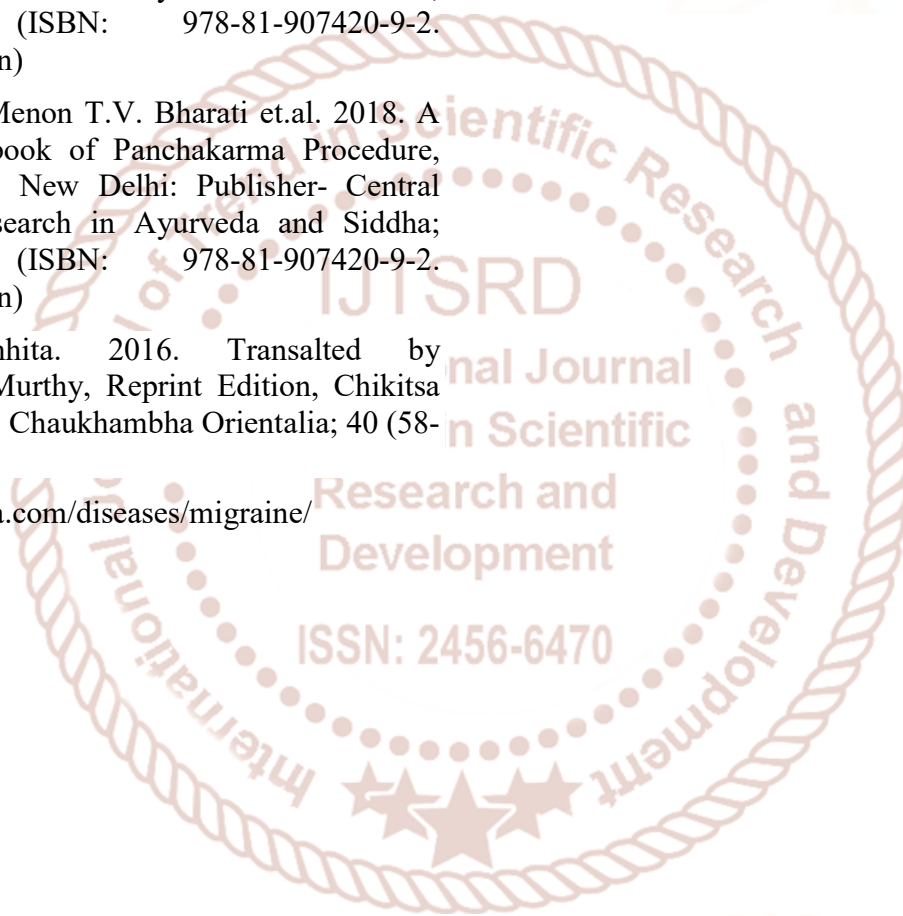
Migraine is an episodic neurovascular disabling disorder which is closely related to ardhavbhedak in Ayurveda and characterized by its cardinal feature half sided headache, stomach upset, nausea, photophobia and phonophobia. The nidanas mentioned in Ayurveda are aharaja, viharaja and manasika factors which trigger the migraine attack and also play vital role in diagnosis and treatment of the disease. Migraine sufferers are seeking Alternative (nonpharmacologic) therapies to alleviate migraine headaches. Ayurveda opens new doors for treatment of migraine through holistic approaches. Ayurveda believes in cleansing the body and pacifying the Doshas from the roots by using different modalities such as nutrition, lifestyle modifications, herbs, Panchakarma, Kriyakalpa, yoga, pranayama, meditation, relaxation techniques and marma therapy to treat migraine. These treatment approaches create a balanced physiology which brings healing the body and mind. This helps to achieve complete treatment as well as control of migraine through Ayurveda.

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### Management of *Arddhavabhedka* or Migraine in Ayurveda

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#### INTRODUCTION

Migraine is now recognized as a chronic illness, the second most common cause of headache, not simply as a headache. Worldwide, migraines affect nearly 15% or approximately one billion people. It is more common in women at 19% than men at 11%<sup>1</sup>. During adolescence migraines becomes more common among women<sup>2</sup> and this persists for the rest of the lifespan, being two times more common among elderly females than males<sup>3</sup>. The word migraine is derived from the Greek word hemicrania, meaning "half of the head" because the pain of migraine often occurs on one side. Pain also sometimes spreads to affect the entire head. The term "migraine" refers to a syndrome of vascular spasms of the cranial blood vessels. It is usually an episodic headache that is associated with certain features such as sensitivity to light, sound or movement; nausea and vomiting often accompany the headache<sup>4</sup>.

In Ayurveda migraine is found to be identical to *Ardhavabhedaka* characterized by pain in half side of head<sup>5</sup>. Vagbhata's statement regarding *arddhavabhedka* runs as follows: "*Ardhe tumoordhanah sosarddhavabhedaka*". Vedana in half of the portion of the head is called *arddhavabhedaka*. A paroxysmal disorder characterized by visual and / or sensory phenomena in an aura associated with or followed by unilateral headache and vomiting. While this definition is satisfactory for 'classical' migraine, there are many patients who never experience an aura and in whom the headache is always bilateral. The single most characteristic and constant feature is that headaches occur paroxysmal disorder, i.e. the

headaches occur in attacks, separated by intervals of freedom. If the condition becomes aggravated, it may even impasse the functions of the *Nayana* (eye) and *Shrota* (ear)<sup>6</sup>. In this present review we have tried to sum up the classical ayurvedic solution for *arddhavabhedka* or migraine.

#### ETIOLOGY

Cerebral: Cerebral ischaemia followed by hyperaemia (spasm of blood vessels followed by dilation)

Ocular : Refractive errors

Allergy : Proteins, tobacco, chocolate, pollen

Psychological : Mental fatigue, anxiety

Endocrine : Serotonin

Age & Sex : Middle age / females

*Other etiological factors:*

- Rooksha ahara sevana (over indulgence of dry foods)
- Atiahara sevana (excessive intake of food)
- Vishamasanam (frequent & irregular intake of food)
- Pravata sevana (exposure to direct breeze)
- Avasya sevana (exposure to snow fall)
- Atimaithuna (excessive sexual indulgence)

Quick Response Code:





- Vegadharana (superssion of physiological urges)
- Ativyayama (over exercising)
- Uchiarbhashana (loud speech)
- Seetamaruta sevana (exporure to cold air)
- Unwanted repetition of vamaana and virechana karmas
- Atibhaya and krodha (Excessive fear and anger)

**PATHOLOGICAL CONDITIONS:**

The general pathology for migraine according to are over exposure to sun, snow, wind, inadequate sleep, suppression of natural urges, indigestion, looking continuously in one object, keeping head in one direction more much time and too much loud speaking.

*Modern Explanation:*

There is a migraine "pain centre" or generator in the brain. A migraine begins when hyperactive nerve cells send out impulses to the blood vessels, causing them to clamp down or constrict, followed by dilation (expanding) and the release of prostaglandins, serotonin, and other inflammatory substances that cause the pulsation to be painful.

*Ayurvedic Explanation:*

The hyper action of the nerve cells and expansion and dilation of blood vessels are caused because of the Vata vitiation due to the above factors. This further vitiates Pitta and Kapha which causes the inflammatory process. People with migraines may inherit the tendency to be affected by certain migraine triggers, such as fatigue, bright lights, weather changes, and others.

*Migraines seem to be triggered by external factors are:*

- **Emotional stress:**
- **Sensitivity to specific chemicals and preservatives in foods:**
- **Caffeine:** Excessive caffeine consumption or withdrawal from caffeine
- **Alcohol:** Excessive caffeine consumption or withdrawal from alcohol
- **Changing weather conditions:**
- **Other factors:** Menstrual periods, excessive fatigue, skipping meals, changes in normal and sleep pattern.

**MIGRAINES: RISK AND CO-EXISTING CONDITIONS:**

There are some medical conditions that are more commonly associated with migraines, including



Fig 1: Unilateral presentation of migraine

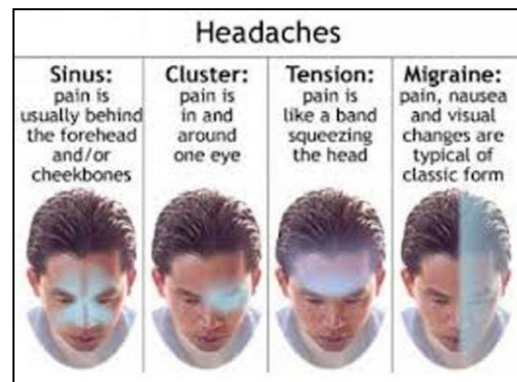


Fig 2: Type of headaches and characteristics

Asthma, Chronic fatigue syndrome, Hypertension, Raynaud's phenomenon (occurs when blood vessels narrow causing pain and discoloration usually in the fingers), Stroke and sleep disorders. Migraines have a tendency to run in families. Four out of 5 migraine sufferers have a family history of migraines. If one parent has a history of migraines, the child has a 50% chance of developing migraines, and if both parents have a history of migraines, the risk jumps to 75%.

**SYMPTOMPS OF ARDDHAVABHEDKA:**

- Pain in arddhavabhedaka will be severe as though cutting by a sharp weaon or churning by a churner. Pain (toda, bheda, bhrama) is felt in half of siras. A pounding or throbbing headache that often begins as a dull ache and develops into throbbing pain. The pain is usually aggravated by physical activity. The pain can shift from one side of the head to the other, or it can affect the front of the head or feel like it's affecting the whole head.
- Sensitivity to light, noise, and odours
- Nausea and vomiting, stomach upset, abdominal pain

- Loss of appetite
- Sensations of being very warm or cold
- Paleness
- Fatigue
- Dizziness
- Blurred vision
- Diarrhoea
- Fever (rare)

Most migraines last about 4 hours although severe ones can last up to a week. The frequency of migraines varies widely among individuals. It is common for a migraine sufferer to get 2-4 headaches per month. Some people, however, may get headaches every few days, while others only get a migraine once or twice a year.

*Other syndromes causing arddavabhedaka like symptoms which are described in ayurvedic classics:*

1. *Anyatovata (Netraroga/ Eye disease):* Pain in *manya akshi* and *sankha* regions. According to Susruta severe pain is felt at *karna, manya, hanu, greeva, netra* and *bhru* regions.
2. *Vataparyayam (Netraroga/ Eye disease):* (a) Severe pain is left in *pakshma, akshi* and *bhru* regions. (b) *Drishtinasa* is seen as complication.
3. *Adhimantha (Netraroga/ Eye disease):* Headache is a predominant symptom especially in *vataja* type *adhimantha*. (a) *Siroantarvedana*, (b) *netravedana*, (c) *karnanada, bhrama* and *lalta bhru vedana*, (d) *Sankha/danta, kapola, kapalasthi ruja* are seen in *raktaja adhimantha*.
4. *Vataja ahishyanda (Netraroga/ Eye disease):* (a) *Nistoda, stambhana, romaharsha, sirobhitapa*. (b) Pain is felt at *sankha, lalta bhru* and *akshi*.
5. *Ardhitavata (Vataroga/ Disorder of nervous system):* Pain is felt in half of the portion of face and head with other associated symptoms.

#### TREATMENT:

Treatment approach in Ayurveda is different from other medical systems. Ayurvedic treatment is not for the disease but it is for the particular condition of disease of the individual. Treatment and preparation will change according to the disease condition and individual. Internal preparations, external treatments and Panchakarma (purification) treatments are adopted for treating Migraine. This is done after a detailed diagnosis according to Ayurvedic methods. History of the disease with duration, previous disease history, mental state, pattern of sleep, appetite, food habits, activities,

analysing the sense organs, analysing the pulse, character of stool and urine, menstrual history, etc are examined in detail. This helps to get knowledge regarding the involvement of Dosha and the intensity of the disease. Treatment is done according to these two factors.

#### *Internal preparations:*

Various herbal preparations as decoctions, powders, tablets, tonics are administered if the disease is not chronic. These preparations act directly on the upper part of the body especially in the head. This action is due to the special Ayurvedic properties like Rasa, Guna, Veerya, Vipaka and Prabhava. Study shows the combined effect of *Shadbindutaila Nasya* along with *Shamana Yogas* i.e; *Abhrakabhasma, Prawalapishiti, Godantibhasma, Shirahshuladivajra Rasa, Pathyadi Kwatha* in the management of *Ardhavabhedaka*. Another combination found significant result- *Narikela Lavana, Sootashekhara Rasa, SitopaladChurna, Rason Vati* and *Godanti Mishran*; treatment should be continued for 3 months. Significant relief was found in associated symptoms, and good improvement in stress was also seen<sup>7</sup>.

#### *External treatments and panchakarma:*

External treatments along with the internal preparations are very effective in chronic conditions. Various kinds of paste over the forehead help for the sudden relief from the ache. The preparations help to normalize the hyper action of the nerve cells and regulates the blood circulation towards the brain. Special treatments like *Sirodhara, Thalam, Sirovasty, Talapodichil*, etc which is developed from Kerala helps to nourish the nerve system and there by the action of Vata is normalised. Involvement of other systemic disorder is also taken into account and treatment is done.

In chronic Migraine toxic materials will be deposited in the head and affects the function of sense organs. Due to this perception of sense organ is affected causing sensitivity to light, sound, odour and mood changes. Panchakarma helps to remove these toxins and help to strengthen the nerve system. *Nasya* (application of herbal preparations through nostrils) is one of the treatments which directly acts on the nerves and removes the toxins accumulated in the sinuses. Mucus coating inside the nostrils are one of the areas where numerous

nerve endings are exposed. The medicated oils applied through Nasya directly acts on these nerve endings and help to pacify Vata. The special preparations used for Nasya drains the mucus deposited in the sinuses there by the pressure in this area is relieved. Other Panchakarma treatments like Vasti (enema), Virechana (purgation) also helps to put the toxins out from the body.

After the purification treatment special preparations called Rasayana (immuno regulatory) is administered. Rasayana preparations improve the immune system further improving the perception of sense organs. Migraine due to other systemic involvement like psychological problems, digestive problems, blood pressure, ophthalmic problems, immune problem, improper menstruation, etc will be relieved when treated according to the specific treatment told for these diseases.

#### Yogic treatment:

Yoga and meditation is very important factor for management of migraine. As it facilitates the blood circulation throughout the body; enhances the flow of oxygen in blood, and helps to maintain a good body physiology and mental consciousness. Yoga helps to manage stress positively, some important postures are illustrated in Fig. 3.

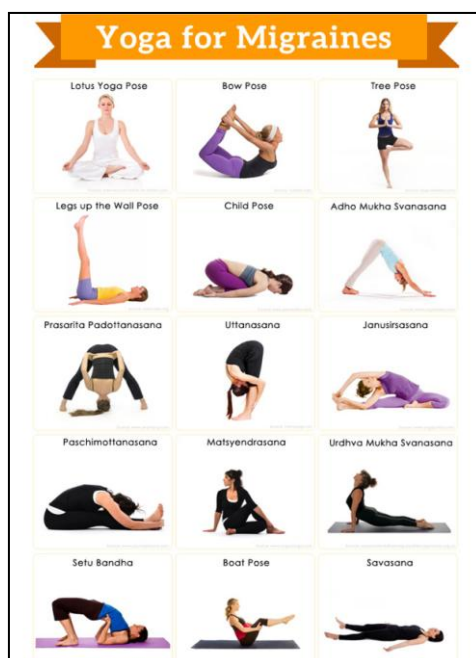


Fig 3: Important yogic postures for the management of migraine

#### OTHER ACTIVITIES FOR CONTROLLING MIGRAINE:

Improper activity can trigger or aggravate Migraine. Proper knowledge about activities helps to reduce intensity during the attack. It is advices to find methods to relax mind and body. Hearing music, meditation, talking with likeminded persons, other deeds which help to relax should be adopted. Exposure to excess wind, cold, sunlight, etc are not advisable. Smoking and usage of alcoholic beverages are not preferable. Taking head shower in cold water, not drying the hair in a proper way, exposing head to warm weather or sunlight without proper drying and immediately after taking shower, taking cold water shower after coming from warm temperature, taking shower before digesting the food, etc can create the pathology. Staying in less oxygenated room, working with computers for long duration, continuous work which produce strain to the eyes and brain, recurring thoughts, etc should be reduced or avoided.

#### SOME CLINICAL STUDIES:

(1) An Ayurvedic Treatment Protocol (AyTP) comprising five Ayurvedic medicines, namely Narikel Lavan, Sootshekhar Rasa, Sitopaladi Churna, Rason Vati and Godanti Mishran along with regulated diet and lifestyle modifications such as minimum 8 h sleep, 30-60 min morning or evening walk and abstention from smoking/drinking, was tried for migraine treatment. The duration of the therapy was 90 days. Out of 406 migraine patients who were offered this AyTP, 204 patients completed 90 days of treatment. Complete disappearance of headache and associated symptoms at completion of AyTP was observed in 72 (35.2%); mild episode of headache without need of any conventional medicines in 72 (35.2%); low intensity of pain along with conventional medicines in 50 (24.5%); no improvement in seven (3.4%) and worst pain was noted in three (1.4%) patients, respectively. In 144 (70.5%) of patients marked reduction of migraine frequency and pain intensity observed may be because of the AyTP<sup>8</sup>.

(2) A combination of five classical ayurvedic formulations (*Narikela Lavana, Sootashekhar Rasa, Sitopaladi Churna, Rason Vati and Godanti Mishran*) has been employed as prophylactic remedy for migraine. These ayurvedic formulations (AYFs) contain certain Bhasma and plant materials. An investigation was initiated to evaluate

safety profile of these AYFs in Sprague Dawley rats and Swiss Albino mice following OECD guidelines. Acute toxicity studies were done after ingestion of 5 g/kg of AYFs in a day in both the animal species. Sub acute toxicity studies were carried in five different groups in which AYFs was administered in various doses ranging from 1.47 – 6.48g/kg for mice and 0.7 – 7.45 g/kg for rats. The highest dose were 10 times higher than the recommended human dose. Detailed hematological, biochemical, necropsy and histopathological evaluation of organs was performed for all animals. The AYFs were well tolerated and no toxic manifestations were seen in any animal. Mortality observed in high dose groups; 4% in rats and 6% in mice was not related to treatment. The AYFs were found to be safe in animals. However, chronic toxicity studies are required to know the long term safety of these AYFs<sup>9</sup>.

(3) A clinical study was conducted on 30 cases presented with classical features of ardhavabhedaka (migraine) to evaluate the effect of nasyakarma with along with internal medications of results were highly encouraging. Nasya karma with from Devdali Churna (Luffa Echinata) to inhale in each nostril for seven days. A formulation of *Lavandula stocohas*, *Coriandrum sativum* and *Piper nigrum* in powder form was given before sunrise at an interval of 30 days. Complete relief was found in 25% cases, marked relief in 15% cases, moderate relief in 10% cases, mild relief in 30% cases and no relief was observed in 20% cases. Results were highly encouraging and free from adverse effects<sup>10</sup>.

(4) The objective of the study was to assess the combined effect of Shadbindutaila Nasya for 7 days, along with shamana yogas selected for the study i.e. abhrakabhasma- prawalapishiti-godantibhasma, Shirashuladivajrasa, Pathyadishadangkawatha in the management of Ardhavabhedaka. 50 patients were assigned in a single group and the intervention was for a period of 48 days. Data was collected before commencement of treatment after Nasya karma, On 21<sup>st</sup> day, 35<sup>th</sup> day and on 48<sup>th</sup> day of the study period. Results were statistically analyzed before and after the treatment. Significant results were obtained on severity and duration of headache and frequency of attack. Significant relief was found in associated symptoms, and good improvement in

stress scores was established at the end of treatment. Overall assessment showed complete relief in 24 patients, marked relief in 21 patients and 5 patients got moderate improvement. The Treatment modality adopted was highly effective on Ardhavabhedaka. Most of the patients experienced maximum benefits at the end of the treatment schedule<sup>11</sup>.

## CONCLUSION:

Migraine has become a challenging problem to the present day physician. Ayurveda believes in cleaning the body from within and eradicating the disease from its roots. Ayurvedic treatment of migraine therefore is centered on the pacification of *Pitta* Dosha, and restoration of digestive function in the body. Along with selective ayurvedic medications and panchakarma therapy, ayurveda also considers following as key factors to control migraine:

- Balancing the nervous system activity
- Use of diet to prevent *Tridosha* imbalance
- Stress management
- Selective yogic exercise
- Meditation

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# Standard Treatment Guidelines Ardhavabedhaka / Migraine

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## Standard Treatment Guidelines

### Ardhavabedhaka / Migraine

#### 1) Disease & its Definition :-

Ardhavabedhaka is a tridoshaja shiroroga characterized by recurrent attacks of headache widely variable in intensity, frequency and duration. Attacks are commonly unilateral and usually associated with bhrama, aruchi, moha, prakasha & sabda asahatwa.

#### 2) Literary background :-

All shirorogas are tridoshic (In Sushruta Samhita Uttarasthana chapter 25 & 26) with predominance of specific dosha.& classified as:

Vataja

Pittaja

Kaphaja

Tridoshaja

Raktaja

The special shiroroga includes

**Ardhavabedhaka**

Suryavarta

Ananthavata

Shankaka

Kshayaja

Krumija shiroroga apart from the other conditions -khalitya,palitya etc.

#### 3) Terminology to be compared with modern science :- Shirashoola -headache

Ardhavabedhaka -migraine -Hemicrania

#### 4) Causative factors:-

Ahara	Vihara	Nidanrthakara roga	Environmental impact
Excess food intake, wrong timing of food, adyashana, Vishamashan, ruksha ahara, guru abhisyandi ahara, ati ushna teekshna ahara, ati amla ahara sevana, intake of alcohol	abhyanga dweshi, ambukreeda, talking loudly, ratri jagarana, diva swapna, atapa dhuma sevan, astmya gandha sevan, chinta, krodha, shoka, excessive excercises, exposure to bright and high intensity light, light stimuli, controlling urges like vomiting, sneezing, shedding tears, Exertion physical-mental, Emotional excesses	Dusta pratishyaya	Smoke, dew, breeze, cloudy, natural calamities like cyclone, heavy rains.

### 5) Pathology :-samprapthi

Tridoshaja or mainly vatapittaja. Vata causes vitiation of agni at all levels causes Ardhavbhedaka.

### 6) Clinical features :- according to dosha involved or types described by treatises

#### A. Symptoms :

Frequency-	Monthly, fortnightly, weekly
Pain	Severe headache- Pricking and spinning types confined to half of the head
Shira Tapa	Head become hot /cold /heavy
Prakash Ashatwa	Photophobia
Brhma moha shola	Aura, Pain, Giddiness
-----	Pain sometimes is relieved spontaneously
-----	If neglected can destroy vision or hearing
Ardha moordha	Unilateral
bhadyate-swanatah-srotra	Hyperacusis
Tamah	Scintillating scotoma

### 7) Examination of the patient:

Primary or Secondary headache.

#### A. Local - in and around the shiras, for

- Lymph nodes
- Pulsating blood vessels
- Discoloration
- Swelling glands
- Growths
- Disfiguration
- Fever/local raise /change in temperature
- Discomfort in jaw movement
- Bleeding any place in and around head
- Examination of central nervous system.
- Eye, Ear, Oral cavity, nasal cavity examination to rule out causes of radiating shirashoola.

#### B. Systemic –

- Blood pressure
- Temperature
- Stiff neck, nausea & vomiting may point to meningitis, encephalitis, or a brain abscess.

- Abnormal speech, eye movements, walking, coordination, or reflexes.

## 8) Investigations and their importance:-(diagnostic ,prognostic)

Head X-rays, CT, MRI scan, EEG, Angiogram,

- The following needs further investigations & CT or MRI, Lumbar puncture or CSF analysis may be ordered:  
Neurologic symptoms or signs (eg, altered mental status, weakness, diplopia, papilledema, focal neurologic deficits)  
Onset of headache after age 50  
Immunosuppression or cancer

## 9) Differential diagnosis:-

	Ananta vata	vataja shirashoola	adhimanta	Shankhaka	Suryavarta
Affected part	Shira	Shira	Netra	Shira	Shira
Dosha	Tridoshaja	Vataja	4 types - V,P,K,R	Tridoshaja +Rakta	Tridoshaja
Site of Pain	Severe Pain at back of neck referred pain at Eyes, Eyebrows & temples	Temples, back of neck, midpoint between eyebrows, forehead	Hemicranial pain, Eyes	Temples	Eyes, eyebrow, temples, forehead
Subsided by	-----	Pressure & fomentation, without any cause	-----	-----	Sun set, Cold measures sometimes by hot measures
Aggrevated by	-----	Night,without any cause	-----	-----	Afternoon, hunger

## 10) Treatment

Chatur sneha or purana grta paan -prabhuta matra,  
Shirovirechana, kayavirechana, basti, murdha taila, Nasya

## Agnikarma

- A. Aim of the treatment -mitigation of symptoms,prevention of recurrence  
 B. Samanya Chikitsa Sutra - As per doshan dominance can be adopted

C. Aushadhi Chikitsa (shamana when shodhana needs to be indicated.)

1. Local management -ardhavabedhaka with any particluar dosha dominance as below

Therapy	Vataja	Pittaja	Kaphaja	Tridoshaja	Raktaja
Seka	bhadradarvadi ksheera	grta ksheera with pittahara herbs			Same as pittaja
pralepa/ lepa	payas+saindava lavan  Kutha and Erand root mixed with Kanju/buttermilk	Jeevaniya Ghrita  Shatdhaut Ghrita	Pathyadi lepa	Trifla Ghrita	Jeevaniya Ghrita  Shatghaut ghrita
Nasya	Brihat panchmool Kshira	Jeevaniya Ghrita, Mulethi, Munnaka & mishraya sadhita ghrita	Katphala powder	Milk+Shunthi Jivakadhya taila/Vrihatjivadhya taila	Jeevaniya Ghrita
Pana	vidaryadi grta,	Jeevaniya ghrita Milk or Ghrita with Kesar/Mishri			Jeevaniya ghrita  Parpatadi phant
pathya	Jangala Mansa, Shali rice, Ghrita, Milk	milk,sweets, ghee,sugar	katu tikta rasa		

## Oral medications



Godanti bhasma 250 mg taken along with sugar and ghrita early in the morning

Tribhuvanakirti 125 mg, Sutashekar 125 mg and Vatavidwamsa rasa 125 mg taken twice or thrice a day along with goghrita and sugar

Chintamani rasa 250 mg, Kamadudha ras 250 mg twice or thrice a day with badam pak

Saptamrita louha 250 mg, Laghu suta shekara, 125 mg and Godanti bhasma 125 mg taken twice or thrice a day with Bhakllataka avaleha

For consumption and anupana in Ardhavabheda – Chinnadi kwatha (Brihat bhaishajya ratnavali), Devadarvyadi kwata, Dhatriyadi kwatha, Bhallatakaksheera and Pathyadi shadanga kwatha are used.

### 3. Suggested Treatment Plans:

TREATMENT PLAN A - Shatavari 5 + brahmi 4 + jatamansi 3 + musta 3

Dose - 1/2 tsp — b.i.d, after food, with a little lukewarm water. --common for most ardhavabhedaka

TREATMENT PLAN B Narikel Lavan, Sootshekhar Rasa, Sitopaladi, Rasonadi Vati & Godanti Mishran along with regulated lifestyle & diet restored the acid-alkali balance & normal functioning of gastro-intestinal system. Along with pathya and apathya

TREATMENT PLAN C shodhan -kaya-shira, rasyana like mahadrakshadi rasayan, dashmoolarista with yoga raja guggulu

### 4. When to refer the patient to higher centre/hospital

Refer if headache does not improve with treatment above, gets worse or new symptoms develop e.g. (fever, fits, visual disturbance, drowsiness etc) or localizes to one part of the head.

- Thunderclap headache (intense headache with “explosive” or abrupt onset), which suggests subarachnoid haemorrhage
- Headache with atypical aura (duration >1 hour, or including motor weakness), which may be symptoms of TIA or stroke
- Aura without headache in the absence of a prior history of migraine with aura, which may be a symptom of TIA or stroke
- Aura occurring for the first time in a patient during use of combined oral contraceptives, which indicates risk of stroke
- New headache in a patient older than 50 years, which may be a symptom of temporal arteritis or intracranial tumour, or in a pre-pubertal child

- Progressive headache, worsening over weeks or longer, which may indicate intracranial space-occupying lesion
- Headache aggravated by postures or manoeuvres that raise intracranial pressure, which may indicate intracranial tumour
- New headache in a patient with a history of cancer, HIV infection or immunodeficiency

D. Diet plan :- Chopped ripe banana with date sugar, ghee, cardamom  
 Tender coconut water +honey or sugar/ amla moraba  
 Eat a sweet preferably made of dairy.  
 Prefer hot masha/mung /horsegram soup +spices & ghee  
 Ghee –medicated with milk or food, choice -medhya  
 Vihar- Shiro abyanga as per directions  
 Regular practice of Yoga-pranayama-dhyana  
 Adopt suitable lifestyle modifications: wake up early  
 Do not skip breakfast or eat very late at night  
 Do not panic if you have an early morning aura  
 Sleep relaxed, padabyanga, slow music, fragrance suitable  
 Sleep only after dinner is digested  
 Avoid all alcoholic beverages in excess  
 Avoid all precursors if you know them  
 Maintain a migraine diary- it may help  
 Vatahar ahara vihara helps  
 Prayer helps too

#### F. Other supportive options

Yoga, medication  
 Exercises Jala neti-sutraneti, kunjla kriya Pavanmukta asna, tadasana, makarasana, vajrasana, shavasana, Pranayama

-Counselling

- Pain management therapies.

- Ahar, Vihar, Upchar

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## A clinical study on the role of nasyakarma [by Devdali (*Luffa echinata*)] in the management of arddhava-bhedaka vis-à-vis migranous headaches.

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Abstract : A clinical study was conducted on 30 cases presented with classical features of arddhavabhedaka (migraine) to evaluate the effect of nasyakarma with along with internal medications of results were highly encouraging. The present study also includes a causation of the condition and clinical observation on the role of different contributory factors attributed to the causation of the condition and clinical conditions considered for the differential diagnosis of arddhavabhedaka found in classical texts.

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# A CLINICAL STUDY ON THE ROLE OF NASYAKARMA (BY DEVDALI {LUFFA ECHINATA}) IN THE MANAGEMENT OF ARDDHAVABHEDAKA VIS-À-VIS MIGRANOUS HEADACHES

**Abstract:** A clinical study was conducted on 30 cases presented with classical features of arddhavabhedaka (migraine) to evaluate the effect of nasyakarma with along with internal medications of results were highly encouraging. The present study also includes a causation of the condition and clinical observation on the role of different contributory factors attributed to the causation of the condition and clinical conditions considered for the differential diagnosis of arddhavabhedaka found in classical texts.

## Introduction

Arddhavabhedaka - a comparable clinical condition of migraine is a commonly occurring vascular headache presenting with pain on one half of the head as cardinal feature. It is described as a separate clinical entity in the classics of Charaka and Susruta while Vagbhata included this condition in the classification of vataja-siroroga. Pain in one half of the head may also appear as a symptom in various conditions viz. anyatyovata

## Need for alternative therapies

Treatment of this condition available at present includes the use of analgesics and vasodilators. They have insignificant role in achieving success but have adverse effects. Owing to the above problems of management, it is imperative to explore newer, efficacious drugs/procedures to tackle such disease entities. The present study was aimed to establish clinically the effect of internal medication and nasyakarma in the management of arddhavabhedaka.

## Historical Account

Migraine is as old as civilisation. It was mentioned in an Egyptian papyrus of 1200 BC, and was described by Hippocrates. The best early account was given by Aretaeus of Cappadocia in about AD 130. He has described

the headache (usually only on one side of the head), nausea, sickness, dislike of daylight and feeling of giddiness which may accompany the attack. Half a century later Galen used the Greek word 'hemicrania' (half skull) to describe the one-sided headache in this disorder. This word was later corrupted to 'megrin' and then to 'migraine'.

## Definition of Migraine

Vagbhata's statement regarding arddhavabhedaka runs as follows: Arddhe tumoordhanah sosarddhavabhedaka. Vedana in half of the portion of the head is called arddhavabhedaka. A paroxysmal disorder characterised by visual and / or sensory phenomena in an aura associated with or followed by unilateral headache and vomiting. While this definition is satisfactory for 'classical' migraine, there are many patients who never experience an aura and in whom the headache is always bilateral. The single most characteristic and constant feature is that headaches occur paroxysmal disorder, i.e. the headaches occur in attacks, separated by intervals of freedom.

## Synonyms

Hemicrania; bilious attack; headache.

## Aetiology

Cerebral: Cerebral ischaemia followed by hyperaemia (spasm of blood vessels followed by dilation)

Ocular	:	Refractive errors
Allergy	:	Proteins, tobacco, chocolate, pollen
Psychological	:	Mental fatigue, anxiety
Endocrine	:	Serotonin
Age & Sex	:	Middle age / females

## Complications

Excerebration of this siroroga may cause vinasa of srotra (loss of auditory function) as well as vinasa of akshi (loss of visual function).

## Signs and Symptoms

Visual aura: Scintillating scotoma up to ½ hr. duration may be followed by visual field loss contralateral to headache. May have aura without headache.

**Prodrome:** hours to days prior to headache. Psychic symptoms: Irritability, confusion, anxiety, depression, euphoria, alertness, clarity.

**Headache:** Pulse synchronous, may be like pressure behind eye-radiating to face, jaw, neck and back. Peak pain 1 to 2 hr., nausea and vomiting, rarely diarrhoea, sensitivity to external stimuli- light and sound changes character of headache over time.

**Skin Pallor:** Temporal arteries tender and dilated. Pain may decrease by occluding temporal artery anterior to ear. Most common age of onset 10 to 30 years. 30 to 50% prior to age 15. Headaches usually decrease after age 40; rarely increases.

Severe pain on both sides of manya. Pain will be felt in alata, akshi, bhru, sankha, karna, and regions on any one of the sides.

**Nature of pain;** Pain in arddhavabhedaka will be severe as though cutting by a sharp weapon or churning by a churner. Pain (toda, bheda, bhrama) is felt in half of siras.

Recurrence of the disease: According to Susruta this set of clinical features recurs once in 10 or 15 days.

## Differential Diagnosis

Clinical features resembling arddhavabhedaka are also found in various other disorders of eye (netra rogas, vata rogas and also appears as vegadharanajanya vyadhis (due to suppression of physiological urges may be considered for differential diagnosis).

## Other syndromes causing arddhavabhedaka like symptoms which are described in ayurvedic classics:

1. Anyatovata (netraroga): Pain in manya akshi and sankha regions. According to Susruta severe pain is felt at karna, manya, hanu, greeva, netra and bhru regions.
2. Vataparyayam (netraroga): (a) severe pain is left in pakshma, akshi and bhru regions. (b) Drishtinasa is seen as complication.
3. Adhimantha (netraroga): Headache is a predominant symptom especially in vataja type adhimantha. (a) Siroantarvedana, (b) netravedana, (c) karnanada, bhrama and lalta bhru vedana, (d) Sankha/danta, kapola, kapalasthi ruja are seen in raktaja adhimantha.
4. Vataja ahishyanda (netraroga): (a) Nistoda, stambhana, romaharsha, sirobhitapa.

- (b) Pain is felt at sankha, lalta bhru and akshi.
5. Ardhitavata (vataroga): Pain is felt in half of the portion of face and head with other associated symptoms.
6. Miscellaneous causes: (1) Arddhava bhedaka asdivasvapnajanya dosha

(2) Arddhavabhedaka inkshavathu vegadharana.

7. Retinal migraine,  
8. Symptomatic migraine and  
9. Facial migraine.

### Model score sheet for assessment in Migraine

Clinical Parameters		Scores
1.	Headache	50
	Mild relief	30
	Moderate relief	10
	Marked relief	5
	Complete relief	0
2.	Visual aura (Transitory diplopia / scotoma, etc)	20
	Absent	0
3.	Vomiting / nausea	12
	Absent	0
4.	Paresthesiae (of limb, part of the body, lips, face, etc.)	6
	Absent	0
5.	Weakness (of limb, part of the body, etc.)	2
	Absent	0

### Materials and Methods

Type of study : Single blind.

Level of study : OPD.

20 patients presenting with classical features of migraine were randomly selected for the study. Patients with notable visual problems and associated with systemic disorders viz, diabetes, hypertension, etc. were excluded from the study.

### Treatment and dose schedule

Nasya karma with from Devdali Churna (Luffa Echinata) to inhale in each nostril for seven days A formulation of उसतखदूस (Lavandula stochas), धनिया (coriandrum sativim) & काली मिर्च Pipernigrm in powder form was given before sunrise at an interval of 30 days.

### Classification of result

1. Complete relief : 100% relief has been noted
2. Partial relief
  - (a) Marked relief : Relief up to 75% and above
  - (b) Moderate relief : Relief above 50% and below 75%
  - (c) Mild relief : Relief more than 25% but below 50%
  - (d) No relief: No relief or only marginal improvement.

### Observations

Among 20 treated cases 55% are females, (Table 1), 35% belongs to age group of 30-34 years (Table 2). 70% are officers (Table 3), 60% belongs to vataprakriti group (Table 4) Vegadharana was observed as aetiological factor in 90% patients (Table 5).

**Table 1. Sex- wise distribution of patients**

Sex	No. of patients	Percentage
Male	8	45
Female	12	55

**Table 2. Age- wise distribution of patients**

Age in Years	No. of Patients	Percentage
20-24	3	15
25-29	4	20
30-34	7	35
35-39	5	25
40-44	1	5

**Table 3. Occupation wise distribution of patients**

Occupation	No. of Patients	Percentage
Officers	14	70
Housewives	4	20
Workers	2	10

**Table 4. Distribution of prakriti**

Prakriti	No. of Patients	Percentage
Vata	12	60
kapha	6	30
Pitta	2	10

Headache was found in all the patients (Table 6). Refractive errors were observed in 60% (12) cases (Table 7 & 8).

## Results

Complete relief was found in 25% cases, marked relief in 15% cases, moderate relief in 10% cases, mild relief in 30% cases and no relief was observed in 20% cases (Table 9).

## Discussion and Conclusion

Migraine has become a challenging problem to the present day physician. In the present study an attempt has been made to explore some alternative solutions hidden in the classical texts to manage such conditions. Results obtained after the study were highly encouraging and free from adverse effects.

**Table 5. Distribution of aetiological factors**

<b>Aetiological factors</b>	<b>No.of Patients</b>	<b>Percentage</b>
Rooksha ahara sevana (over indulgence of dry foods)	21	45
Atiahara sevana (excessive intake of food)	17	15
Vishamasanam (frequent & irregular intake of food)	17	85
Pravata sevana (exposure to direct breeze)	6	30
Avasya sevana (exposure to snow fall)	3	15
Atimaitihuna (excessive sexual indulgence)	5	25
Vegadharana (superssion of physiological urges)	18	90
Ativyayama (over exercising)	4	20
Uchiarbhashana (loud speech)	8	40
Seetamaruta sevana (exporure to cold air)	4	20
Unwanted repetition of vamaana and virechana karmas	0	0
Atibhaya and krodha	10	50

**Table 6. Incidence of clinical features**

<b>Clinical feature</b>	<b>No. of Patients</b>	<b>Percentage</b>
Headache	22	100
Visual aura	18	90
Nausea / vomiting	19	95
Parasthesia	3	15
Weakness	1	5

**Table 7. Incidence of refractive errors**

<b>Sl. No.</b>	<b>No. of Patients</b>	<b>Percentage</b>
1. Refractive errors	12	60
2. No. refractive errors	8	40

**Table 8. Role of different contributory factors at a glance**

<b>Sl. No.</b>	<b>Factors</b>	<b>No. of Patients</b>	<b>Percentage</b>
1.	Females	11	55
2.	Age 30 -34 yrs	7	35
3.	Officers	14	70
4.	Vataprakriti	12	60
5.	Vegadharana	18	90
6.	Headache & nausea	20	100
7.	Refractive errors	12	60

**Table 9. Results**

Sl. No.	Mode of response	No. of Patients	Percentage
1.	Complete relief	5	25
2.	Marked relief	3	15
3.	Moderate relief	2	10
4.	Mild relief	6	30
5.	No relief	4	20

In the present scenario Nasya karma from Devdali Churna to inhale in each nostril for seven days A formulation of उसतखदूस (Lavandula stochas), धनिया (coriandrum sativum) & काली मिर्च Pipernigrum in powder form was given before sunrise for 30 days.

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### Clinical Management of Migraine

A formulation of उप्तखदूस (Lavandula stochas), धनिया (coriandrum sativum) & काली मिर्च Pipernigrum was given before sunrise.

Nasya Karma by DEVDALI (Gaggarbel) given immediate relief in pain .



## Need for excellent institutes, multidisciplinary Ph Ds and useful discoveries in India

The editorial 'The mirage of world class institutions' is didactic and highly reflective<sup>1</sup>. Balamram raises some pertinent questions, offers some useful comments and suggests steps to create world-class institutes. In this context, I quote Morton Schapiro, President of the Northwestern University, USA<sup>2</sup>: 'you cannot create a world class university overnight'. According to him, combining access with affordability and ensuring high-quality undergraduate education are vital for building such an institution.

In India, there has been a tremendous expansion in education with 540-plus universities and 26,000 colleges<sup>3</sup>. But this number is supposed to cater to only 12% of the eligible candidates. According to Kapil Sibal (Minister of Human Resource Development and Minister of Communications and Information Technology), we require 1500 universities and 40,000–45,000 colleges. Even then we fall short when compared to the enrollment in Western countries. At present, a large number of capable students are unable to enter government institutes in view of their limited number and are forced to join private institute shelling out a lot of money. Though there has been progress in the quantity, the quality in institutes is variable. Hence, the government has a serious responsibility to cater to the needs of millions of aspirants through an increase in both quantity as well as quality of institutions.

India also needs more number of PhDs than the present 8000-plus. It is

likely that 20,000 Ph D students will graduate every year till 2020; this is equivalent to just 1% of the total number of undergraduates<sup>4</sup>. A subject-wise quantitative requirement of PhDs is essential for planning – this does not exist at present. The large number of Ph D aspirants can be harnessed to solve the numerous problems facing the country. Science alone should not be treated as a panacea for these problems and scientists should not think that science would remain unaffected in spite of these difficulties. Scientists and technologists should work in close collaboration with academicians from the arts and humanities. When so many advanced countries are worried about the number and utility of PhDs and thinking of serious reforms<sup>4–7</sup>, we cannot remain unconcerned about our Ph D system. This exercise is a responsibility of policy makers, funding agencies and academicians.

Our academicians should strive to identify the practical problems facing the country, work on them and persevere till they are solved. John Bidwell<sup>8</sup> once said that useful discoveries are different from exciting discoveries. Mark Taylor<sup>5</sup> has used the expression 'practical problems' citing the example of providing clean water to a growing population. Our emphasis should be on making useful discoveries. To sum up the opinions of Bidwell<sup>8</sup> and Taylor<sup>5</sup>, the curriculum should focus on existing practical problems, and our teaching and research should be relevant to this curriculum.

Adequate and authentic classified information about these problems and their current status must be open to the public. Every problem needs time, capital and expertise to solve. Policy makers and funding agencies should accordingly grant funds and encourage collaborations. Performers should be provided adequate resources for the required time and greater autonomy as incentives to persevere in academics and contribute to solving problems.

These approaches can enable the development of some highly useful albeit delayed world-class institutes in the country.

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## Traditional use of *Calotropis procera* R.Br. against migraine

Migraine, a neurological disorder<sup>1–3</sup>, is locally called *vanti champa noppi* in Chittoor District, Andhra Pradesh. Usually migraine causes episodes of severe or moderate headache (which is often one-sided and pulsating) lasting between several hours and three days, accompanied by nausea (vomiting) and a heightened sensitivity to bright light (photophobia) and noise (phonophobia)<sup>4</sup>.

One year prevalence of migraine ranges from 6% to 15% in adult males and 14% to 35% in adult females<sup>5</sup>. These figures vary substantially with age: approximately 4–5% of children aged under 12 suffer from migraine, with little apparent difference between boys and girls<sup>6</sup>. There is a rapid growth incidence amongst girls occurring after puberty<sup>7</sup>, which continues throughout early adult

life<sup>8</sup>. By early middle age, around 25% of women experience migraine at least once a year compared to men<sup>9</sup>. After menopause, migraine attacks in women tend to decline dramatically, so that above 70 years there are approximately equal number of male and female sufferers, with prevalence returning to around 5% (ref. 5). Many people report that one or more dietary, physical, hormonal,

emotional or environmental factors precipitate their migraine. The most often reported triggers include pesticides (sprayed fruits/vegetables), perfumes or fragrances (30% of sufferers) stress, over-illumination or glare, alcohol, food, too much or too little sleep and weather. Some women experience migraine in conjunction with monthly menstrual cycles. Sometimes migraine occurs with no apparent cause ([http://psychology.wikia.com/wiki/Migraine\\_headache](http://psychology.wikia.com/wiki/Migraine_headache)).

The genus *Calotropis* (Asclepiadaceae) is represented by two taxa, *C. procera* and *C. gigantea*. These have numerous uses and are of mythological importance among the Hindus<sup>10,11</sup>. The tender leaves of *C. procera* are used in the form of a capsule for the treatment of migraine along with water on an empty stomach for 3 days<sup>12</sup>. Mature yellow leaf juice is also inhaled by persons suffering from migraine<sup>13</sup>.

The traditional medicinal information has been gathered from rural people in Chittoor District and some urban areas by recording the usage method of the drug and observing the curative effect of this herbal drug against migraine. Some residents of Bhakarapet Panchayat reported on the traditional use of the dried stem fumigations of *C. procera*. The dried stem which is hollow but closed at

the nodes, is cleared using a needle. This hollow stem is burnt at one end to produce fumes from the other end of the stem. These fumes are inhaled from the left nostril if the migraine is on right side of the head and vice versa. Many people from rural areas and urban areas have thus been cured from migraine. Apart from extensive usage of modern medicine for migraine, people still depend on herbal medicines. Many people reported that migraine never recurred after they had used the stem fumes of *C. procera* once or twice. The fumes may be providing permanent cure against migraine. Further research will open new avenues for the application and improvement of traditional remedies and to develop a medicine in the form of an inhaler for migraine.

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## Indian scientists and the archives of the American Institute of Physics

Indian men of science have been unable to create a central archive on the history of science. Also, most of the Indian historians of science do not give credit to archives or acknowledge the sources of their information. Thus, these sources remain obscure or unknown to future historians and in the worst cases, the material disappears forever.

As cases in point, I have reproduced two figures. The first (Figure 1) is from *M. N. Saha in Historical Perspective* (Gupta, J. (ed.), Thema Publishers, Calcutta, 1994; plate after p. 88). The reference for the photograph has not been acknowledged. This photograph seems to have been scanned from a Bengali journal and appears on the webpage of the American Institute of Physics (AIP) on typing 'Bose' in 'quick search' at <http://photos.aip.org/>.



**Figure 1.** (From left to right) Sitting: M. N. Saha, J. C. Bose and J. C. Ghosh; Standing: S. Datta, S. N. Bose, D. M. Bose, N. R. Sen, J. N. Mukherjee and N. C. Nag (Kolkata, 1930).



Clinical Trial Details (PDF Generation Date :- Sun, 18 Apr 2021 06:29:27 GMT)

<b>CTRI Number</b>	CTRI/2015/07/006009 [Registered on: 15/07/2015] - <b>Trial Registered Prospectively</b>	
<b>Last Modified On</b>	06/06/2015	
<b>Post Graduate Thesis</b>	Yes	
<b>Type of Trial</b>	Interventional	
<b>Type of Study</b>	Drug Ayurveda	
<b>Study Design</b>	Single Arm Trial	
<b>Public Title of Study</b>	Effect of Agastya( <i>Sesbania grandiflora</i> Linn.) Puspa and Patra on Shira shoola(Migrane)	
<b>Scientific Title of Study</b>	A Pharmacoclinical Evaluation of Agastya( <i>Sesbania grandiflora</i> Linn.) Puspa and Patra on Shira shoola (Ardhambhedaka)	
<b>Secondary IDs if Any</b>	<b>Secondary ID</b>	<b>Identifier</b>
	NIL	NIL
<b>Details of Principal Investigator or overall Trial Coordinator (multi-center study)</b>	<b>Details of Principal Investigator</b>	
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	India			
<b>Sites of Study</b>	<b>Name of Principal Investigator</b>	<b>Name of Site</b>	<b>Site Address</b>	<b>Phone/Fax/Email</b>
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<b>Details of Ethics Committee</b>	<b>Name of Committee</b>	<b>Approval Status</b>	<b>Date of Approval</b>	<b>Is Independent Ethics Committee?</b>
	PGT/7/-A/Ethics/2014-15/1538	Approved	02/09/2014	No
<b>Regulatory Clearance Status from DCGI</b>	<b>Status</b>		<b>Date</b>	
	Not Applicable		No Date Specified	
<b>Health Condition / Problems Studied</b>	<b>Health Type</b>		<b>Condition</b>	
	Patients		Patients complain with Sirahshoola	
<b>Intervention / Comparator Agent</b>	<b>Type</b>	<b>Name</b>	<b>Details</b>	
	Intervention	Sesbania grandiflora flower	flower powder T D S for 15 days with honey	
	Comparator Agent	Sesbania grandiflora leaf	leaf powder T D S for 15 days with honey	
<b>Inclusion Criteria</b>	<b>Inclusion Criteria</b>			
	<b>Age From</b>	20.00 Year(s)		
	<b>Age To</b>	50.00 Year(s)		
	<b>Gender</b>	Both		
	<b>Details</b>	Patients having age between 20-50 yrs  Irrespective of sex  patient having sign and symptoms of shirashoola (Ardhvbhedak-classical & other)		
<b>Exclusion Criteria</b>	<b>Exclusion Criteria</b>			
	<b>Details</b>	Patients having age less than 20 years and more than 50 years Headache other then Migraine Patients suffering Hypertension and any major systemic disease Suryavarta, Anantavata, Shankhaka		
<b>Method of Generating Random Sequence</b>	Not Applicable			



<b>Method of Concealment</b>	Not Applicable	
<b>Blinding/Masking</b>	Open Label	
<b>Primary Outcome</b>	<b>Outcome</b>	<b>Timepoints</b>
	relief in the Sirahshoola	up to 15 days
<b>Secondary Outcome</b>	<b>Outcome</b>	<b>Timepoints</b>
	relief in the Migraine	up to 15 days
<b>Target Sample Size</b>	<b>Total Sample Size=30</b> <b>Sample Size from India=30</b> <b>Final Enrollment numbers achieved (Total)=Applicable only for Completed/Terminated trials</b> <b>Final Enrollment numbers achieved (India)=Applicable only for Completed/Terminated trials</b>	
<b>Phase of Trial</b>	Phase 1	
<b>Date of First Enrollment (India)</b>	30/07/2015	
<b>Date of First Enrollment (Global)</b>	No Date Specified	
<b>Estimated Duration of Trial</b>	<b>Years=1</b> <b>Months=11</b> <b>Days=0</b>	
<b>Recruitment Status of Trial (Global)</b>	Not Applicable	
<b>Recruitment Status of Trial (India)</b>	Not Yet Recruiting	
<b>Publication Details</b>	not yet published	
<b>Brief Summary</b>	<p><i>Agastya</i> (<i>Sesbania grandiflora</i> Linn.; Fabaceae), one of the drugs of Ayurveda, is reported for its clinical indications including <i>shira shoola</i> (headache) in the classical texts as well as Ethano-botanical survey reports. Its flower and leaf are the useful parts. Research studies on <i>S. grandiflora</i> flowers shows that, it is safe ie. 2500 mg/kg was LD50 value for aqueous extracts. The juice of the leaves and flowers are popularly used for nasal catarrh and headache when taken as snuff. Various leaf preparations are used to treat epileptic fits also applied externally for treatment of leprosy eruptions. The leaf juice is used as snuff in coryza, headache, influenza, cough and fever, as well as in epilepsy for countering unconsciousness and epileptic attack. Paste of leaves is externally applied over wound ulcers, gout, rheumatic and inflamed joint. The juice of flowers is applied to eyes for checking night blindness and checking sight weakness, and also promoting vision. Traditional practitioners of Gujarat prescribe the internal administration the powder its flower for the management of <i>Shira shoola</i>. This traditional method of administration i.e oral seems to be more convenient than being taken as a snuff. Hence, needs to be scientifically evaluated. Recent literature review shows that no studies has been carried through oral administration out to assess the efficacy of powder of <i>agastya puspa</i> and <i>patra</i> on <i>shira shoola</i>. So, in the present study, an effort is made to explore the <i>shoolahara</i> activity of <i>Agastya</i> both pharmacologically as well as clinically. With this concept, present research work has been planned with following aims and objectives.</p>	

**ROLE OF GORAKHMUNDI (*SPHAERANTHUS INDICUS*) IN  
ARDHAVABHEDAKA W.S.R. TO MIGRAINE**

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**ABSTRACT**

Migraine is a result of various changes in our brain which become a cause for severe headache. It usually occurs due to sensitivity of light/sound or smell. Approx 25% of people over whole population is suffering from migraine. It can be predicted that after adolescent stage, the ratio of migraine between male and female is 1:3. Pain in half of the head is defined as *Ardhavabhedaka* in *ayurveda*. Migraine can be compared with this disease. *Acharya Charak* and *Sushrut* have given description about migraine as a separate diagnostic unit although *Acharya Vagbhatt* has included this disease in *vataja shiro roga*. Treatment of *Ardhavabhedaka* can be done by yoga, *panchakarma* and some herbal drugs. *Gorakhmundi* (*Sphaeranthus indicus*) is one among them which plays great role in treatment of migraine.

**KEYWORDS:** Migraine, *Ayurveda*, *ardhavabhedaka*, *Sphaeranthus indicus*, Pharmacological activities, Traditional Uses.

**INTRODUCTION**

The most common categories of migraine headache are those without aura (previously known as common migraines) and those with aura (previously known as classic migraines). Common migraine has no "aura." About 80% of migraines are common. Classic migraines (migraine with aura) present with an aura before the headache and are more severe than common migraines. Other types of headaches can also cause intense pain, and not



all headaches are migraines. For example, some describes the pain of cluster headaches as the worst pain they have experienced. Sinus headaches can also cause pain and inflammation. The causes of migraines are not known. Changes in neurotransmitter levels within the brain are thought to play a role.<sup>[1]</sup>

A migraine is a primary headache disorder characterized by the recurrent headaches that are moderate to severe. Typically, the headaches affect one half of the head, are pulsating in nature, and last from two to 72 hours.<sup>[2]</sup>

Migraines are believed to be due to a mixture of environmental and genetic factors. About two-thirds of cases run in families. Changing hormone levels may also play a role; the risk of migraines usually decreases during pregnancy.<sup>[3]</sup> Migraine is a neurological disease with extremely incapacitating neurological symptoms. About 25% of migraine sufferers also have a visual disturbance called an aura, which usually lasts less than an hour. In 15-20% of attacks, other neurological symptoms occur before the actual headache.<sup>[4]</sup>

### **Triggering factors**

- Allergic reactions.
- Bright lights, loud noises, and certain odours or perfumes.
- Physical or emotional stress.
- Changes in sleep patterns.
- Smoking or exposure to smoke.
- Skipping meals.
- Alcohol or caffeine.
- Menstrual cycle fluctuations, birth control pills.
- Tension headaches.

### **Pathophysiology of Migraine**

Migraines are believed to be a neurovascular disorder with evidence supporting its mechanisms starting within the brain and then spreading to the blood vessels. Some researchers believe that neuronal mechanisms play a greater role, while others believe blood vessels play the key role. Others believe both are likely important.

One theory is related to increased excitability of the cerebral cortex and abnormal control of pain neurons in the trigeminal nucleus of the brainstem. Low levels of the

neurotransmitter serotonin, also known as 5-hydroxytryptamine, are believed to be involved.<sup>[5]</sup>

Once considered exclusively a disorder of blood vessels, compelling evidence has led to the realization that migraine represents a highly choreographed interaction between major inputs from both the peripheral and central nervous systems, with the trigeminovascular system and the cerebral cortex among the main players. Advances in in-vivo and in vitro technologies have informed us about the significance to migraine of events such as cortical spreading depression and activation of the trigeminovascular system and its constituent neuropeptides, as well as about the importance of neuronal and glial ion channels and transporters that contribute to the putative cortical excitatory/inhibitory imbalance that renders migraineurs susceptible to an attack.

A series of laboratory experiments in the 1990s suggested that migraine pain may be due to a sterile neurogenically driven inflammation of the dura mater. Plasma extravasation can be blocked by ergot alkaloids, indomethacin, acetylsalicylic acid and the serotonin-5HT<sub>1B/1D</sub> agonist, sumatriptan. Furthermore, preclinical studies have suggested that cortical spreading depression may be a sufficient stimulus to activate the trigeminal neurons, although this has been a controversial area.<sup>[6]</sup>

In addition, there are structural changes in the dura mater that are observed after trigeminal ganglion stimulation. These include mast cell degranulation and changes in the postcapillary venules, including platelet aggregation.

It is generally thought that local vasodilatation of intracranial extracerebral blood vessels and a consequent stimulation of surrounding trigeminal sensory nervous pain pathways is a key mechanism underlying the generation of headache pain associated with migraine. This activation of the 'trigeminovascular system' is thought to cause the release of vasoactive sensory neuropeptides, especially CGRP, that increase the pain response. The activated trigeminal nerves convey nociceptive information to central neurons in the brain stem trigeminal sensory nuclei that in turn relay the pain signals to higher centers where headache pain is perceived. It has been hypothesized that these central neurons may become sensitized as a migraine attack progresses.

### Ayurvedic view

*Acharya Charaka* explains it as either *vata* or *vatha kaphaja* in origin. In *Charaka Samhita Ardhavabhedaka* is described in *Siddhi sthanam* chapter number nine. *Vata* and *kapha* are most common cause of *ardhavabhedaka* (migraine) according to *Acharya Charaka*. *Vata* vitiated due to intake of rough food, over eating, eating during indigestion, exposure to easterly wind and dews, excessive coitus, suppression of urges, exertion and physical exercise singly or accompanied by *Kapha* seizes the half of the carotid region, eyebrow, temple, ear, eye and forehead. This is *Ardhavabhedaka*. If far advanced, it may destroy the sight and the hearing.<sup>[7]</sup>

In *Sushrut Samhita Ardhavabhedaka* (migraine) is described in *Uttaratantra* chapter number twenty five. According to *Sushruta* whose half of the head had severe pain such as splitting, picking, churning etc appearing in bouts of (intervals of) either or fifteen or ten days and without any known cause. This disease is known as *Ardhavabhedaka* (migraine). *Siras* (head), in *Ayurveda* is explained as *Uthmanga* (vital organ). Being the seat of life, intellect and sense organs, it is also one among the three major *marmas*. Though all the three *doshas* can be located in head, predominantly it is the seat of *kapha*.<sup>[8]</sup>

The deranged function of *tridoshas* is manifested as neurological, vascular, metabolic and psychological disturbances. In various *samhitas* of *Ayurveda*, the aetiopathogenesis, clinical features and management of a primary headache (*swathantra sirasoola*) namely *Ardhavabhedaka* is explained. *Ardhavabhedaka* refers to a hemi cranial headache. *Videha* elicits the *samprapti* of *vatha kapha* due to obstruction by *kapha* in one half of the head. *Acharya Vaghbata* postulates that the involvement of *kapha* and *pitha* also should be considered while formulating the treatment of *Ardhavabhedaka*. Hence it becomes evident, clinically also, that *Ardhavabhedaka* is a *sannipathika sirasoola* with a predominance of *vatha* and *kapha*.

### Nidan

- *Ruksha sevana*- taking dry foods.
- *Adhyasana*- consuming food immediately before the digestion of previous food.
- *Poorva vata*- exposure to direct breeze.
- *Avasyaya*- exposure to cold or dew.
- *Vega dharana*- suppression of natural urges.
- *Ati vyayama and ayasa*- over exertion etc.

- *Dhoom sevana*- exposure to smoke.
- *Atapa and tushara sevana*- hot and cold climates.
- *Ambu kreeda*- swimming and water games.
- *Atiswapna*- excessive or continuous sleep.
- *Atijagarana*- night arousals.
- *Vashpa nigraha*- suppressing tears.
- *Rodana*- weeping.
- *Madyapana*- drinking excess alcohol.
- *Krimi*- presence of worms.
- *Asatmya gandha*- unaccustomed smells.

### Ayurvedic Treatment

The healing science of Ayurveda opens new doors for treatment of migraine and other type of headaches. Ayurveda uses different modalities such as nutrition, lifestyle modifications, herbs, *panchakarma*, yoga, meditation, relaxation techniques, pranayama (breathing exercises), aromatherapy, *marma* points to help treat migraine headaches. These treatment approaches create a balanced physiology. This state of complete balance in healing the body and mind can allow the illness to resolve and symptoms to disappear. A mixture of herbal essential oils can help to alleviate headache. Peppermint essential oil in massage oils and balm can help with migraine.

Pranayama (breathing exercises): Different types of breathing exercises have different effects on the body, mind and spirit. One can benefit from alternate nostril breathing (*Anuloma Viloma*).

**Soothing nose drops (*Nasya*):** Putting about 5 drops of *brahmi ghee* in each nostril can alleviate the pain of migraine headache. In *vata*-type headaches, placing 3-5 drops of warm *ghee* in each nostril can help to calm down the headache.

Ayurveda, the oldest traditional system of India, reveals that ancient Indians had a rich knowledge of medicinal value of different plants.<sup>[9]</sup> Many herbs and ayurved therapy are used for migraine treatment. Describe in our *Samhita Mundi* [*Sphaeranthus indicus* Linn.] is mostly used for treatment of *Ardhavabhedaka* [migraine].

***Sphaeranthus Indicus [Ardhavabhedaka]***

## Taxonomic Classification

- Kingdom: Plantae
- Subkingdom: Viridiaeplantae
- Phylum: Tracheophyte
- Subphylum: Euphyllophytina
- Infraphylum: Radiatopses
- Class: Magnoliopsida
- Subclass: Asteridae
- Superorder: Asteranae
- Order: Asterales
- Family: Asteraceae
- Genus: *Sphaeranthus*
- Species: *indicus*

**Pharmacodynamic Properties**

*Rasa* (Taste) - *Tikta* (Bitter), *Katu* (Pungent)

*Guna* (Qualities) - *Laghu* (Light for digestion), *Ruksha* (Dry in nature)

*Vipaka* - *Katu* (Undergoes Pungent taste after digestion)

*Veerya* (Potency) - *Ushna* (Hot)

*Karma* (Actions) - *Tridosha shamaka* (reduces all the three *doshas*), *Rasayana* (acts like health tonic).<sup>[10]</sup>

**Distribution**

*Mundi* grows in rice fields after the crop is harvested. *Sphaeranthus indicus* is a plant distributed throughout the plains and wet lands in India, Sri Lanka and Australia.

**Botanical Description**

The shrub grows 15 – 30 cm high and is scented. Leaves: Round and composite without stalk and hairy like velvet, 3 – 6 cm long, oblong shaped. Flower: Stalk 12 – 18 cm long, bears round inflorescence of violet colour. Flowering occurs in winter followed by fruiting. One of the varieties called *mahashravani* or *mahamundi*.

### Chemical composition of *Sphaeranthus indicus*

Stems, leaves and flowers have been found to contain fatty acids, phytosterols, a glycoside composed of the alkaloid sphaeranthine and a polysaccharide,  $\beta$ -sitosterol, n-pentacosane, n-triacontanol, stigmaterol, hentri-acontane and  $\beta$ -D-glucoside of  $\beta$ -sitosterol. Flowers also contain a number of eudesmanolides and sesquiterpene lactones, viz., hydroxy-, dihydroxy- and methoxy frullanolides. Stems, leaves and flowers contain essential oil composed of methyl chavicol,  $\alpha$ -ionone, d-cadinene, p-methoxycinnamaldehyde as major constituents and  $\alpha$ -terpinene, citral, geraniol, geranyl acetate,  $\beta$ -ionone, sphaerene, indicusene and sphaeranthol  $\alpha$ -cadenine, ocimene as minor constituents.  $\beta$ -Sitosterol, n-triacontanol, phenylurethan, n-pentacosane have also been isolated from.<sup>[11]</sup>

### Ayurvedic Preparations

*Mundi Churna, Mundi panchang swarasa, Mundi kwatha.*

### Benefit of *Gorakhmundi* [*Sphaeranthus indicus*] in migraine

The whole plant is used for formulation of medicine. *Mundi* is used in ayurvedic treatment of pain, localized swelling, headache, indigestion, epilepsy, mental illness and skin disorder. *Gorakhmundi* Powder of Planet Ayurveda has got plenty of health benefits and uses. It is believed that *Gorakhmundi* powder acts as very good blood purifier to remove toxins from the body. It reduces increased uric acid, urea and creatinine level and fight against various ailments.

*Acharya shodala describes that* The fresh juice of *sphaeranthus indicus* is given with balck papper powder in dose of 10-15 ml for seven days before food to treat headache including cases of [*Ardhavebhedka*] migraine.<sup>[12]</sup> It works like nervine tonic.<sup>[13]</sup>

Mix *Gorakhmundi* powder, ghee; honey is prescribed in the diseases related to *vata*. Also prescribed powder of *Gorakhmundi* and *Saunth* (Ginger) with equal quantity in hot water to removes the pain of common *vata*.

## DISCUSSION

### Mode of Action according to Ayurved

*Mundi* is *vata* and *kapha shamak* due to its *ushna veerya*. It is brain tonic as well as nervine tonic too. It strengthens the nerve and improves the function of nerve. It reduces the *vata dosha* in body which relieves the pain of *Ardhavabhedaka*. It is also found as a good blood



purifier so that it has been proved as a good pain reliever in *Ardhavabhedaka*. It also reduced all types of swelling in our head.

### Mode of Action according to Modern

Study reveals that Petroleum ether, benzene, chloroform, ethanol and triple distilled water extracts of whole plant of *S. indicus*, obtained by successive solvent extraction, were screened for analgesic and antipyretic activity (200 and 400 mg/kg, p.o.) using Eddy's hot plate, tail immersion and brewer's yeast induced pyrexia methods, respectively. The petroleum ether, chloroform and ethanol extracts showed significant analgesic activity at both the doses from 1 hour onward as compared to the standard drug diclofenac sodium. The chloroform and ethanol extracts showed potential significant antipyretic activity from 1 hour onward, whereas aqueous extracts exhibited this activity from 2 hours onward as compared to the standard drug paracetamol amongst various extracts.<sup>[14]</sup> Neuroleptic and anxiolytic activity has been reported for flowers of this plant. These reported activities confirm that the herb of *S. indicus* is able to modulate the physiology of the central nervous system. The hydroalcoholic extract of *S. indicus* was seen to increase immobility time and decrease peripheral square movements; the observed decrease in central square movements could be due to impairment with locomotor activity.<sup>[15]</sup> The extract (50 and 100 mg/kg p.o.) produced reduction in spontaneous motor activity, exploratory behaviour and motor coordination and prolonged pentobarbital sleeping time. Hydroalcoholic extract decreased locomotor activity but did not affect emotional activity parameters in the open field test, suggesting a possible central nervous depressant activity. Hydroalcoholic extract also increased the immobility time in the forced swimming test at an oral dose of 500 mg/kg but did not significantly modify the activity in the tail suspension test. Hydroalcoholic extract protected rats against MES-induced convulsions and mice against PTZ-induced convulsions.<sup>[16]</sup>

The ethanol extracts of the whole plant *S. indicus* Linn. exhibited dose dependent analgesic activity with 66.6 and 67.4% of protection Malairajan et al., 2012 leaves (ethanolic) The ethanolic extract *S. indicus* in different doses (100,200, and 400mg/kg, p.o) exhibited dose dependent and significant analgesic activity in both models of pain.

### CONCLUSION

*Ayurvedic nighantus* have broadly mentioned *mundi* in the treatment of different ailments of human being. The pharmacological studies reported in this review confirm the therapeutic value of *S. indicus* Linn. The current study describes that flower of *S. indicus* has significant

anti-inflammatory and analgesic properties. Conclusion of the study is that *mundi* can be used as an alternative therapy for the treatment of minor to moderate types as a painkiller. Due to *vata* and *kaphanashak* property *mundi* can be use in a broad-spectrum.

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## ORIGINAL RESEARCH ARTICLE - LITERARY REVIEWS

**Critical Review Of Sootashekhara Rasa**

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**ABSTRACT**

*Sootashekhara Rasa* is an important formulation in the practice of *Ayurveda*, Which is used in *Amla Pitta*(Hyperacidity), *Agnimandya*(Digestive impairment), *Atisara*(Diarrhoea), *Gulma*(Abdominal Lump), *Kasa*(Cough), *Grahani*(Malabsorption syndrome) and *Rajyakshma*(Tuberculosis). Four different formulations with the same name and one *Laghu Sootashekhara Rasa* are found in the literature. Among these all, the *Sootashekhara Rasa*, described in *Yoga Ratnakara* is famous and came into clinical & trade practice. This is also modified by different scholars with the time. Main formula have 19 ingredients including mineral, animal and plant origin drugs. Since it is having Gold as one of the ingredients that make it costly too. Today, in the market it is available with and without gold by the name of *Swarna Sootashekhara Rasa* and *Sada Sootashekhara Rasa* or *Sootashekhara Rasa (Swarna Rahita)*. An Attempt has been made to critically review the formula. The changes was made by scholars to make it safer, cheaper with maintaining its efficacy. By reviewing the properties of ingredients it can be said that it may effective in all the indications mentioned.

**Keywords :** *Sutashekhara Rasa, Sheetari Rasa, Swarnasootashekhara Rasa, Amlapitta, Sadasootashekhara Rasa.*

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**Introduction :**

*Sootashekhara Rasa* is a herbomineral formulation, which contains various types of drugs i.e. mineral origin, animal origin and plant origin. It is a *Rasakalpa* which is categorized under the *Kharaliya Rasakalpa*. *Kharaliya Rasa kalpas* are the formulations which is completely prepared and obtained as end

products in *Khalvayantra*(Mortar and Pestle) by act of trituration<sup>[1]</sup>. *Sootashekhara Rasa* is very commonly prescribed medicine in day to day Ayurveda practice to cure *Amlapitta*(Hyperacidity), *Agnimandhya*(Digestive impairment), *Kasa*(Cough), *Gulma*(Abdominal Lump), *Pitta pradhana* diseases (Disease caused by vitiation of *Pitta Dosha* mainly) and other disease caused by *Mandagani*(Lower intensity of digestive fire). As it very famous and commonly prescribed medicines by Vaidyas, it is important to compile and present all the related information and scientific data should be presented on one place, so that related professionals (Vaidya, Ayurveda students, teachers & researchers etc.) can gain the detailed knowledge of it. The objectives of the present study is to compile and review all the data available in text of Ayurveda & Rasashastra, published research work, information available on internet, information related to availability in market; to review the formula, ingredients; to criticize the changes in main formula by scholars; and to understand the probable mode of action as per indications mentioned in text.

### Material And Methods:

*Maulika grantha*, (Basic texts) *Chikitsa grantha*, *Samgraha Grantha* and textbooks of *Ayurveda* and *Rasashastra* are reviewed. Thesis database, research journals on internet and in print media were also search and reviewed to search any previous research work done on the *Sootashekhara*. Information related to trade was also collected from the medical store near National Institute of Ayurveda, Jaipur. All the information were collected and were reviewed on the ingredients, changes in formula and indications.

### In Ayurveda & Rasashastra text:

There are five formulations described in the *Rasashastra* text with the name of *Sootashekhara Rasa* or similar to it (Table No.1). In *Rasa Chintamani*, a book of 15<sup>th</sup> century<sup>[2]</sup>, the name *Sootashekhara Rasa* is mentioned for the first time<sup>[3]</sup>. Where the formulation is indicated for *Vata-Shleshma Jwara Chikitsa*, the same is also mentioned in the *Vrihata Nighantu Ratnakara* with

the name of *Suryashekhara Rasa*<sup>[4]</sup>. The same formulation is mentioned in some other books i.e. *Rasendra Chintamani*<sup>[5]</sup>, *Bhaishajya Ratnavali*<sup>[6]</sup>, *Rasaraja sundar*<sup>[7]</sup>, *Rasendra sara samgraha*<sup>[8]</sup> and *Rasa Manjari*<sup>[9]</sup> with the name of *Sheetari Rasa*, Which is described in the context of *Jwara chikitsa (Vatakaphaja Jwara)*.(Table No. 1)

Second formulation with the name of *Sootashekhara Rasa* is mentioned in *Yoga ratnakara* for *Amlapitta Chikitsa*<sup>[10]</sup>, which was primarily came in vogue as used same and with some modification in the present date also. Now a days it is famous as *Swarna Sootashekhara Rasa* or *Swarna Yukta Sootashekhara Rasa*. *Rasa Chandanshu*<sup>[11]</sup>, *Vrihat Nighantu Ratnakara*<sup>[12]</sup>, *Rasa Tantra Sara evam Siddha Prayoga Samgraha*<sup>[13]</sup>, *Ayurveda Sara Samgraha*<sup>[14]</sup> and *Ayurvedic Formulary of India Part I*<sup>[15]</sup> & *II*<sup>[16]</sup> have also adapted the same formula with same name. *Acharya Yadava ji Trikam ji*, a great scholar of *Ayurveda*, did some changes in the formula, in his two books i.e. *Siddha Yoga Samgraha*<sup>[17]</sup> and *Rasamritam*<sup>[18]</sup>. But formulas are not same in these two books also. In *Siddha Yoga Samgraha*, *Shuddha Vatsanabha*(*Aconitum ferox*) is removed and *Rajata Bhasma*(Incinerated Silver) is added additionally in to the formula. In later book *Rasamritam*, *Nirvisha*(*Delphinium denudatum*) is also added in place of *Vatsanabha*. In *Yoga Ratnakara* Levigation with Juice of *Eclipta alba* (*Bhringaraja*) is mentioned for one day but *Yadav Ji Trikam Ji* said 21 days for levigation in both the books. The dose is also reduced by *Yadav Ji Trikam Ji*, from 2 *Gunja*(250 mg) (*Yoga Ratnakara*) to 1 *Gunja*(125 mg). (Table No. 1)

One Formulation with the name of *Sootashekhara Rasa* (*Swarna Rahita*) has been described in *Ayurveda Sara Samgraha*.<sup>[19]</sup> Here the author has followed the formula of *Siddha Yoga Samgraha*, only difference is that *Swarna Bhasma* (Incinerated gold)&*Vatsanabha* has been removed.

*Sootashekhara Rasa (Swarnaraupyarahita)* is mentioned in *AFI- Part-III*. Where formula is similar to *Yogaratnakara*, without having *Swarna Bhasma* by using the title *Sootashekhara Rasa*



(*Swarnaraupyarahita*)<sup>[20]</sup>. The same is marketed as *Sada* or *Swarna Rahita Sootashekhara Rasa* now a days. (Table No. 1). Some people are using *Swarna Makshika Bhasma* in place of *Swarna Bhasma*, by following a note of *Rasatantra Sara Siddha Prayoga Samgraha*.<sup>[21]</sup>

Some practitioner are also modifying the formula and practicing in their clinical practice, although no clear justification is reported.<sup>[22]</sup>

There is one more *Sootashekhara Rasa* is mentioned in *Rasa Chandanshu* in the context of *Kapha Roga Chikitsa*<sup>[23]</sup>. The formula is named as *Rakta Soota Shekhara Rasa* also. Ingredients are completely different from above two. (Table No. 1)

In *Rasayoga Sagara*, another *Sootashekhara Rasa*(4<sup>th</sup>) has been mentioned, quoted from *Rasayana Samgraha* and indicated from *Amla Pitta Chikitsa*<sup>[24]</sup>. It has three

ingredients i.e. *Rasa* (Mercury), *Vishvam* (*Shunthi*; Ginger;*Zingiber officinale*) and *Gairika* (Ochre; Fe<sub>2</sub>O<sub>3</sub>), which are leviagated in *Tambuli Patra Swarasa* (Leaf juice of *Piper betel*). One *Ratti*(125 mg) dose is indicated in *Amlapitta*(Hyperacidity), *Bhrama*(Vertigo) and *Mootrakrichha*(Dysuria);along with *Sita* (Sugar) or *Madhu* (Honey). (Table No. 1)

*Laghu Sootashekhara Rasa* is also described in *Rasa Tantra Sara evam Siddha Prayoga Samgraha*<sup>[25]</sup>,*Rasa Tarangini*<sup>[26]</sup> and AFI (Part-II)<sup>[27]</sup>. It has *Gairika* and *Shunthi* are as ingredients and *Nagarabela Swarasa* (*Piper betel*) is *Bhawana Dravya*(Levigation). 1-3 *Vati* (2 *Ratti*/ 250mg each) dose is indicated along with Milk and *Sita* in *Amlapitta Chikitsa*. This formula is looks like inspired from above mentioned 4<sup>th</sup>*Sootashekhara Rasa*.

**Table No. I Showing The Various Formulations With The Name Of Sootashekhara Rasa**

Formula	Ingredients
<b>Sootashekhara Rasa 1<sup>st</sup>/ Sooryashekhara</b>	Mineral origin: <i>Sootaka</i> (Mercury), <i>Tankana</i> (Borax), <i>Gandhaka</i> (Sulphur), <i>Saindhava Lavana</i> (Rock Salt)
	Plant origin: <i>Jaipala</i> ( <i>Myristica fragrans</i> ), <i>Maricha</i> ( <i>Piper nigrum</i> ), <i>Chincha</i> ( <i>Tamarindus indica</i> Linn), <i>Sharkara</i> (Sugar), <i>Jambiri Nimbu</i> ( <i>Citrus lemon</i> )
<b>Sootashekhara Rasa 2<sup>nd</sup></b>	Mineral origin: <i>Parada</i> , <i>Swarna Bhasma</i> (Incinerated Gold), <i>Tankana</i> , <i>Swarna Makshika Bhasma</i> (Incinerated Copper pyrite), <i>Rajata Bhasma</i> (Incinerated silver), <i>Gandhaka</i> , <i>Tamra Bhasma</i> (Incinerated Copper)
	Animal origin: <i>Shankha Bhasma</i> (Conch shell)
	Plant Origin: <i>Vatsanabha</i> ( <i>Aconitum ferox</i> Wall), <i>Nirvisha</i> ( <i>Delphinium denudatum</i> ), <i>Dhatura</i> ( <i>Datura metal</i> ), <i>Pippali</i> ( <i>Piper longum</i> ), <i>Maricha</i> ( <i>Piper nigrum</i> ), <i>Shunthi</i> ( <i>Zingiber officinale</i> Rose), <i>Twaka</i> ( <i>Cinnamomnm zeylanicum</i> ), <i>Ela</i> ( <i>Elettearia cardamomum</i> ), <i>Tejapatra</i> ( <i>Cinnamomnm tamala</i> ), <i>Nagakeshara</i> ( <i>Mesua ferrea</i> ), <i>Bilva</i> ( <i>Aegle marmelos</i> ), <i>Kachoor</i> ( <i>Curcuma zedoaria</i> ), <i>Bhringaraja</i> ( <i>Eclipta alba</i> )

<b>Sootashekhara Rasa 3<sup>rd</sup>/ Rakta Sootashekhara Rasa</b>	Mineral origin: <i>Abhraka Bhasma</i> (Incinerated Mica), <i>Rasa Sindoor</i> , <i>Swarna Bhasma</i> , <i>Tamra Bhasma</i> , <i>Loha Bhasma</i> (Incinerated Iron), <i>Shuddha Tankana</i> ,
	Animal origin: <i>Kastoori</i> (Musk), <i>Shankha Bhasma</i>
	Plant origin: <i>Vatsanabha</i> , <i>Dhatoora</i> , <i>Twaka</i> , <i>Ela</i> , <i>Patra</i> , <i>Nagakeshara</i> , <i>Shunthi</i> , <i>Pippali</i> , <i>Maricha</i> , <i>Shati</i> ( <i>Hedychium spicatum</i> Ham.), <i>Kesara</i> ( <i>Crocus sativus</i> ), <i>Arka Dugdha</i> ( <i>Calotropis procera</i> ).
<b>Sootashekhara Rasa 4<sup>th</sup></b>	Mineral: <i>Rasa</i> (Mercury), <i>Gairik</i> (Ochre)
	Plant origin: <i>Shunthi</i> , <i>TambualDala</i> ( <i>Piper betel</i> )
<b>Laghu Sootashekhara Rasa</b>	Mineral: <i>Gairika</i>
	Plant origin: <i>Shunthi</i> , <i>Tambula Dala</i>

Among all of these 2<sup>nd</sup> Sootashekhara Rasa is most commonly used in clinical practice. Several research papers have been published on it. So here in the present study this formula has been selected and an attempt is made to review it.

#### Sootashekhara Rasa 2<sup>nd</sup> in Classics:

**Table No. II Showing The Ingredients Of Sootashekhara Rasa In Various Books**

Ingredients	Latin Name	Used Part	YR, NR, R. Ch., RTS & SPS, ASS, AFI-1 <sup>st</sup> , AFI-2 <sup>nd</sup>	SYS	Rasamritam, ASS (No.1)	ASS (Swarna Rahita)	AFI- 3 <sup>rd</sup>
<b>Mineral Origin Drugs</b>							
<i>Shuddha Parada</i>	<i>Hydrargyrum</i>		✓	✓	✓	✓	✓
<i>Swarna Bhasma</i>	<i>Aurum</i>		✓	✓	✓	×	×
<i>Shuddha Tankana</i>	<i>Borax</i>		✓	✓	✓	✓	✓
<i>Shuddha Gandhaka</i>	<i>Sulphur</i>		✓	✓	✓	✓	✓
<i>Tamra Bhasma</i>	<i>Cuprum</i>		✓	✓	✓	✓	✓
<i>Rajata Bhasma</i>	<i>Argentum</i>		×	✓	×	✓	×
<b>Animal Origin Drugs</b>							
<i>Shankha Bhasma</i>	<i>Turbinella pyrum</i>	Conch shell	✓	✓	✓	✓	✓
<b>Plant Origin Drugs (Powder form)</b>							
<i>Shuddha Vatsanabha</i>	<i>Aconitum ferox</i>	Root	✓	×	✓	×	✓
<i>Shuddha Dhatura</i>	<i>Datura metal</i>	Seed	✓	✓	✓	✓	✓

<i>Pippali</i>	<i>Piper longum</i>	Fruit	✓	✓	✓	✓	✓
<i>Maricha</i>	<i>Piper nigrum</i>	Fruit	✓	✓	✓	✓	✓
<i>Shunthi</i>	<i>Zingiber officinale</i>	Rhizome	✓	✓	✓	✓	✓
<i>Twaka</i>	<i>Cinnamomum zeylanicum</i>	Bark	✓	✓	✓	✓	✓
<i>Ela</i>	<i>Elettaria cardamomum</i>	Seed	✓	✓	✓	✓	✓
<i>Tejapatra</i>	<i>Cinnamomum tamala</i>	Leaves	✓	✓	✓	✓	✓
<i>Nagakeshara</i>	<i>Mesua ferrea</i>	Androecium	✓	✓	✓	✓	✓
<i>Bilva</i>	<i>Aegle marmelos</i>	Fruit pulp	✓	✓	✓	✓	✓
<i>Kachoor</i>	<i>Curcuma zedoaria</i>	Rhizome	✓	✓	✓	✓	✓
<i>Nirvisha</i>	<i>Delphinium nudatum</i>	Root	×	✓	×	×	×
<b>Bhawana Dravya</b>							
<i>Bhringaraja (Juice)</i>	<i>Eclipta alba</i>	Whole plant	✓	✓	✓	✓	✓
<b>Duration of Bhawana</b>			1 day	21 days	21 says	21 days	-
<b>Dose</b>			2 Gunja (250 mg)	1 Gunja (125 mg)	1 Gunja (125 mg)	2 Ratti (250 mg)	125-250mg
<b>Anupana</b>			Madhu- Sarpi (Honey & Ghee)	Yogya Anupana (Appropriate)	Yogya Anupana (Appropriate)	Shaarkara, Madhu, Dadima Rasa, Dadima avleha, Amla Murabba	-
<b>Indications</b>			Amlapitta, Vanti, Shoola, 5 types of Gulma & Kasa, Grahani, Atisara (Tridoshottha), Shwasa, Mandagni, Ugra Hikka, Udavarta, Yapy Roga, Rajayakshma, Sarvaroga	Hriddaha, Bhrama, Moorchha, Vanti, Shoola, Amlapitta	Hriddaha, Bhrama, Moorchha, Vanti, Shoola, Amlapitta	Amlapitta, Bhrama, Mootrakrichha, Suryavritta, Raktapita, Mukha roga, Pita vikara, Unmada.	Amlapitta, Vamana, Gulma, Kasa, Grahani, Mandagni, Hikka, Shwasa, Rajayakshama

YR- Yoga Ratnakara, NR- Nighantu Ratnakara, R.Ch.-Rasa Chandashu, RTS & SPS-Rasa Tantra Sara Evam Siddha Prayoga Samgraha, ASS- Ayurveda Sara Samgraha, SYS- Siddha Yoga Samgraha, AFI- Ayurvedic Formulary of India

#### Published research work:

Pradakar H et al. has reported that in their survey it was found in retrospective study, 250 cases who are already

under treatment and was taking *Sootashekhara Rasa*, no side effect was noted and in 30 new cases, who were prescribed for the same, the same findings were noticed. The authors concluded that it was found safe.<sup>[28]</sup>

In a review article Thakur J et al. has concluded that *Sootashekhara Rasa* corrects the vitiated state of *Pitta* and improves the whole digestion process and result in proper functioning of *Agni*. Its substances are having *Ruksha*, *Laghu*, *Katu* and *Ushna* properties that decrease the vitiated *drava roopa* of *Pitta*<sup>[29]</sup>.

In an animal trial Chandra P et al. has reported that antiulcer activity of *Kamdudha Rasa* and *Sootashekhara Rasa Sada* were evaluated using different ulcer models- cold restraint induced ulcers (CRU), pylorus-ligation (PL), ethanol-induced ulcers (EtOH), and indomethacin (INDO) induced ulcers model. In CRU model the *Kamadugha* (KD) and *SutshekharaRasaSada* (SRS) significantly inhibited the formation of gastric lesions induced by cold restraint-stress by 74.37% and 74.83% respectively. Animals in the PL group showed a significant increase in the ulcer index and acid secretory parameters like gastric volume, pH, free and total acidity when compared with those of vehicle treated group. KD and SRS at a dose of 40 mg/kg body weight each showed protection index of 47.59% and 50.69%, respectively in EtOH model. In INDO model, the inhibition of ulcers were 55.91%, 57.52% for groups treated with KD and SRS each of 40 mg/kg and 66.13% with positive control (Lansoprazole), respectively<sup>[30]</sup>.

In a clinical trial Thankchan et al. has reported that *SootashekharaRasa* (125 mg OD) along with *Pathyadi Kwatha* (50 ml) was found more effective than only use of *Sootashekhara Rasa* or *Pathyadi Kwatha*, Where 67.03% relief were noticed in *SootashekharaRasa* and *Pathyadi Kwatha* treated group while 64.08% and 57.05% relief were noticed in *Sootashekhara* treated and *Pathyadi Kwatha* treated group respectively<sup>[31]</sup>.

Chouhan G et al. has reported that in their clinical trial combination of *Avipattikara Choorna* (5 g BD) with *Sootashekhara Rasa* (125 mg BD) are found very effective

in managing *Urdhwaga Amlapitta*, both the drugs were found free from side effects. After 4 weeks of treatment significant improvement in *Hrita-Kantha Daha*, *Tikta-Amla Udgara*, *Utklesha*, *Avipaka*, *Guruta* and *Klama*. No adverse event was noticed by the authors<sup>[32]</sup>.

Patil MS et al. has reported that Ayurvedic treatment i.e. *Suvarna Sootashekhara Rasa*, *Avipattikara Choorna*, *Laghu Sootashekhara Rasa*, *Sutashekhara Rasa*, *Musta Choorna* and Himcold suspension along with *Pathya sevana* were found effective in chronic stage of *Amlapitta*<sup>[33]</sup>.

In a comparative clinical study, Bhati LS has reported that *Sootashekhara Rasa* is found more effective than *Shankha Bhasma* to treat *Garavishajanita Amlapitta*<sup>[34]</sup>.

In an another study Prakash B et al. has reported that *Sootashekhara Rasa* along with *Narikela Lavana*, *Rasonadi vati*, *Sitopaladi Choorna* and *Godanti mishrana* with regulated diet and lifestyle (Ayurvedic Treatment protocol) were given in Migraine diagnosed patient for 90 days. By analyzed the data of the cases, who have completed the treatment they found that complete disappearance of headache with associate symptoms in 35.2% cases, mild episode of headache and associated symptoms in 35.2% cases, low intensity of pain along with conventional medicines in 24.5% cases, no improvement in 3.4% cases. In 70.5% cases marked reductions were noticed in their study<sup>[35]</sup>. Point is also to be noticed in the study that the formula of the *Sootashekhara rasa* also been changed i.e. ingredients were *Shuddha Parada*, *Shuddha Gandhaka*, *Dalchini*, *Ela*, *Tejapatra*, *Nagakeshara*, *Shankha Bhasma*, *Swarnamakshika Bhasma*, *Roupya Bhasma*, *Tamra Bhasma*, *Dhatura*, *Suhaga*, *Shunthi*, *Maricha*, *Pippali* and *Bhringaraja Swarasa*, no satisfactory justification is provided regarding this point. Same author (Prakash B et al) has reported that daily dose of *Sootashekhara Rasa* (250 mg) with *Sitopaladi Choorna* (400 mg) has shown sustained improvement of nutritional anemia in adolescent students. Same composition of *Sootashekhara Rasa* is adopted<sup>[36]</sup>.

In a review article Kumar A & Singhal H have concluded that The *Sootashekhara Rasa* is very beneficial in *Amlapitta* due to multiple actions such as anticholinergic and directly acting antacids<sup>[37]</sup>.

### Wikipedia:

An online Wikipedia page of *Sootashekhara Rasa* is also available<sup>[38]</sup>, where therapeutic uses, method of preparation, metal-mineral ingredients, availability and dosage, safety, Ayurvedic *Shodhana* protocol and references headings are mentioned but no proper and exact information is there on the page. No references are given for any statement. It can be referred for just some idea about the formulation it cannot be taken as a relevant or serious concern.

**Method of preparation:** Since *Sootashekhara Rasa*

is a *Kharaliya Rasayana*, so its complete manufacturing process is done into *Kharala*. *Shuddha Parada* and *Shuddha Gandhaka* are taken in a mortar (*Kharala*) and triturated till *Kajalli* preparation, which is evaluated by *Kajalli Pareeksha*. Then *Swarna Bhasma* or *Swarna makshika Bhasma*, *Rajata Bhasma* (if present in reference followed), *Tamra Bhasma* and *Shankha Bhasma* added respectively one by one in low quantity and triturated continuously for proper mixing. After it *Shuddha Vatsanabha Choorna* following *Shudhha Tankan* is added and mixed properly. At last mixture of all other herbal ingredients are mixed and triturated till homogenous mixture. Then *Bhringaraja Swarasa* is added and levigated at per reference and then *vati* of *gunja pramana* (125 mg) from this mass are prepared, dried well and preserved in air tight container.

**Table No. III Showing The Properties Of Ingredients**

Ingredients	Rasa	Guna	Veerya	Vipaka	Karma	
<b>Mineral Origin Drugs</b>						
1.	<i>Shuddha Parada</i> <sup>[39]</sup>	<i>Shadarasa</i>	<i>Sara, Guru, Snigdha</i>		<i>Yogavahi, Tridoshaghna, Rasayana, Shodhana, Sarvarogavarjita</i>	
2.	<i>Shuddha Gandhaka</i> <sup>[40]</sup>	<i>Katu</i>	<i>Sara, Snigdha</i>	<i>Ushna</i>	<i>Madhura</i>	<i>Pachana, Deepana, Yogavahi, Kaphavatashamaka</i>
1+2	<i>Kajjali</i> <sup>[41]</sup>				<i>Srvamayahara, Tridoshahara</i>	
3.	<i>Swarna Bhasma</i> <sup>[42,43]</sup>	<i>Kashaya, Tikta, Madhura, Katu</i>	<i>Sheeta, Guru, Snigdha, Pichhila</i>	<i>Sheeta</i>	<i>Madhura</i>	<i>Garavishara, Sarvadoshamayaghna, Deharogapramathi, Ruchya, Pushthipradayi</i>
4.	<i>Shuddha</i> <sup>[44]</sup> <i>Tankana</i>	<i>Katu</i>	<i>Ruksha, Teekshna</i>	<i>Ushna</i>	<i>Katu</i>	<i>Saraka, Kaphsvishleshana, Hridya, Vatamyanihoodana, Agnidiptikara, Admananashana, Vishanashaka</i>
5.	<i>Tamra Bhasma</i> <sup>[45]</sup>	<i>Tikta, Kashaya, Madhura</i>	<i>Laghu, Sara, Snigdha</i>	<i>Ushna</i>	<i>Katu</i>	<i>Vatakaphara, Pittakaphahara, Urdhwa-Adha Shodhana,, Garavishahara, Kshutkaram</i>
6.	<i>Rajata Bhasma</i> <sup>[46]</sup>	<i>Kashaya, Amla, Madhura</i>	<i>Snigdha, Sheeta, Guru, Sara</i>	<i>Sheeta</i>	<i>Madhura</i>	<i>Vatapittajit, Pitta rogahara, Sarvarogahara, Ruchya, Jatharagnidipaka,</i>
7.	<i>Swarna Makshika Bhasma</i> <sup>[47]</sup>	<i>Tikta, Madhura</i>	<i>Sheeta, Laghu</i>	<i>Sheeta</i>	<i>Katu</i>	<i>Sakalamyaghna, Tridoshghna, Yogavahi, Vishghna</i>



<b>Animal Origin Drugs</b>						
1.	<i>Shankha Bhasma</i> <sup>[48,49]</sup>	<i>Kashaya, Katu (Kshara)</i>	<i>Laghu, Hima</i>	<i>Sheeta (Anushna)</i>		<i>Tridoshanghna, Grahi, Agnideepana, Grahanirogahara</i>
<b>Plant Origin Drugs (Powder form)</b>						
1.	<i>Shuddha Vatsanabha</i> <sup>[50,51]</sup>	<i>Madhura</i>	<i>Ruksha, Teekshna, Laghu, Vyavayi, Vikashi</i>	<i>Ushna</i>	<i>Madhura</i>	<i>Yogavahi. Pittasanshodhana, Vatashaleshma Vikaranuta, Agnimandhyanash</i>
2.	<i>Shuddha Dhatura</i> <sup>[52,53]</sup>	<i>Tikta, Katu</i>	<i>Laghu, Ruksha, Vyavayi, Vikasi</i>	<i>Ushna</i>	<i>Katu</i>	<i>Saraka, Madaka</i>
3.	<i>Pippali</i> <sup>[54]</sup>	<i>Katu</i>	<i>Laghu, Snigdha, Teekshna</i>	<i>Anushna-sheeta</i>	<i>Madhura</i>	<i>Deepana, Pachana, Anahaprashamana, Vatashaleshmahara,</i>
4.	<i>Maricha</i> <sup>[55]</sup>	<i>Katu</i>	<i>Laghu, Teekshna</i>	<i>Ushna</i>	<i>Katu</i>	<i>Deepana, Kaphavatahara,</i>
5.	<i>Shunthi</i> <sup>[56]</sup>	<i>Katu</i>	<i>Laghu, Snigdha</i>	<i>Ushna</i>	<i>Madhura</i>	<i>Deepana, Rochana, Kaphavatahara, Agnivaradhana, Vibhandha-Anahanut</i>
6.	<i>Twaka</i> <sup>[57]</sup>	<i>Katu, Tikta, Madhura</i>	<i>Laghu, Ruksha, Teekshna</i>	<i>Ushna</i>	<i>Katu</i>	<i>Kaphavatahara, Ama-Aruchinashaka, Agnimandiyahara, Samgrahi, Utkalehsaprashamana</i>
7.	<i>Ela</i> <sup>[58]</sup>	<i>Katu, Madhura</i>	<i>Laghu, Ruksha</i>	<i>Sheeta</i>	<i>Madhura</i>	<i>Sheetala, Hridya, Rochana, Deepana, Vatahara, Kaphahara</i>
8.	<i>Tejapatra</i> <sup>[59]</sup>	<i>Madhura, Tikta</i>	<i>Teekshana, Laghu, Pichhila</i>	<i>Ushna</i>	<i>Madhura</i>	<i>Kaphavatahara, Aruchinashaka</i>
9.	<i>Nagakeshara</i> <sup>[60]</sup>	<i>Kashaya, Tikta</i>	<i>Laghu, Ruksha</i>	<i>Ushna</i>	<i>Katu</i>	<i>Kaphahara, Chhardi-Hrillasa Nashana, Kaphapitahara</i>
10.	<i>Bilva</i> <sup>[61]</sup>	<i>Kashaya, Tikta</i>	<i>Laghu, Ruksha</i>	<i>Ushna</i>	<i>Katu</i>	<i>Samgrahi, Deepana, Vatakapha Prashamana</i>
11.	<i>Kachoor</i> <sup>[62]</sup>	<i>Katu, Tikta</i>	<i>Laghu, Teekshna</i>	<i>Ushna</i>	<i>Katu</i>	<i>Vatakapha Nashaka, Deepana, Rochana</i>
12.	<i>Nirvisha</i> <sup>[63]</sup>	<i>Katu, Tikta</i>	<i>Laghu, Teekshna</i>	<i>Ushna</i>	<i>Katu</i>	<i>Kaphavatasradoshanut,</i>
<b>Bhawana Dravya</b>						
1.	<i>Bhringaraja (Juice)</i> <sup>[64]</sup>	<i>Katu, Tikta</i>	<i>Ruksha, Laghu</i>	<i>Ushna</i>	<i>Katu</i>	<i>Kaphavatanut,</i>

### Discussion:

The formulations has been selected in the present study for review is first described in *Yoga Ratnakara*. The same formula was adopted by *Rasa Chandanshu, Virhata Nighnatu Ratnakara, Rasatantrasara evam Siddha Prayoga Samgraha and Ayurveda Sara*

*Samgraha*. In *Rasamritam*, *Vaidya Yadav Ji Trikam ji* has removed from the formula and added *Rajat Bhasma* in it. *Nirvisha* is also added by him in his another text *Siddha Yoga Samgraha*. *Nirvisha* is the *Pratinidhi Dravya* (Substitute) of *Vatsanabha*<sup>[65]</sup> and it is nontoxic



drug so *Shodhana*(Refinement) is also not required like *Vatsanabha*. Reasons for addition of *Rajata Bhasma* may be explained by its properties i.e. *Kashay Amla Rasa, Madhura Vipaka, Sheeta, Sara, Balaprada, Ruchya, Pavanahari, Kaphapranashi, Param Dahahara, Pitamaya Prashamana, Vahnimandyaprasanam, Vishghna, Visheshena Jatharamayanashanam*<sup>[66,67]</sup>. It is indicated in *Hridayaha, Moorchha, Vanti, Shoola* and *Amla Pitta* (specially). The properties of *Rajata Bhasma* make it more efficacious for these disease conditions. He has also said to *Bhwana* for 21 days instead of one day. *Bhawana* facilitates in proper mixing and firm binding between all components of ingredients of mixture, which leads to interaction between them or with liquid may results in physical as well as chemical interactions between them, at the same time make it easier to make *Vati* (Pills). It also reduces the particle size, which increase the bioavailability of the drug<sup>[68]</sup> and make the drug more potent. *Ayurveda Sara Samgraha* has followed the formula of *Siddha Yoga Samgraha*, but *Swarna Bhasma* has been removed from the original to make it cheaper. It is mentioned by the author that the properties of *Swarna Rahita* (Without gold) *Sootashekhara Rasa* are much similar to *Sootashekhara Rasa (Swarna Yukta)*, difference is that presence of *Swarna Bhasma* make it *Somya* (Soft), beneficial for brain and heart<sup>[69]</sup>.

Some pharmacies are using *Swarna Makshika bhasma* in the place of *Swarna Bhasma*. *Rasa Tantra Sara and Siddha Prayoga Samgraha* has permitted for it<sup>[70]</sup>. Purpose of this may be to make the formulation cheaper, so that more patients can afford to use it. The justification of this replacement may be that the *Swarnamakshika Bhasma* is the *Pratinidhi Dravya* (Substitute) of *Swarna Bhasma*<sup>[71]</sup>. Properties of *Swarna Makshika Bhasma* i.e. *Sakalaamayaghna, Tridoshghna, Yogavahi, Vishaghna* do not compromise with the efficacy of the drug<sup>[72]</sup>.

The formulation is indicated in *Amla Pitta, Vanti (Utkalesha/ Chhardi), Shoola*, five types of *Gulma*, five types of *Kasa, Grahani, Shotha, Atisara, Shwasa, Mandagni, Hikka, Udavata, Rajyakshma* and almost

all the disease conditions. Root cause of all of the above disease condition is same that is *Mandagni*<sup>[73,74]</sup>. Which cause *Amavastha* and then *Prakopa* of *Vatadi dosha*. Due to *Margavarodha* the *Dosha Gati* got disturbed and *Vimargagami Dosha* cause the disease.

By reviewing the ingredients of formulation (Table No. 2) it is found that 13 are having *Katu Rasa*, 11 having *Tikta Rasa*, 8 having *Madhura Rasa*, 6 having *Kashaya Rasa*, 1 is having *Amla Rasa* and the *Parada* has all the *Shadarasa*. In *Guna*, 15 are of *Laghu*, 3 *Guru*, 7 *Teekshna*, 6 *Snigdha*, 8 *Ruksha*, 4 *Sara*. *Dhatu* and *Vatsanabha* are having *Vyavayi, Vikasi Guna* also. 14 drugs are of *Ushna Veerya*, 4 of *Sheeta* and 2 of *Anushna sheeta Veerya*. Most of the mineral origin drugs are of *Madhura, Tikta* and *Kashaya Rasa, Snigdha, Sara, Guru Guna*, so they do neutralize the *Kupita Pitta Dosha*. Other drugs (Animal and Plant origin drugs) are mostly of *Katu* and *Tikta Rasa*, they do *Shaman* of *Amadosha*. *Katu, Tikta Rasa, Ushna Veerya* set the fire to *Jatharagni* by their *Deepana, Pachana* and *Rochana Karma*. *Katu, Tikta, Kashaya Rasa, Ruksha, Laghu Guna, Ushna Veerya* do the *Shoshana* of *Drava Vidagdha Pita (Samapita)*. *Tikta* and *Madhura Rasa* mitigate the *Daha, Trishna*. *Laghu, Teekshna, Vyavayi* and *VikasiGuna (Dhatu and Vatsanabha)* are *Shighrapaki* so they increase the rate of action. *Kajalli* is *Yogavahi* and *Sarvarogahara* so it enhance the potency of the drug. *Vatsanabha, Swarna Bhasma* and *Rajat Bhasma* are also having the same property. The disease may be caused by *Garavisha* and *Ama* is itself is a *Visha (Amavisha)*, so for this *Swarna Bhasma, Shankha Bhasma* and *Tankana* are having *Garavishahara* property. *Shankha Bhasma* and *Tankana* are *Kshareeya* in nature so they neutralize the *Amla (Vidagdhavastha)* also. *Tamra Bhasma, Vatsanabha, Tankana* and *Dhatu* are *saraka*, so they do *strotoshodhana* and remove the *utklesita Dosha*. *Rajata Bhasma, Trikatu, Vatsanabha* and most of the ingredients are *agnideepaka* in the formula. *Trikatu* also enhance the bioavailability of the drug, it is having *shuthi* also, which is best in *Amapachana* and *Vibandhanashana*. *Chaturjataka(Twaka, Ela,*

*Tejapatra, Nagakeshara*) increases the interest in the meal (*Rochaka*), correct the condition of *Utklesha* and *Hrillasa* (Nausea). *Bilva* and *Shankha Bhasma* remove the disease of *Grahani*. *Bhringaraja* is *Ruksha* and *Laghu* so it reduces the *Dravatava* of *Pitta* and also enhances the *Jatharagni*. That's how the *Sootashekhara Rasa* corrects the disease condition.

### Conclusion:

The *Sootashekhara Rasa* is an important, effective and very commonly prescribed formulation, which is modified by different scholars with the time. Now it is available in market with the name of *Sada Sootashekhara Rasa/Swarna Rahita Sootashekhara Rasa* and *Swarnayukta Sootashekhara Rasa*. By reviewing the formula it can be said that the changes were done to make it cheaper with sustain its efficacy. It can be concluded after reviewing the properties of the ingredients that it should be effective medicine to treat *Amlapitta, Kasa, Gulma* and all such types of abnormalities, where pathogenesis starts from *Mandagni*.

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### सारांश:

सूतशेखर रस आयुर्वेद चिकित्सा अभ्यास में काम में लिया जाने वाला एक महत्वपूर्ण योग है, जो की अम्लपित्त, अग्निमांद्य, अतिसार, गुल्म, कास, ग्रहणी तथा राजयक्ष्मा की चिकित्सा में काम में लिया जाता है। शास्त्रों में इसी नाम से चार भिन्न भिन्न योग तथा एक लघु सूतशेखर रस पाए जाते हैं। इन सभी सूतशेखर रसों में से योग रत्नाकर में वर्णित योग सबसे अधिक प्रसिद्ध है जो के व्यावसायिक तथा चिकित्सकीय अभ्यास में सबसे अधिक प्रसिद्ध हुआ। यह भी समय के साथ भिन्न भिन्न आचार्यों द्वारा परिवर्तित किया गया। मुख्य योग में १६ घटक द्रव्य है, जिनमें खनिज, जांतव और पादप उद्भव द्रव्य है। चूंकि स्वर्ण इसमें एक घटक के रूप में है, जो की इसे महंगा भी बना देता है। आज बाजार में यह सवर्ण सहित और रहित, स्वर्ण सूतशेखर रस तथा सादा सूतशेखर रस के नाम से उपलब्ध है। प्रस्तुत अध्ययन में योग का समालोचनात्मक अध्ययन करने का प्रयास किया गया है। आचार्यों द्वारा किये गए परिवर्तन इसे और सुरक्षित तथा सस्ता बनाने के लिए किए गए, प्रभाविकता को बनाए रखते हुए। इसके घटक द्रव्यों की समीक्षा से यह कहा जा सकता है की यह निर्देशित रोगों में प्रभाविक हो सकता है।



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# A clinical study on the role of Brihat Dashamoola Taila Nasya and Laghu Sutashekhar Rasa in the management of Ardhavabhedaka w.s.r. to Migraine

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**ABSTRACT :** Migraine is one of the common causes of recurrent headache. According to IHS, Migraine constitutes 16% of the primary headache and affects 10-20% of the general population. The diagnosis is mainly based on clinical history. Moreover, unilateral headache with paroxysmal nature is the only symptom mentioned for the disease Ardhavabhedaka by ancient scientists. Ardhavabhedaka has been explained as Tridoshaja by Acharya Sushruta, Vata-Kaphaja by Charaka and Vataja by Vagbhata. But the different quality of pain such as Toda, Bheda, etc. describes the Vishama nature of Vata dosha. A study in 2002 that analyzed over 800,000 cases of migraine reported that most migraines are not treated according to any expert recommendations or accepted evidence. Our Acharyas have mentioned Nasya Therapy as the master key for all urdhavajatrugata vikaras. Considering all such things the present study was selected, in which total 44 patients were registered and were randomly divided into two groups. In group A, Laghu Sutashekhar Rasa & group B, Brihat Dashamoola Taila Nasya along with Laghu Sutashekhar Rasa was given for 6 weeks. In group A & in group B, maximum number of patients i.e., 35% & 52.94% respectively showed marked improvement.

**Key words :** Ardhavabhedaka, Migraine, Brihat Dashamoola Taila, Laghu Sutashekhar Rasa

## INTRODUCTION

According to IHS, Migraine is the most common neurovascular headache, which constitutes 16% of the primary headache and affects 10-20% of the general population. Hence WHO ranks Migraine among the World's most disabling medical illness.<sup>13</sup> Ardhavabhedaka can be scientifically correlated with Migraine due to its cardinal feature 'half sided headache' which is also explained by commentator Chakrapani as Ardha Mastaka Vedana<sup>1</sup> and also due to its paroxysmal nature. Ardhavabhedaka has been explained as Tridoshaja by Acharya Sushruta<sup>3</sup>, Vata-Kaphaja by Charaka<sup>2</sup> and Vataja by Vagbhata<sup>7</sup>. The various types of pain explained by different Acharyas suggest the Vishama nature of Vata dosha. Moreover, the symptoms nausea, vomiting and giddiness are also seen, which shows the involvement of Pitta dosha, which can be explained as under:

- ◆ Vomiting & burning sensation symptoms are seen when Prana Vayu combines with Pitta.<sup>4</sup>
- ◆ Udana Vayu with Pitta results in murchha, daha, bhrama and klama.<sup>5</sup>
- ◆ The symptom bhrama is due to Rajoguna and Pitta-Vata dosha involvement.<sup>6</sup>

The modern drugs are not acceptable due to their drawbacks - drug dependence, drug withdrawal syndrome, relapse of headache within hours and chances of getting chronic headache.<sup>13</sup> In Ayurveda Nasya Therapy is considered as master key for all urdhavajatrugata vikaras. Hence Brihat Dashamoola Taila Nasya has been selected from Bhaisajya Ratnavali Shiro-roga adhikara<sup>8</sup>. The compound drug selected for the study "Laghu Sutashekhar Rasa" is described in Rasa Tarangini<sup>9</sup>, which is having digestive, anti-oxidant, anti-inflammatory properties.

## Aims and Objectives:

- 1) To study the etiopathogenesis of Ardhavabhedaka - Migraine from Ayurvedic and modern point of view.
- 2) To evaluate the efficacy of Laghu Sutashekhar Rasa alone in the management of Ardhavabhedaka.
- 3) To assess the efficacy of Brihat Dashamoola Taila Nasya with Laghu Sutashekhar Rasa in the management of Ardhavabhedaka.

## MATERIAL AND METHODS

**Source of data -** Patients of Ardhavabhedaka (Migraine) fulfilling the inclusion criteria attending OPD of Shalakya, IPGT & RA, GAU, Jamnagar were selected.

A detailed performa was prepared incorporating Ayurvedic and modern points of Ardhavabhedaka

(Migraine). An assessment was made on change in clinical feature before and after treatment. The scoring was given to each symptom ranging from 0 - 4.

**Inclusion criteria :**

Patients between the age group of 16 to 60 years having recurrent attacks of headache, mostly unilateral in site, variable in intensity, frequency and duration with or without nausea, vomiting, aura and GI tract symptoms were included in the present study.

**Exclusion criteria :**

Patients suffering from sinusitis, hypertension, and fever, secondary headache caused by meningitis, tumor, encephalitis, cervical spondylitis and refractive errors; also patients using any other systemic drugs which may alter the results of the study were excluded.

**Ethical clearance :**

The study was cleared by the ethical committee of the institute. Written consent was taken from each

patient willing to participate before the start of the study. Patients were free to withdraw their name from the study at any time without giving any reason.

**Grouping of Patients :**

Total 44 patients were registered from the O.P.D. of Dept. of Shalakyia of I.P.G.T. & R.A., Gujarat Ayurveda University, Jamnagar hospital and randomly divided into 2 groups.

Group A : Laghu Sutashekhara Rasa (LSR group)

Group B : Brihat Dashamoola Taila and Laghu Sutashekhara Rasa (CG group)

LSR Dose : 500 mg twice a day.

Nasya Dose : 4-8 drops in each nostril, 3 sittings of 7 days each with 1 week gap (alternate week)

Duration : 6 weeks

Follow Up : 2 months

**TABLE NO. 1 : CRITERIA FOR ASSESSMENT OF THE CLINICAL SYMPTOMS DEPENDING ON THE SEVERITY :**

<p><b>Severity of Headache</b></p> <p><input type="checkbox"/> 0</p> <p><input type="checkbox"/> 1</p> <p><input type="checkbox"/> 2</p> <p><input type="checkbox"/> 3</p> <p><input type="checkbox"/> 4</p>	<p><b>Nausea</b></p> <p><input type="checkbox"/> 0</p> <p><input type="checkbox"/> 1</p> <p><input type="checkbox"/> 2</p> <p><input type="checkbox"/> 3</p> <p><input type="checkbox"/> 4</p>
<p><b>Frequency of Headache:</b></p> <p><input type="checkbox"/> 0</p> <p><input type="checkbox"/> 1</p> <p><input type="checkbox"/> 2</p> <p><input type="checkbox"/> 3</p> <p><input type="checkbox"/> 4</p>	<p><b>Vomiting</b></p> <p><input type="checkbox"/> 0</p> <p><input type="checkbox"/> 1</p> <p><input type="checkbox"/> 2</p> <p><input type="checkbox"/> 3</p> <p><input type="checkbox"/> 4</p>
<p><b>Duration of Headache :</b></p> <p><input type="checkbox"/> 0</p> <p><input type="checkbox"/> 1</p> <p><input type="checkbox"/> 2</p> <p><input type="checkbox"/> 3</p> <p><input type="checkbox"/> 4</p>	<p><b>Vertigo</b></p> <p><input type="checkbox"/> 0</p> <p><input type="checkbox"/> 1</p> <p><input type="checkbox"/> 2</p> <p><input type="checkbox"/> 3</p> <p><input type="checkbox"/> 4</p>
<p><b>Aura</b></p> <p><input type="checkbox"/> 0</p> <p><input type="checkbox"/> 1</p> <p><input type="checkbox"/> 2</p> <p><input type="checkbox"/> 3</p> <p><input type="checkbox"/> 4</p>	<p><b>Gradation for Associated symptoms</b></p> <p><input type="checkbox"/> 0</p> <p><input type="checkbox"/> 1</p> <p><input type="checkbox"/> 2</p> <p><input type="checkbox"/> 3</p> <p><input type="checkbox"/> 4</p>

**Advice Given to Patient :**

- ◆ Diet - avoid spicy and junk food.
- ◆ 10 gm of Ghee or sweet prepared of Ghee was advised to take daily morning.
- ◆ Shavasana and other relaxation exercises were advised for at least one hour daily.

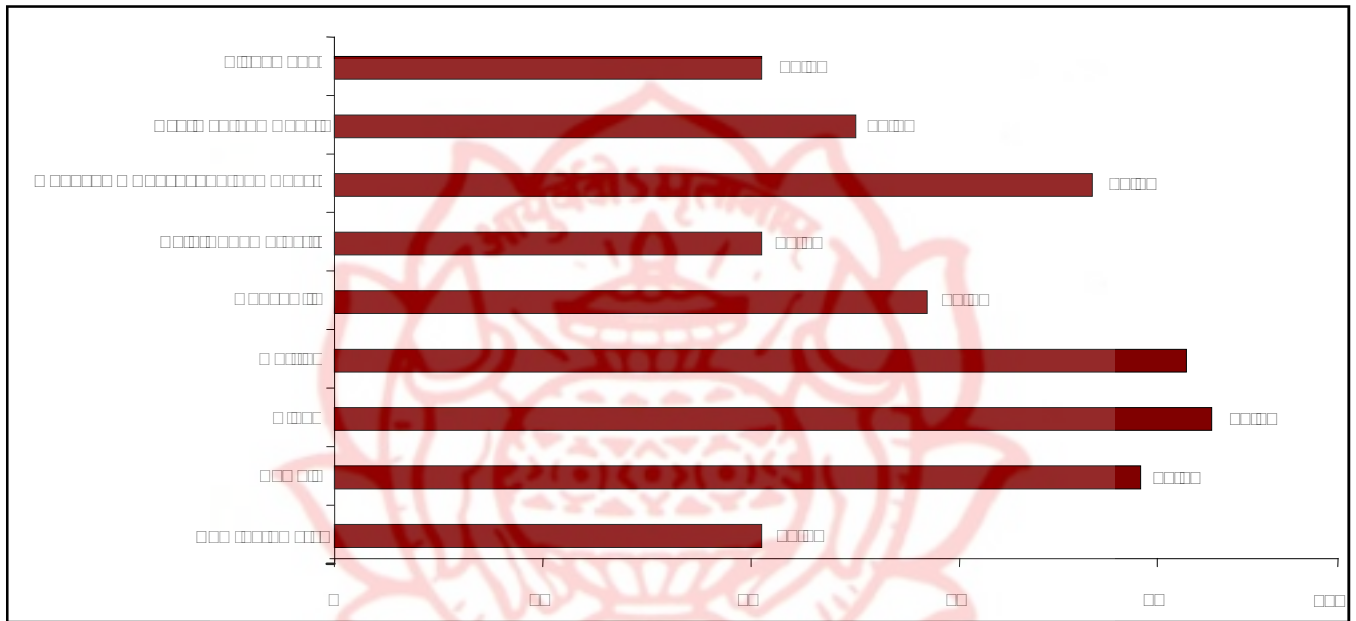
Group A and 17 in Group B) and 7 discontinued (3 in Group A and 4 in Group B). The observation of all 44 patients are shown in Graph No.1.

*Effect of Therapy on Chief Complaints :* Group A : Relief in severity (73.44%), duration (59.09%) & frequency of headache (61.11%) & nausea (90%), vomiting (89.29%), vertigo (78.57%) & aura (76.92%). Group B : Relief in severity (85%), duration (72.73%) and frequency (75%) of headache and nausea (94.44%), vomiting (92.31%), vertigo (90%) & aura (81.25%).

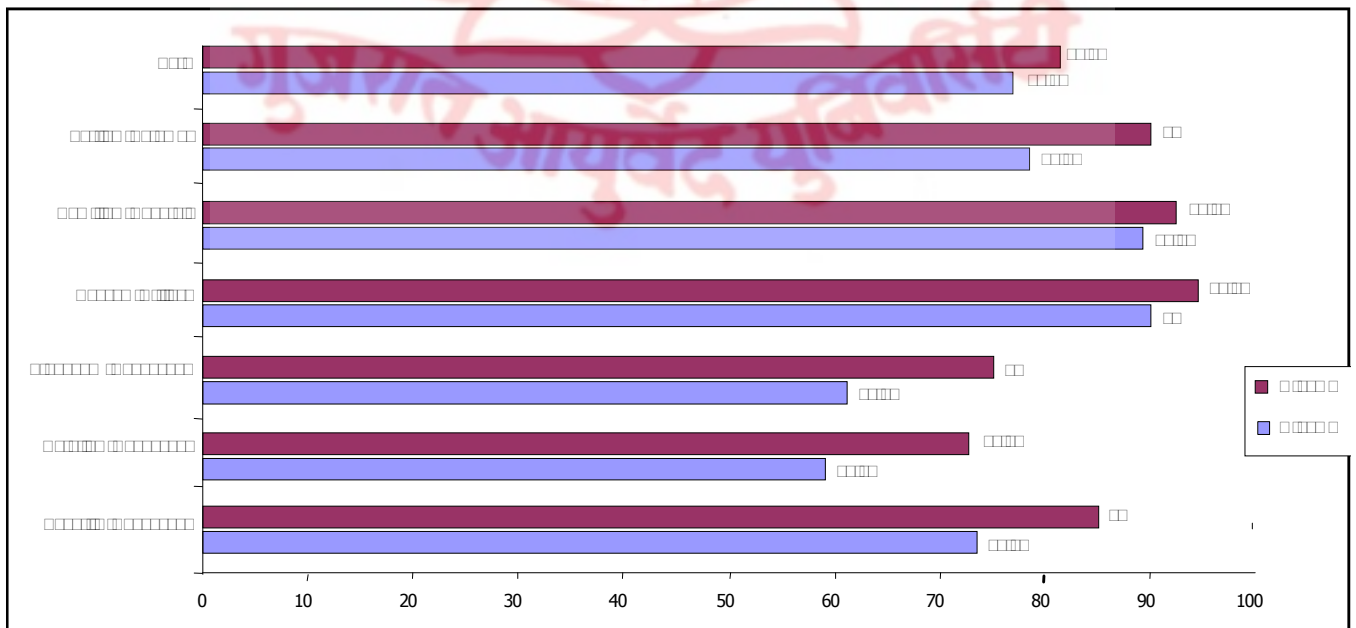
**OBSERVATIONS & RESULTS**

Total 44 patients were registered (23 in Group A and 21 in Group B), out of which 37 had completed (20 in

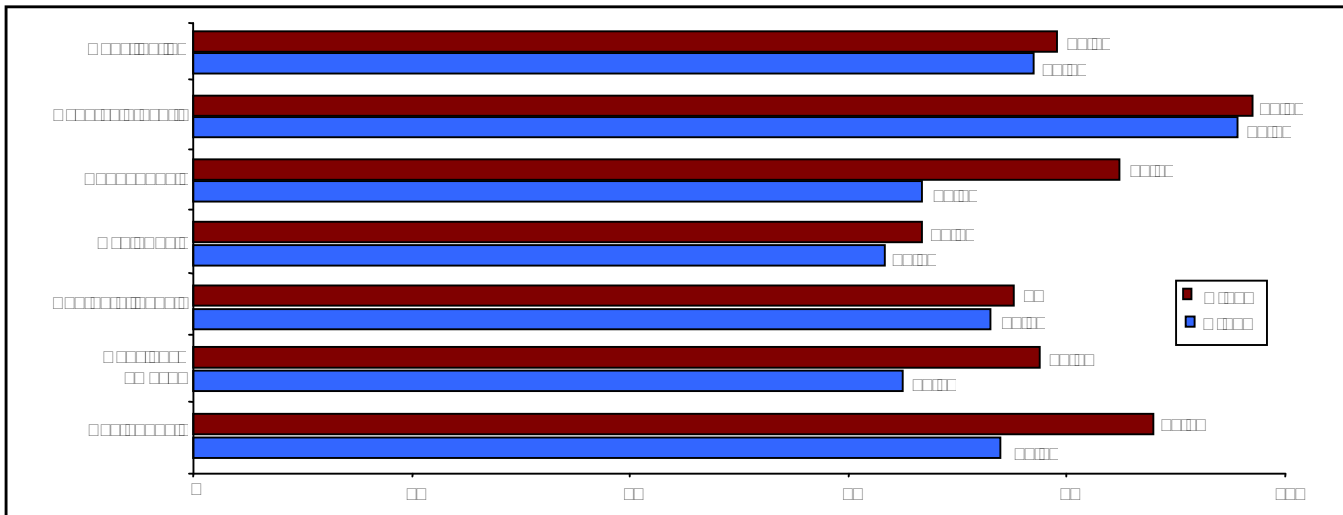
**GRAPH NO. 1 : GENERAL OBSERVATIONS (n=44):**



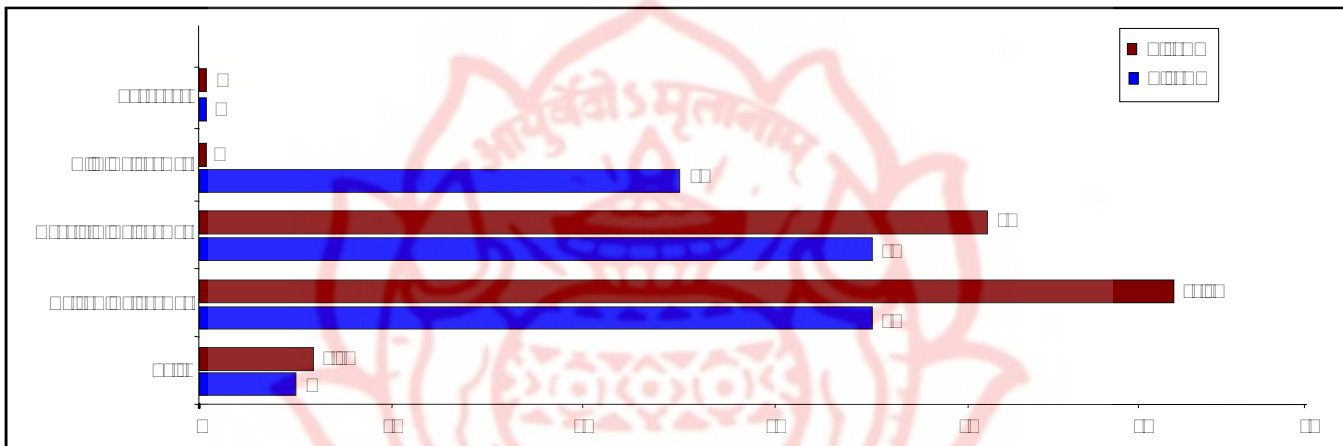
**GRAPH NO. 2 : EFFECT OF THERAPY ON CHIEF COMPLAINTS (n=37):**



**GRAPH NO. 3 : EFFECT OF THERAPY ON ASSOCIATED COMPLAINTS :**



**GRAPH NO. 4 : OVERALL EFFECT OF THERAPY ON 44 PATIENTS OF ARDHAVABHEDAKA :**



*Effect of Therapy on Associaed Complaints :*  
**Group A :** Relief in Photophobia (73.81%), Heaviness of eyes (64.86%), Supraorbital (72.92%), Ocular pain (63.33%) Phonophobia (66.67%), Hyperchlorhydria (95.45%) and Constipation (76.92%)

**Group B :** Relief in Photophobia (87.80%), Heaviness of eyes (77.42%), Supraorbital (75%), Ocular pain (66.67%) Phonophobia (84.71%), Hyperchlorhydria (96.55%) and Constipation (78.95%).

The overall effect of therapy showed that in Group B, 52.94% patients had marked improvement, followed by 41.18% moderate improvement and 5.88% had complete improvement. In Group A, marked and moderate improvement was seen in 35% each, 25% had mild improvement and 5% patients had complete improvement.

**DISCUSSION**

The symptoms 'half sided headache' with its paroxysmal nature is explained in almost all the texts.

Only Acharya Sushruta<sup>3</sup> has mentioned Bhrama along with headache as a symptom. The various types of pain explained by different Acharyas suggest the Vishama nature of Vata dosha. Ardhavabhedaka can be differentiated from other Shiro-roga such as Suryavarta, Shankha, etc. only due to its cardinal feature “half sided headache” and also due to its paroxysmal nature<sup>3</sup>. This cardinal feature also differentiates it from Amlapitta because nausea & vomiting are seen in both the diseases. If the disease Ardhavabhedaka is not treated or neglected due to any reason, then it may become chronic or may lead to various complications such as karna-akshi nasha<sup>2</sup>.

**Probable mode of action of Laghu Sutashekhara Rasa<sup>10-12</sup> :**

Ushna Virya (66.67%), Katu Rasa (40%) and Tikta Rasa (20%) have Deepana - Pachana Karma, which causes Amapachana and thus provides proper metabolism and ultimately balances the Agni.

Snigdha Guna (28.57%), Madhura Vipaka (66.67%) and Madhura Rasa (20%) having the property





## Clinical evaluation of an Ayurvedic therapy– *Sutashekhara Rasa* and *Brihat Jeevakadya Taila Nasya* in the management of *Ardhavabhedaka* (Migraine)

### Research Article

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### Abstract

*Ardhavabhedaka*-hemicranial headache is a psychosomatic disorder: later replaced by migraine a Greek word "half of the head" because the pain of migraine often occurs on one side (classical Migraine) may affect the entire head. The term "migraine" refers to a syndrome of vascular pathology of the cranial blood vessels and is one of the commonest headache encountered in clinical practise. The survey results suggested that both patients and physicians believe migraine treatment is elusive and that patients are becoming increasingly frustrated and dissatisfied with treatment outcomes. Clinically, it is a *Rakta/Pitta* dominant disease; and *Acharya Charaka* opined that the vitiated *Doshas* after reaching *Shirah* vitiates *Rakta* (*Rasavaha* and *Raktavaha Srotas*) there to produce *Shiro Roga* (headache). Its diagnosis is based on mainly clinical history. For the present study, it was planned to compare the result between *Brihat Jeevakadya Taila Nasya* and *Sutashekhara Rasa* orally (*Pitashamaka*, *Raktashodhaka*, *Deepana* etc.) in Treatment Trial group and Flunarizine in Control group. The overall effect of therapy showed that in Trial group 80.00% patients had marked improvement, followed by moderate improvement in 13.33% and complete improvement in 6.67%. In control group marked and moderate improvement was seen in 60.00% and 33.33% respectively; and 6.67% had mild improvement. No any adverse drug reaction was found during whole study. Total 30 patients were registered and from the results and observation which were received from this study it can be concluded that Trial group is showing better results in *Ardhavabhedaka*.

**Key Words:** *Ardhavabhedaka*, *Brihat Jeevakadya Taila*, Migraine, *Sutashekhara Rasa*.

### Introduction:

Headache in general is one of the commonest complain of the people seeking medical help. Of all the disorders that present to the clinician with headache, migraine is the commonest and also the most burdensome. Migraine is one of the most disabling of

neurological disorders. The World Health Organization (WHO) has identified migraine among the world's top 20 leading causes of disability (1). More than 2/3rd of Migraine sufferers either have never consulted a doctor or have stopped doing so (2). Moreover routine use of these drugs leads to GI tract disturbance. In contrast to that *Ayurveda* has a variety of natural medication in the treatment of various varieties of *Shirah-Shoola*, and these recipes are free from above mentioned GIT complications and rather safe in use. Clinically, it is a *Pitta* dominant disease; and *Acharya Charaka* opined that the vitiated *Doshas* after reaching *Shirah*

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vitiates *Rakta* (*Rasavaha* and *Raktavaha Srotas*) there to produce *Shiro Roga* (headache)(3). Thus, *Rakta* is the main *Dushya* in *Ardhavabhedaka*. Its diagnosis is based on mainly clinical history. The study was conducted in I. P. G. T. & R. A., hospital. In this study, 30 patients were selected and *Sutashekhara Rasa* orally and *Brihat Jeevakadhya Taila Nasya* were given for its *Pittashamaka*, *Raktashodhaka*, *Deepana* etc. properties for 45days. For the present study, an attempt has been made to treat “the disease” by identifying the risk factors for the disease and preventing the recurrence of the disease in the individual by explaining *Pathya Apathya*.

For the present study it was planned to evaluate the efficacy of *Brihat Jeevakadya Taila Nasya* and *SutashekharaRasain* the management of *Ardhavabhedaka*.

#### **Aims and objectives:**

The present study was based on following aims and objects:

1. To study and understand the etiopathogenesis of *Ardhavabhedaka* (Migraine) in *Ayurvedic* classical literature.
2. To evaluate the role of adopted line of treatment/ trail drugs in the management of *Ardhavabhedaka* (Migraine).

#### **Materials and methods:**

The study was approved by Institutional Ethics Committee (No. PGT/7/A/Ethics/2013-14/1767 dated on 10/09/2013). Patients were selected from the O. P. D. of Dept. of Shalakyā –Tantra and referred from other dept. of I. P. G. T. & R. A., G. A. U. Jamnagar. Patients’ written informed consent was taken before starting the treatment. Patients were selected using ‘Simple random sampling method’. The study was conducted in 30 subjects.

#### **Diagnostic criteria:**

**Criteria for inclusion:** Age Control group between 20 to 60 years and having sign and symptom of *Ardhavabhedaka* (Migraine) According to *Ayurvedic* Classics as well as Modern science.

#### **Criteria for exclusion:**

Patients having any chronic debilitating disease with other neurological pathology or having Sinusitis, Hypertension, Secondary headache caused by meningitis, tumor, encephalitis, cervical spondylitis and refractive errors, age Control group below 16 & above 60 etc. were excluded from the study.

#### **Grouping:**

##### **Group A-Trial group**

##### **Group B-Control group**

#### **Intervention:**

Before starting the treatment *Deepana-Pachana* with *Sunthi Churna* 2gm 2 times or *Chitrakadi Vati* 2 Tablet thrice a day was given for 3 days followed by *Kostha Shuddhi* (*Mridu Virechana*) with *Triphala Churna* 6gm at bed time was given for 3 days in group A patients.

#### **Group A-Trial group:**

##### **(1) Brihat Jeevakadya Taila Nasya(4):**

*Nasya* was done in the dose of 6 drops in each nostril for 2 sittings of seven days with the interval of 15 days after each sitting. Total duration was one and half month.

##### **(2) Sutashekhara Rasa Vati (5):**

*Vati* was given in the dose of 250mg BD with *Drakshajala Anupana* for one and half month.

**Drakshajala:** 25 gm of dried *Draksha* is soaked in 200 ml of water overnight and in the next day morning, it is crushed and filtered through a clean cloth and that water is used as *Anupana*. (*Anubhuta*)

#### **Group B- Control group:**

Flunarizine Tab 10mg OD was given for 45 days.

Patients were diagnosed on the basis of subjective criteria of diseases.

#### **Investigations:**

Routine hematological and urine analysis were carried out before treatment to rule out any systemic diseases.

### Scoring pattern:

#### Subjective symptoms

The improvement in patients was assessed on the basis of relief in the signs and symptoms of the disease. The details of the score adopted for the main signs and symptoms in this study are as follows:

#### ❖ Severity of Headache

0 = No headache.

1 = Mild headache, patient is aware only if he/she pay attention to it.

2 = Moderate headache, can ignore at times.

3 = Severe headache, can't ignore but he/she can do his/her usual activities.

4 = Excruciating headache, can't do anything.

#### ❖ Frequency of Headache: Assessed in term of (frequency in days)

0 = Nil

1 =  $\geq 20$  days

2 = 15 days

3 = 10 days

4 =  $\leq 5$  days

#### ❖ Duration of Headache: (Assessed in term of hours/day)

0 = Nil

1 = 1-3 hours/day

2 = 3-6 hours/day

3 = 6-12 hours/day

4 = More than 12 hours/day

#### ❖ Nausea:

0 = Nil

1 = Occasionally

2 = Moderate, but does not disturb the routine work

3 = Severe, disturbing routine work

4 = Severe enough, small amount of fluid regurgitating from Mouth

#### ❖ Vomiting:

0 = Nil

1 = Only if headache does not subside

2 = Vomiting 1-2 times

3 = Vomiting 2-3 times

4 = Forced to take medicine to stop vomiting

#### ❖ Vertigo:

0 = Nil

1 = Feeling of giddiness

2 = Patient feels as if everything is revolving

3 = Revolving signs + black outs

4 = Unconscious

#### ❖ Aura:

0 = Nil

1 = Lasts for 5 minutes.

2 = Lasts for 15 minutes

3 = Lasts for 30 minutes

4 = Lasts for 60 minutes

#### ❖ Gradation For Associated Symptoms:

0 = No symptoms

1 = Mild (can do his/her work)

2 = Moderate (forced to stop work)

3 = Severe (forced to take rest)

4 = Excruciating (force to take medicine)

### Overall assessment:

The improvement was assessed on the basis of subjective symptoms and salivary tests (objective parameters).

**Subjective:** The assessment was done by adopting the following scoring pattern for subjective symptoms-

1. Complete Remission: 100% relief in objective and subjective signs and symptoms.
2. Marked improvement: 76 – 99% relief in objective and subjective signs and symptoms.
3. Moderate improvement: 51 – 75% relief in objective and subjective signs and symptoms.
4. Mild improvement: 26 – 50% relief in objective and subjective signs and symptoms.
5. Unchanged: Below 25% relief in objective and subjective signs and symptoms.

### Statistical estimation of results:

The obtained data were analyzed statistically. The values were expressed as percentage of relief and Standard Error Mean. The data were analyzed by paired 't' test. Unpaired 't' test was applied for comparative study.

$P > 0.05$  = Insignificant

$P < 0.05$  and  $0.01$  = Significant

$P < 0.001$  = Highly significant

## Observations and Results

In this clinical trial of *Ardhavabhedaka*, a total number of 30 patients were registered and were randomly distributed into two groups. 15 patients registered in each group. The general observations are shown in FIGURE NO. 1

Observation reveals that, regarding the chief complaints 100% patients were having *Shirah-Shoola* (headache), followed by *Hrillas* (nausea) and *Chhardi* (vomiting) 93. 33% and 80. 00% respectively, *Bhrama* (vertigo) 46. 67%, and *Aura* 66. 67%, which are identical to the textual *Lakshana* (symptoms) of *Ardhavabhedaka* and migraine.

Regarding the associated symptoms 63. 33% patients were having Photophobia, 66. 67% patients were having Phonophobia, 30. 00% were having Ocular pain, 33. 33% were having Eyelid edema, 26. 67% patients had blurring of vision, 23. 33% had Lacrimation, 50. 00% patients had Stiffness of neck followed by other symptoms, which tally with textual *Lakshana* of *Ardhavabhedaka* and migraine.

Regarding the *Shirah-Shoola*, Maximum (76. 67%) patients were having unilateral headache, that also particularly more in frontal and temporal region i. e., 53. 33% each, nature of pain was *Tivra* (sharp) in 96. 67% patients. Regarding the quality of headache, maximum patients (86. 67%) were having *Shankhanistoda*, *Akshi Nishkashanvat Pida* (53. 33%), *Ghatasambheda* (43. 33%) followed by others. The intensity of headache was excruciating in 60% of patients. Maximum patients (53. 33%) were having chronicity of >5 years. Maximum patients (66. 67%) were having gradual onset of headache. The duration >12 hours of headache was seen maximum i. e., 40. 00%. Regarding frequency, the episode at an interval of  $\leq 5$  days was seen maximum i. e., 80. 00%. Maximum patients (63. 33%) were found to be having continuous nature of headache. This shows that majority of the patients either have never consulted a doctor or have stopped doing so, which suggests the chronicity of disease. It was observed that patients rely on painkiller without any

medical advice given by physician, in a hope to get rid of the headache quickly. But it was not going to stop the pathology. And the patients, who were taking anti-migraine drugs, were not responding. This results in chronic migraines i. e., rebound or transformed migraine headache.

The maximum *Nidanas* (etiological factors) observed in patients were *Lavana-Amla Aahara* (66. 67%), *Samshana* (50. 00%), *Vishamashana* (26. 67%), followed by *Ratrijagarana* 26. 67% and *Diwaswapa* 80. 00%. This shows faulty lifestyle, which is accepted by today's generation. Intake of junk food, taking food at any time, fasting habits of females, etc lead to *Agnimandhya* and *Tridosha Dushti*, which contributes chiefly in the pathogenesis of the disease. Also tyramine and other amines present in today's junk and sour-spicy food causes dilation of the nerves in the brain, resulting in a rush of blood. Faulty diet causes Constipation (23. 33%) and Hyperchlorhydria (70. 00%), which was observed by patients at the time of migraine headache.

Similarly *Ratrijagarana* and *Diwaswapa* aggravate *Vata* and *Kapha Dosha* respectively. Also disturbed sleep was observed in maximum patients i. e., 33. 33%. Disturbances such as sleep deprivation, too much sleep, poor quality of sleep and frequent awakening at night are associated with both migraine and tension headaches, whereas improved sleep habits helps in reducing the frequency of migraine headaches. Sleep also has been reported to shorten the duration of migraine headaches.

Environmental factors, like *Dhupa* (86. 67%), *Dhuma* (23. 33%), *Dhuli* (20. 00%) causes the *Atiyoga* of *Indriyas* and serves as a triggering factor. Female's emotional nature, the responsibilities of the family were the cause of mental factors such as *Chinta* (86. 67%), *Krodha* (70. 00%), *Bhaya* (50. 00%) and *Shoka* (43. 33%).

Sunlight was observed as maximum triggering factor i. e., 83. 33%. Bright lights and other high intensity visual stimuli can cause headaches in healthy subjects as well as patients with migraine headaches, but

migraine patients seem to have a lower than normal threshold for light-induced pain. Sunlight, television and flashing lights all have been reported to precipitate migraine headaches.

Emotional (73.33%) and physical stress (40.00%) also acts as triggering factor. This may lead to *Dhatukshaya* and vitiation of *Vata Dosha*. Awakening/Journey (56.66%) served as triggering factor because it also leads to vitiation of *Vata Dosha*. Skipping breakfast/fasting habits (40.00%) served as triggering factor because it possibly may precipitate migraine headaches by causing the release of stress-related hormones and lowering blood sugar.

#### **Effect of therapies on signs & symptoms:**

Regarding effect of therapy on Chief complaints, both the group showed significant results. Statistically highly significant ( $<0.001$ ) improvement in severity (81.03%), duration (73.46%) and frequency (75.86%) of headache was obtained in trial group, followed by statistically highly significant ( $<0.001$ ) improvement in severity (66.66%), duration (63.41%) and frequency (61.11%) of headache in Control group. TABLE NO. 1 & 2

Effect of therapy on other associated complaints showed that in trial group 95.12% relief in Nausea, 82.75% in Vomiting, 100% in Vertigo and 100% in Aura was obtained, which was statistically significant. While in Control Group, Nausea was relieved by 76.66%, Vomiting by 94.44%, and Vertigo by 63.63%, which were statistically significant. But no significant result in Aura ( $<0.05$ ) was obtained. This shows that Trial group therapy was more effective than control group therapy on chief complaints. TABLE NO. 3 & 4

The associated symptoms like Blurring of vision, Photophobia, Ocular pain, Eyelid oedema, Phonophobia were relieved by 96.55%, 90.00%, 80.00%, 90.91%, 96.55 in Treatment Trial group and 72.72%, 88.23%, 80.00%, 85.71% and 89.47 in Control group respectively, which were statistically highly significant ( $<0.001$ ). The other associated symptoms like Hyperchlorhydria

and Constipation were relieved by 92.85% and 100% in Trial group which were statistically highly significant and 35.29% and 60.00% in Control group respectively, which were statistically insignificant. This shows that Trial group therapy was more effective than control group therapy on associated symptoms. TABLE NO. 5 & 6

#### **Total effect of therapy:**

The overall effect of therapy showed that in Trial group 80.00% patients had marked improvement, followed by moderate improvement in 13.33% and complete improvement in 6.67%. In control group marked and moderate improvement was seen in 60.00% and 33.33% respectively; and 6.67% had mild improvement. Not a single case was noted unchanged in any of the groups. FIGURE NO. 2

#### **Probable Mode of action:**

In the present study *Sutashekhara Rasa* used for systemic treatment of *Ardhavabhedaka*. *Sutashekhara Rasa* is mentioned in *Yogratnakara* for *Amlapitta rogadohikara*. The compound was slightly modified to meet the cost factor i. e. *Swarna Bhasma* was replaced by *Swarna Makshika Bhasma*(6). In *Ardhavabhedaka*, the root cause is *Agnimandhya*. So if *Agnimandhya* is treated, best production of *Rasa-Rakta Dhatu* occurs. We can't establish that the particular drug acts by their *Rasa, Guna, Virya, Vipaka* mentioned in *Yoga*.

#### **Dominant Rasa Panchaka of Sutashekhara Rasa(7)**

*Rasa is Katu, Tikta, Madhura, Guna is Snigdha, Laghu, Tikshana, Virya is Ushna, Vipaka is Katu and Doshgnata is Vata-Pitta shamaka.*

*KatuRasa* and *TiktaRasa* have *Deepana – Pachana Karma*(8), which causes *Amapachana* and thus provides proper metabolism and ultimately balances the *Agni*. Thus these *Rasa* works at *AgniDushti* stage in the *Samprapti* of *Ardhavabhedaka* and pacify the *Kapha Dosha*.

*Ushna Viryahas Deepana – Pachana property, which acts as*

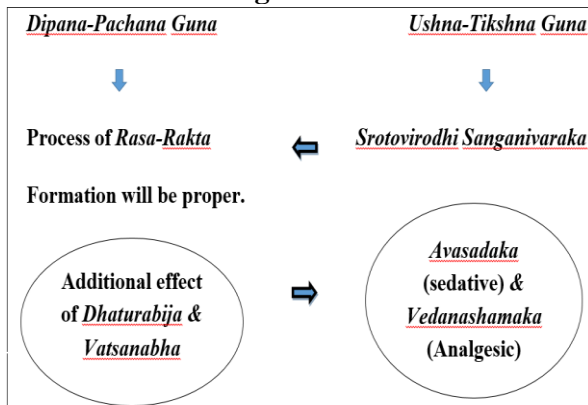


*Agnideepaka*. It also softens and liquefies the morbid *Doshas* which are ultimately removed due to *Virechaka Karma*, thereby relieving constipation.

*Snigdha Guna*, and *Madhura Rasa* having the property *Srushtavinamutra*, which relieves the symptoms of constipation and hyperchlorhydria and pacify the *Vata Dosh* and *Pitta Dosh*.

*Snigdha Guna* has *Kledana Karma* (9) which acts as a binding agent and also strengthens the efficacy of *Dhatu* by providing proper nourishment. *Laghu Guna* and *Tikshna Guna* have *Sroto-shodhaka* property, which helps in expelling the morbid *Doshas*

**Image No 1:**



*Sutashekhara* relives *Amlata* and *Tikshanta* of *Pitta* by acting on *Amashaya* and *Pakvashaya*. Thus it regularizes *Pittotpati*. The driver *Dosha Vata* also gets pacified by the contents hence *Chhardi* (vomiting) and *Bhrama* (vertigo) subsides in *Ardhavabhedaka* by use of *Sutashekhara Rasa*. **It works as *Doshpratnyika* and *Vyadhipratnyika Chikitsa* in *Ardhavabhedaka*.**

The food gets putreficated by improper digestion in intestine (*Vidagdha jeerna*) and produces *Ama-visha*. So *Rasa-Rakta Dusti* and *Vata Vikruti* occurs. By this process different types of diseases are produced. Among them one of the disease is *Ardhavabhedaka*. ***Sutashekhara* is the best line of treatment in such type of *Ama-visha*.** The compound drug is thus having *Shothahara*, *Vedanasthapana*,

*Deepana, Pachana* and *Tridosha Shamaka Karma*.

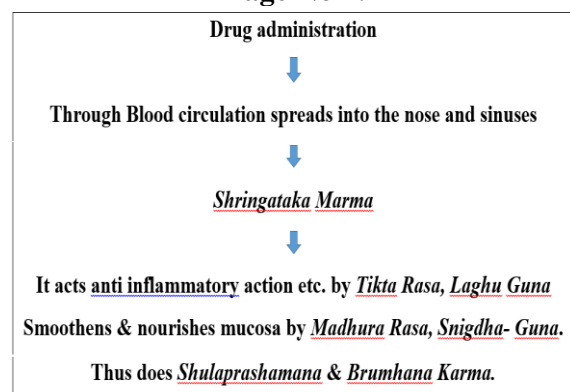
### Probable mode of action of *Brihat Jeevakadya Taila Nasya*

There are various modalities for the alleviation of *Shirahshoola*. According to *Acharya Charaka*, *Nasyakarma* is the best treatment for the *Shiro Roga* (10), because, nose is the nearest pathway for the elimination of *Doshas* from the head. *Ardhavabhedaka* being one of the *Shiroroga* can be best treated with *Nasya* in which morbid *Doshas* are situated in the head. In the present study *Brihat Jeevakadya Taila* used for *Nasya* for treatment of *Ardhavabhedaka*. *Brihat Jeevakadya Taila* is indicated in *Chakradutta* for *Vata-Pittaja Shirahshoola*. *Jeevaka* and *Rishabhaka* will be represented by *Vidarikanda* due to its unavailability.

### Importance of *Snehana Nasya*

*Nasya* is the only procedure which can directly influence *Pranadhistan* and *Indriya* (11):

**Image No 2:**



### *Dravyas in Taila Paka are Mrudupaka* (12)

### Biphasic nature of this type of process (*Mrudupaka*) i. e.

1. Aqueous soluble part of active principle will be easily absorbed through mucosa.
2. Fat soluble content can be easily assimilated through nerve endings.

**Dominant Rasa Panchaka of Brihat Jeevakadya Taila**

*Rasa is Madhura, Tikta, Gunais Guru, Snigdha, Viryais Sheeta, Vipakais Madhura, Doshgnata is Vata-Pitta shamaka and Dhatuprabhavais Brihaniya, Balya, Jivaniya Samprapti Vighatana*

In Brihat Jeevakadya Taila most of drugs are Brihaniya, Balya, Rasayana, Jivaniya, Dahaprasamaka. By virtue of its Madhura-Tikta Rasa; Guru-Snigdha properties it pacifies Vata-Pitta Dosha. By Vata pacifying action may regularize motility of the blood vessel wall. By Pitta Shamana properties it may be inhibiting release of inflammatory mediators like serotonin, Prostaglandins etc. Action at the level of Srotasa: - By improving the microcirculation thus allowing improved tissue perfusion and nourishment.

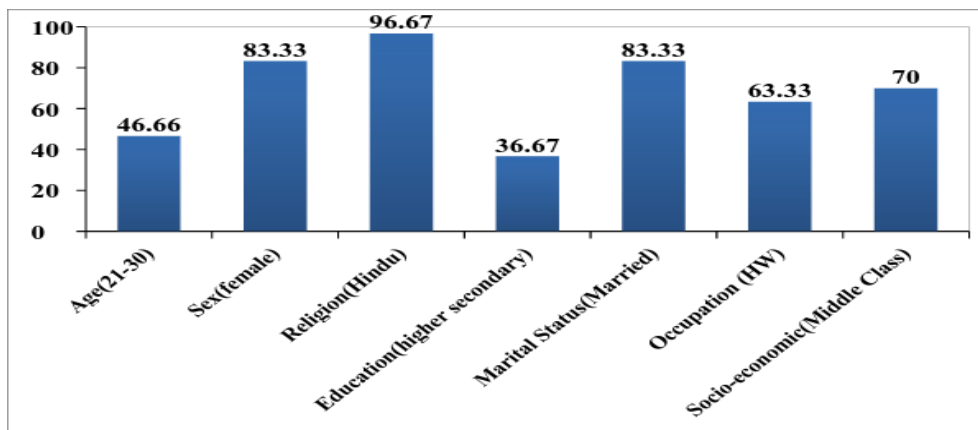
Such drugs probably cause Srotovishodhana or cleaning of microchannels thus promoting the

microcirculatory function, which in turn produces the desired Rasayana effect and improved nutritional status.

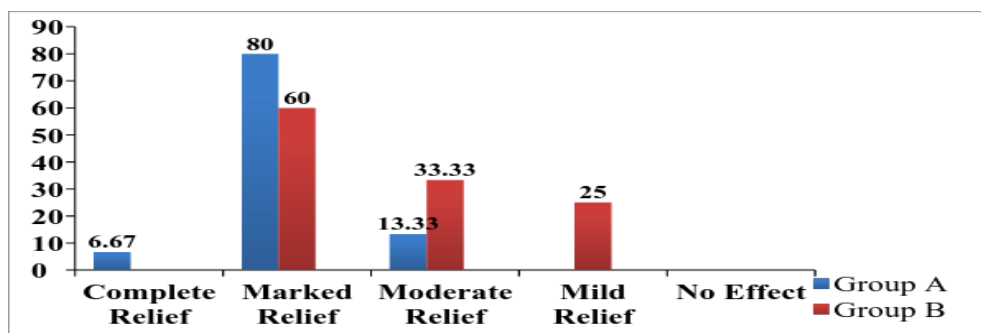
**Conclusion:**

On the basis of similarities between the signs, symptoms, complications, prognosis, chronicity and etymology; Ardhavabhedaka and Migraine are similar clinical entities. Migraine is a clinical diagnosis based on symptoms that are subjective and verifiable only by the patient. Ardhavabhedaka is clinically Pitta dominantly Tridoshaja Vyadhi. Patients from 21-40 years of age group, females, housewives, married and middle class people were more prone to Migraine. Migraine sufferers had severe intensity and unilateral episodic pain with continuous rhythm. It can be inferred that in this study Trial group where in Sutashekhara Rasa along with Brihat Jeevakadya Taila Nasya is given; was showing better results in Ardhavabhedaka (Migraine) than Control group (Flunarizine).

**Figure no. 1: General Observations (n=30): %**



**Figure no. 2: Overall Effect of Therapy:**





**TABLE – 01: EFFECT ON HEADACHE (CHIEF COMPLAINT) IN 15 PATIENTS OF ARDHAVABHEDAKA IN TRIAL GROUP.**

Headache	n	Mean		% of relief	S. D.	S. E.	T	P
		B. T.	A. T.					
Severity	15	03. 87	0. 73	81. 03	0. 35	0. 09	34. 49	<0. 001
Duration	15	03. 27	0. 73	73. 47	0. 83	0. 21	11. 77	<0. 001
Frequency	15	03. 87	0. 80	75. 86	0. 59	0. 15	20. 00	<0. 001

**TABLE – 02: EFFECT ON HEADACHE (CHIEF COMPLAINT) IN 15 PATIENTS OF ARDHAVABHEDAKA IN CONTROL GROUP.**

Headache	n	Mean		% of relief	S. D.	S. E.	T	P
		B. T.	A. T.					
Severity	15	3. 80	1. 27	66. 66	0. 91	0. 24	10. 72	<0. 001
Duration	15	2. 73	1. 00	63. 41	1. 22	0. 32	05. 49	<0. 001
Frequency	15	3. 60	1. 40	61. 11	0. 77	0. 20	11. 00	<0. 001

**TABLE – 03: EFFECT ON CHIEF COMPLAINTS IN 15 PATIENTS IN TRIAL GROUP.**

Symptoms	n	Mean		% of relief	S. D.	S. E.	T	P
		B. T.	A. T.					
Hrillas (Nausea)	13	2. 73	0. 13	95. 12	1. 30	0. 33	7. 76	<0. 001
Chhardi (Vomiting)	12	1. 93	0. 07	82. 76	1. 19	0. 31	6. 09	<0. 001
Bhrama (Vertigo)	05	1. 60	00	100	0. 55	0. 24	6. 53	<0. 05
Purvabhasa (Aura)	11	1. 20	00	100	0. 42	0. 13	9. 00	<0. 001

**TABLE – 04: EFFECT ON CHIEF COMPLAINTS IN 15 PATIENTS OF ARDHAVABHEDAKA IN CONTROL GROUP.**

Symptoms	n	Mean		% of relief	S. D.	S. E.	T	P
		B. T.	A. T.					
<i>Hrillas</i> (Nausea)	14	3. 00	0. 64	78. 57	1. 08	0. 29	8. 15	<0. 001
<i>Chhardi</i> (Vomiting)	12	1. 83	0. 08	95. 45	0. 87	0. 25	7. 00	<0. 001
<i>Bhrama</i> (Vertigo)	09	1. 67	0. 44	73. 33	0. 97	0. 32	3. 77	<0. 05
<i>Purvabhasa</i> (Aura)	09	1. 00	0. 44	55. 55	0. 58	0. 18	3. 16	0. 01

**TABLE-05: EFFECT ON ASSO. COMPLAINTS IN 15 PATIENTS IN TRIAL GROUP**

Associated complaints	n	Mean		% of relief	S. D.	S. E.	T	P
		B. T.	A. T.					
<b>Ocular complaints</b>								
Blurring of vision	03	1.50	00	100	0.71	0.50	3.00	>0.05
Lacrimation	04	1.25	00	80.00	0.50	0.25	5.00	<0.05
Eyelid oedema	06	1.50	0.17	88.89	0.52	0.21	6.32	0.001
Ocular pain	05	2.20	0.20	90.91	1.23	0.55	3.65	<0.05
Supra orbital pain	03	1.67	0.33	80.00	0.58	0.33	4.00	<0.05
Heaviness of eyes	04	2.50	0.25	90.00	1.29	0.63	3.57	<0.05
Photophobia	11	2.63	0.09	96.55	0.82	0.25	10.29	<0.001
Burning sensation	03	2.00	0.50	75.00	0.71	0.50	3.00	>0.05
<b>Ear complaints</b>								
Phonophobia	11	2.64	0.09	96.55	0.82	0.25	10.29	<0.001
<b>GIT complaints</b>								
Constipation	04	1.50	00	100	0.58	0.29	5.20	<0.01
Hyperchlorhydria	09	1.56	0.11	92.85	0.53	0.18	8.22	<0.001
<b>Other complaints</b>								
Sleep disturbance	03	1.00	1.00	80.00	00	00	+inf	<0.001
Mood swings	07	1.14	0.28	75.00	0.69	0.26	3.28	<0.01
Stiffness of neck	06	1.33	0.50	62.50	0.98	0.40	2.08	>0.05
Loss of memory	04	1.00	0.25	75.00	0.50	0.25	3.00	<0.05
Fear	03	1.00	00	100	00	00	+inf	<0.001

**TABLE -06: EFFECT ON ASSOCIATED COMPLAINTS IN 15 PATIENTS OF ARDHAVABHEDAKA IN CONTROL GROUP.**

Associated complaints	n	Mean		% of relief	S. D.	S. E.	T	P
		B. T.	A. T.					
<b>Ocular complaints</b>								
Blurring of vision	06	1.83	0.50	72.72	0.52	0.21	6.32	0.001
Lacrimation	03	1.67	00	100	0.58	0.33	5.00	<0.05
Eyelid oedema	04	1.75	0.25	85.71	0.58	0.29	5.19	<0.05
Ocular pain	04	1.25	0.25	80.00	00	00	+inf	<0.001
Photophobia	08	2.12	0.25	88.23	0.64	0.23	8.27	<0.001
<b>Ear complaints</b>								
Phonophobia	09	2.11	0.22	89.47	0.60	0.20	9.43	<0.001
Earache	05	1.50	00	100	0.58	0.29	5.19	<0.05
<b>GIT complaints</b>								
Constipation	03	1.67	0.67	60.00	00	00	+inf	<0.001
Hyperchlorhydria	11	1.42	0.92	35.29	0.52	0.15	3.32	<0.01

Other complaints								
Sleep disturbance	05	1. 14	0. 29	75. 00	0. 69	0. 26	3. 29	<0. 05
Mood swings	09	1. 11	0. 11	90. 00	00	00	+inf	<0. 001
Stiffness of neck	09	1. 22	0. 22	81. 81	0. 50	0. 17	6. 00	<0. 001
Loss of memory	04	1. 25	0. 50	60. 00	0. 50	0. 25	3. 00	>0. 05
Fear	05	1. 40	0. 40	71. 42	0. 70	0. 32	3. 16	<0. 05

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# Research Works carried out on *Ardhavabhedaka* (Migraine) in the Department of Shalakyatantra, Post Graduate Teaching and Research in Ayurveda, Jamnagar

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## Abstract

*Ardhavabhedaka is a Tridoshaja disease; clinically, it is a Rakta/Pitta dominant disease. Ardhavabhedaka- hemicranial headache is a psychosomatic disorder: later replaced by migraine a Greek word "half of the head". Present study is aimed to highlight the effective role of Ayurvedic medicines, i.e. Laghu Sutashekhara Rasa, Sutashekhara Rasa, Brihat Dashmoola Taila, Brihat Jeevakadya Taila and Go-ghrita Nasya. Till date, total three clinical researches have been carried out in the subject of Ardhavabhedaka at Department of Shalakyatantra, IPGT & RA, Jamnagar. From the data obtained in clinical studies, trial drugs were found to be effective both on general and local symptoms as well as on associated symptoms.*

**Keywords:** *Ardhavabhedaka, Brihat Dashmoola Taila, Laghu Sutashekhara Rasa, Migraine*

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## INTRODUCTION

*Ardhavabhedaka is a Tridoshaja disease [1]; clinically, it is a Rakta/Pitta dominant disease; and Acharya Charaka opined that the vitiated Doshas after reaching Shirah vitiates Rakta (Rasavaha and Raktavaha Srotasa) there to produce Shiro Roga (headache) [2]. Ardhavabhedaka, hemicranial headache is a psychosomatic disorder: later replaced by migraine, a Greek word "half of the head", because the pain of migraine often occurs on one side (Classical Migraine) but may also affect the entire head.*

The survey results suggested that both, patients and physicians believe migraine treatment is elusive and that patients are becoming increasingly frustrated and dissatisfied with treatment outcomes. Present study is aimed to highlight the effective role of ayurvedic medicines, i.e. *Laghu Sutashekhara Rasa, Sutashekhara Rasa, Brihat Dashmoola Taila, Brihat Jeevakadya Taila and Go-ghrita Nasya*. Till date, total three clinical researches have been carried out in the subject of *Ardhavabhedaka* at Department of Shalakyatantra, Institute for Post Graduate

Teaching and Research in Ayurveda (IPGT & RA), Jamnagar.

## Details of Research Works on *Ardhavabhedaka*

Till date a total of three research works have been carried out on *Ardhavabhedaka* in Shalakyatantra Department, IPGT & RA, Gujarat Ayurved University, Jamnagar. Details are given in Table 1.

**Table 1:** *Details of Clinical Research Works on Ardhavabhedaka at Department of Shalakyatantra, IPGT & RA, Jamnagar.*

Study No.	Name of Researcher	Year	No. of Patients Registered
1	Hemal <i>et al.</i>	2008	44
2	Mata <i>et al.</i>	2015	30
3	Vaghela <i>et al.</i>	2015	150

## MATERIALS AND METHODS

For clinical study, patients attending OPD and IPD of Department of Shalakyata, IPGT & RA, hospital fulfilling the criteria for diagnosis were selected randomly, irrespective of their

*Desha, Jati, Prakriti, Sattva*, etc. Patients' written informed consent was taken before starting the treatment.

### Diagnostic Criteria

#### Criteria for Inclusion

Age control group between 20 and 60 years and having sign and symptom of *Ardhavabhedaka* (Migraine) according to *Ayurvedic* classics as well as modern science.

#### Criteria for Exclusion

Patients having any chronic debilitating disease with other neurological pathology or having sinusitis, hypertension, secondary headache caused by meningitis, tumor, encephalitis, cervical spondylitis and refractive errors, age control group below 16 and above 60, etc. were excluded from the study.

### Method of Sampling

Open clinical trial and simple random sampling method was adopted. Details are given in Table 2.

### Drugs

All the ayurvedic trial drugs were prepared in the pharmacy of Gujarat Ayurved University, Jamnagar and pharmacognostical and analytical studies were done in laboratories of

IPGT & RA, Gujarat Ayurved University, Jamnagar.

### Investigations

Routine haematological, urine and blood sugar level analyses were carried out before treatment to rule out any disease. Digital PNS X-ray, ophthalmologic fundus examination, nasal endoscopy and CT-SCAN was done wherever required.

### Scoring Pattern

- *Subjective Criteria:* The improvement in patients was assessed on the basis of relief in the signs and symptoms like severity of headache, frequency of headache, duration of headache, nausea, vomiting, aura, vertigo, associated symptoms of the disease.
- *Overall Assessment:* An assessment scale was made to assess the rate of improvement. At the end of treatment, the results in view of percentage of relief were classified.
- *Statistical Estimation of Results:* The obtained data were analyzed statistically. The values were expressed as percentage of relief and standard error mean. The data were analyzed by paired 't' test. Unpaired 't' test was applied for comparative study.

**Table 2: Details of Intervention of Three Research Works.**

Study No.	Name of Researcher	No. of Groups	Details of Intervention
1	Hemal et al. [3]	2	<b>Group A:</b> <i>Laghu Sutashekhara Rasa</i> (LSR) 500 mg thrice per day orally for six weeks [4]. <b>Group B:</b> LSR 500 mg thrice per day orally for two months. <i>Brihata Dashamoola Taila</i> (BDT) for <i>Nasya</i> 6–8 drops in each nostril. Three sittings of seven days at the interval of one week after each sitting for six weeks.
2	Mata et al. [5]	2	<b>Group A:</b> <i>Sutashekhara Rasa</i> (SR) 250 mg BD along with <i>Brihat Jeevakadya Taila Nasya</i> (BJT) was done in the dose of six drops in each nostril for two sittings of seven days with the interval of 15 days after each sitting [6]. Total duration was 45 days. <b>Group B:</b> Flunarizine 10 mg OD for 45 days.
3	Vaghela et al. [7]	4	<b>Group A:</b> LSR 500 mg thrice per day orally for two months. <b>Group B:</b> BDT for <i>Nasya</i> 6–8 drops in each nostril. Four sittings of seven days at the interval of one week for two months. <b>Group C:</b> Placebo tablet prepared by wheat floor. 500 mg tablet thrice per day orally for two months. <b>Group D:</b> <i>Go-Ghrita Nasya</i> 6–8 drops in each nostril. Four sittings of seven days at the interval of one week for two months.

**Table 3: The Overall Effect of Therapy (%).**

Assessment of Results	Study 1		Study 2		Study 3			
	Group A	Group B	Group A	Group B	Group A	Group B	Group C	Group D
Complete relief	05.00	05.88	06.67	00	38.00	02.23	00	2.22
Marked relief	35.00	52.94	80.00	60.00	36.00	16.00	00	28.89
Moderate relief	35.00	41.00	13.33	33.33	16.00	21.00	00	48.89
Mild relief	25.00	00	00	25.00	10.00	07.00	10.00	20.00
No relief	00	00	00	00	00	00	90.00	00

## RESULTS

Hemal, in her study (n=44) reported that Group B, i.e. LSR along with BDT *Nasya* provided better results in all chief complaints and in associated complaints. Statistically highly significant ( $p < 0.001$ ) result was found in Group B in comparison to Group A, i.e. LSR. Mata, in her study (n=30) reported that Group A, i.e. SR along with BJT *Nasya* provided better results in all chief complaints and in associated complaints.

Statistically highly significant ( $p < 0.001$ ) result was found in Group A in comparison to Group B, i.e. Flunarizine. Vaghela, in his project work (n=150) reported that LSR is more effective than BDT *Nasya* and *Go Ghrita Nasya* in all chief complaints and in associated complaints. Statistically highly significant ( $p < 0.001$ ) result was found in LSR in comparison to other drugs. Details are given in Table 3

## DISCUSSION

The symptoms 'half side headache' with its paroxysmal nature is explained in almost all the texts. Only *Acharya Sushruta* has mentioned *Bhrama* along with headache as symptom [8]. The various types of pain explained by different Acharyas suggest the *Vishama* nature of *Vata Dosha*. *Ardhavabhedaka* can be differentiated from other *Shiroroga* such as *Suryavarta*, *Shankhaka* etc. only due to its cardinal feature half side headache and also due to its paroxysmal nature [8].

This cardinal feature also differentiates it from *Amlapitta* because nausea and vomiting are seen in both the diseases. Till date, a total of

three research works have been carried out on *Ardhavabhedaka* in dept. of Shalakyatantra, IPGT & RA, Jamnagar. Among them two research works were on LSR and BDT, one on SR and BJT.

In the present study, LSR and SR were used for systemic treatment of *Ardhavabhedaka*. In SR, the compound was slightly modified to meet the cost factor, i.e. *Swarna Bhasma* was replaced by *Swarna Makshika Bhasma* [9]. In *Ardhavabhedaka*, the root cause is *Agnimandhya*. So if *Agnimandhya* is treated, best production of *Rasa-Rakta Dhatu* occurs. *Sutashekhara* relives *Amlata* and *Tikshanta* of *Pitta* by acting on *Amashaya* and *Pakvashaya*. Thus it regularizes *Pittotpati*. The driver *Dosha Vata* also gets pacified by the contents hence *Chhardi* (vomiting) and *Bhrama* (vertigo) subsides in *Ardhavabhedaka* by use of these drugs. The food gets putreficated by improper digestion in intestine (*Vidagdhajeerna*) and produces *Ama-visha*. So *Rasa-Rakta Dusti* and *Vata Vikruti* occur. By this process, different types of diseases are produced. Among them, one disease is *Ardhavabhedaka*. Both LSR and SR are the best lines of treatment in such type of *Ama-visha*.

### Probable Mode of Action of Nasya

*Nasyakarma* is the best treatment for the *Shiro Roga*, because nose is the nearest pathway for the elimination of *Doshas* from the head [10]. *Ardhavabhedaka* being one of the *Shirorogas* can be best treated with *Nasya* in which morbid *Doshas* are situated in the head. *Nasya* is the only procedure, which can directly influence *Pranadhistan* and *Indriya* [11]. *Dravyas* in *Taila Paka* are *Mrudupaka* [12].



Biphasic nature of this type of process (*Mrudupaka*), i.e.:

1. Aqueous soluble part of active principle will be easily absorbed through mucosa.
2. Fat soluble content can be easily assimilated through nerve endings.

### Samprapti Vighatana

In study of Hemal *et al.* and Vaghela *et al.* BDT used *Nasya* for treatment of *Ardhavabhedaka* [13]. Most of the contents in BDT are having *Shothahara*, *Vedanasthapana*, *Deepana*, *Pachana* and *Tridosha Shamaka Karma*. In the study of Shweta *et al.*, BJT was used for *Nasya* [14].

In BJT, most of drugs are *Brihaniya*, *Rasayana*, *Jivaniya*, *Dahaprasamaka*. By virtue of its *Madhura-Tikta Rasa* and *Guru-Snigdha* properties it pacifies *Vata-Pitta Dosha*. By *Vata* pacifying action may regularize motility of the blood vessel wall. By *Pitta Shamana* properties it may be inhibiting release of inflammatory mediators like serotonin, Prostaglandins etc. Action at the level of *Srotasa*, it may improve the microcirculation thus allowing improved tissue perfusion and nourishment.

Such drugs probably cause *Srotovishodhana* or cleaning of microchannels thus promoting the microcirculatory function, which in turn produces the desired *Rasayana* effect and improved nutritional status. *Ghrta* is supreme in *Jangama Sneha*. By virtue of its *Sanskaruvartana* property, it attains the properties of ingredients without losing its own. *Ghrta* is effective in subsiding *Pittaja* and *Vataja* disorders; it improves *Dhatu*s and is overall booster for improving *Ojas* [15]. Digestion, absorption and delivery to the target organ are made easy when any drug is processed with *Ghrta* due to its lipophilic action. Anti-oxidant effect of *Go-Ghrta* is due to its Vitamin A and Vitamin E content [16].

### CONCLUSION

Patients from 21–40 years of age group, females, house wives, married and middle class people were more prone to migraine. Migraine sufferers had gradual onset with severe intensity and unilateral episodic pain

with continuous rhythm. Triggering factors described in modern texts are the *Nidanas* mentioned by our ancient *Acharyas*. Hence, ayurvedic medicines, i.e. LSR and SR are more effective in management of *Ardhavabhedaka* in comparison to modern medicines and placebo.

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**Ayurvedic management of *Ardhavabhedaka* (Migraine)**

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**Abstract**

*Ardhavabhedaka* defines *Ardha Mastaka Vedana*. Migraine, the most common cause of vascular headache afflicts approximately 15% of women and 6% of men. Migraine can often be recognized by its activators like stress, lack of sleep, worries, red wine, menses, estrogen etc. and by its deactivators like sleep, relaxation, meditation, pregnancy, exhilaration and drugs. Modern life style and stress are the main causative factors for the condition. Many medications have been tried and a many are still under research, but modern drugs are not acceptable due to their inherent drawbacks. In contrast, Ayurveda has a variety of natural medication in the treatment of *Ardhavabhedaka*. It was planned to compare the results between *Laghu Sutashekhara Rasa* orally in Group A, *Brihat Dashamoola Taila Nasya* in Group B, placebo drug in Group C and *Goghrita Nasya* in Group D. Total 150 patients were selected. The overall effect of therapy showed that in Group A, 38% patients cured while 36% patients showed marked improvement. In Group B, 46.67% patients moderately improved while 35.55% patients showed marked improvement. In Group C, 90% patients did not show considerable change. In Group D, 48.89% patients moderately improved and 28.89% patients showed marked improvement. No any adverse drug reaction was found during the whole study. From the results and observation it can be concluded that Group A shows better results in *Ardhavabhedaka*.

**Keywords:** *Brihat Dashmoola Taila, Laghu Sutashekhara Rasa, Nasya*

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## A Randomized clinical trial on *Ardhavabhedaka*– Migraine and its *Ayurvedic* management

### Research Article

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### Abstract

*Ardhavabhedaka* defines *Ardha Mastak Vedana*. The word migraine is derived from the Greek word hemi-cranias, meaning "half of the head". Migraine is now recognized as a chronic illness, not simply a headache. Many medications have been tried and a lot are still in research work also, but modern drugs are not acceptable due to their drawbacks. In contrast to that *Ayurveda* has a variety of natural medication in the treatment of *Ardhavabhedaka*. It was planned to compare the result between *Laghu Sutashekhara Rasa* orally in Group A, *Brihat Dashamoola Taila Nasya* in Group B, placebo drug in Group C and *Go-ghrita Nasya* in Group D. The overall effect of therapy showed that in Group A 38% patients cured and 36% patients got marked improvement. In Group B 46.67% patients moderately improved and 35.55% patients marked improved. In Group C 90% patients unchanged. In Group D 48.89% patients moderately improved and 28.89% patients marked improved. No any adverse drug reaction was found during whole study. Total 150 patients were registered and from the results and observation which were received from this study it can be concluded that Group A is showing better results in *Ardhavabhedaka*.

**Key Words:** *Brihat Dashmoola Taila, Go-ghrita, Laghu Sutashekhara Rasa, Nasya.*

### Introduction:

Headache has troubled mankind from dawn of civilization. Neurovascular headaches are the second most common primary headaches, which includes migraine(1). The term "migraine" refers to a syndrome of vascular spasms of the cranial blood vessels. Migraine is now recognized as a chronic illness, not simply a headache(2). Many medications have been tried and a lot are still in research work also, but modern drugs are not acceptable due to their drawbacks. All the medications, either the older one or the newly available one have a lot of side effects (GIT distress, etc). In contrast to that *Ayurveda* has a variety of natural medication in the treatment of various types of *Shiro-Roga*. Thus, here an attempt has been made to evaluate the efficacy of *Shamana Yoga – Laghu Sutashekhara Rasa* from *Rasa Tarangini*(3), which is having digestive, anti-oxidant, anti-inflammatory properties and *Vata-Kaphahara* quality of *Gairika, Shunthi* and Betel leaves. As a *Shodhana* therapy *Brihat Dashamoola Taila* from *Bhaisajya Ratnavali*(4), which is having *Vatahara* properties, has been selected in the present study.

According to *Acharya Sushruta*(5), *Ardhavabhedaka* is best treated with *Ghrita* and it is effective in subsiding *Pittaja* and *Vataja* disorders; it improves *Dhatu*s and is overall booster for improving *Ojas*.

So here the clinical study has been planned to find out the efficacy of *Brihat Dashamoola Taila* and *Go-ghrita* as *Nasya* and *Laghu Sutashekhara Rasa* as oral drug in comparison of placebo drug for the treatment of *Ardhavabhedaka*

### Aims and objectives:

The present study was based on following aims and objects:

To study the etiopathogenesis of *Ardhavabhedaka* - Migraine from Ayurvedic and modern point of view.

To evaluate the efficacy of *Laghu Sutashekhara Rasa* (orally) and *Brihat Dashamoola Taila* (*Nasya*) in patients suffering from *Ardhavabhedaka* – Migraine.

### Materials and methods:

For clinical study, patients attending O.P.D. & I.P.D. of Department of Shalakyata, I.P.G.T. & R.A., hospital fulfilling the criteria for diagnosis were selected randomly, irrespective of their *Desha, Jati, Prakriti, Sattva* etc. Patients' written informed consent was taken before starting the treatment. The study was conducted in 150 subjects. CTRI reg. no. is 2015/07/009321. The study was approved by Institutional Ethics Committee (No.PGT/7/A/Ethics/2011-12/2687 dated on 23/08/2011).

### Diagnostic criteria:

**Criteria for inclusion:** Age Control group between 16

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to 60 years and having sign and symptom of *Ardhavabhedaka* (Migraine) according to *Ayurvedic* Classics as well as Modern science. The diagnosis of the disease shall be done on the basis of clinical manifestations like recurrent attacks of headache, mostly unilateral in site, variable in intensity, frequency and duration with or without nausea, vomiting, aura and GI tract symptoms.

**Criteria for exclusion:**

Sinusitis, hypertension, fever, Secondary headache caused by meningitis, tumour, encephalitis, cervical spondylitis and refractive errors. Patients using any other systemic drugs which may alter the results of study.

**Grouping:**

Group A: *Laghu Sutashekhara Rasa: (Rasa Tarangini Parishista)*  
Dose - 500 mg Tablet thrice per day orally  
Duration - 02 Months.

Group B: *Brihata Dashamoola Taila for Nasya (Bhaishajya Ratnavali 65/94-98)*  
Dose- 6 - 8 drops in each nostril.  
Duration- (02 Months) 4 sittings, each sitting of 7 days at the interval of 1 week.

Group C: Placebo Tablet prepared by wheat floor.  
Dose - 500 mg Tablet thrice per day orally  
Duration - 02 Months.

Group D: *Go-Ghrita Nasya: (Su. U. 26/31-35)*  
Dose- 6- 8 drops in each nostril.  
Duration- (02 Months) 4 sittings, each sitting of 7 days at the interval of 1 week.

**Investigations:**

Routine haematological, urine and blood sugar level analysis was carried out before treatment to rule out any disease. Digital PNS X-Ray, Ophthalmologic Fundus examination, Nasal endoscopy and CT-SCAN was done wherever required.

**Scoring pattern:**

**Subjective symptoms**

The improvement in patients was assessed on the basis of relief in the signs and symptoms of the disease. The details of the score adopted for the main signs and symptoms in this study are as follows:

**Severity of Headache**

- 0 = No headache.
- 1 = Mild headache, patient is aware only if he/she pay attention to it.
- 2 = Moderate headache, can ignore at times.
- 3 = Severe headache, can't ignore but he/she can do his/her usual activities.
- 4 = Excruciating headache, can't do anything.

**Frequency of Headache: Assessed in term of (frequency in days)**

- 0 = Nil

- 1 =  $\geq 20$  days
- 2 = 15 days
- 3 = 10 days
- 4 =  $\leq 5$  days

**Duration of Headache: (Assessed in term of hours/day)**

- 0 = Nil
- 1 = 1-3 hours/day
- 2 = 3-6 hours/day
- 3 = 6-12 hours/day
- 4 = More than 12 hours/day

**Nausea:**

- 0 = Nil
- 1 = Occasionally
- 2 = Moderate, but does not disturb the routine work
- 3 = Severe, disturbing routine work
- 4 = Severe enough, small amount of fluid regurgitating from Mouth

**Vomiting:**

- 0 = Nil
- 1 = Only if headache does not subside
- 2 = Vomiting 1-2 times
- 3 = Vomiting 2-3 times
- 4 = Forced to take medicine to stop vomiting

**Vertigo:**

- 0 = Nil
- 1 = Feeling of giddiness
- 2 = Patient feels as if everything is revolving
- 3 = Revolving signs + black outs
- 4 = Unconscious

**Aura:**

- 0 = Nil
- 1 = Lasts for 5 minutes.
- 2 = Lasts for 15 minutes
- 3 = Lasts for 30 minutes
- 4 = Lasts for 60 minutes

**Gradation For Associated Symptoms:**

- 0 = No symptoms
- 1 = Mild (can do his/her work)
- 2 = Moderate (forced to stop work)
- 3 = Severe (forced to take rest)
- 4 = Excruciating (force to take medicine)

**Overall assessment:**

The improvement was assessed on the basis of subjective symptoms and salivary tests (objective parameters).

**Subjective:**

The assessment was done by adopting the following scoring pattern for subjective symptoms-

- Complete Remission: 100% relief in objective and subjective signs and symptoms.
- Marked improvement: 76 – 99% relief in objective and subjective signs and symptoms.
- Moderate improvement: 51 – 75% relief in



objective and subjective signs and symptoms.

- Mild improvement: 26 – 50% relief in objective and subjective signs and symptoms.
- Unchanged: Below 25% relief in objective and subjective signs and symptoms.

#### Statistical estimation of results:

The obtained data were analyzed statistically. The values were expressed as percentage of relief and Standard Error Mean. The data were analyzed by paired 't' test. Unpaired 't' test was applied for comparative study.

- $P > 0.05$  = Insignificant
- $P < 0.05$  and  $0.01$  = Significant
- $P < 0.001$  = Highly significant

#### Observations and Results

In this clinical trial of *Ardhavabhedaka*, a total number of 150 patients were registered and were randomly distributed into four groups. The general observations are shown in FIGURE NO. 1

Observation reveals that, regarding the chief complaints 100% patients were having *Shirah-Shoola* (headache), followed by *Hrillas* (nausea) and *Bhrama* (vertigo) 88% and 63.33% respectively, *Chhardi* (vomiting) 48%, and *Aura* 96.66%, which are identical to the textual *Lakshana* (symptoms) of *Ardhavabhedaka* and migraine.

Regarding the associated symptoms 77.33% patients were having Photophobia, 73.33% were having Supraorbital pain, 67.33% were having Ocular pain, 45.33% patients had blurring of vision, 27.33% had Lacrimation, 88.66% patients had sleep disturbance, 77.33% patients had Sleep disturbance, 37.33 patients had Stiffness of neck followed by other symptoms, which tally with textual *Lakshana* of *Ardhavabhedaka* and migraine.

Regarding the *Shirah-Shoola*, Maximum (72%) patients were having unilateral headache, that also particularly more in parietal and frontal region i.e., 88.00% and 74.00% respectively, nature of pain was *Tivra* (sharp) in 66.67% patients. Regarding the quality of headache, maximum patients (95.33%) were having *Shirogurava* followed by others. The intensity of headache was Severe in 90.66% of patients. Maximum patients (36.66%) were having chronicity of >5 years. Maximum patients (88.66%) were having gradual onset of headache. The duration 3-6 hours per day of headache was seen maximum i.e., 62.66%. Regarding frequency, the episode at an interval of  $\leq 5$  days was seen maximum i.e., 51.33%. Maximum patients (84.66%) were found to be having continuous nature of headache. This shows that majority of the patients either have never consulted a doctor or have stopped doing so, which suggests the chronicity of disease. It was observed that patients rely on painkiller without any medical advice given by physician, in a hope to get rid of the headache quickly. But it was not going to stop the pathology. And the patients, who were taking anti-migraine drugs, were not responding. This results in chronic migraines i.e., rebound or transformed migraine headache.

The maximum *Nidanas* (etiological factors) observed in patients were *Amla Aahara* (85.33), *Lavana Aahara* (77.33%), *Samshana* (30.00%), *Adhyashna* (24.66), *Vishamashana* (17.33%), followed by *Ratrijagarana* 53.33% and *Diwaswapa* 71.00%. This shows faulty lifestyle, which is accepted by today's generation. Intake of junk food, taking food at any time, fasting habits of females, etc lead to *Agnimandhya* and *Tridosha Dushti*, which contributes chiefly in the pathogenesis of the disease. Also tyramine and other amines present in today's junk and sour-spicy food causes dilation of the nerves in the brain, resulting in a rush of blood. Similarly *Ratrijagarana* (53.33) and *Diwaswapa* (71.33) aggravate *Vata* and *Kapha Dosha* respectively. Also disturbed sleep was observed in maximum patients i.e., 90.00%. Disturbances such as sleep deprivation, too much sleep, poor quality of sleep and frequent awakening at night are associated with both migraine and tension headaches, whereas improved sleep habits helps in reducing the frequency of migraine headaches. Sleep also has been reported to shorten the duration of migraine headaches.

Environmental factors, like *Dhupa* (58.00%), *Dhuli* (36.66%), *Dhuma* (26.00%) causes the *Atiyoga* of *Indriyas* and serves as a triggering factor. Female's emotional nature, the responsibilities of the family were the cause of mental factors such as *Chinta* (88.66%), *Krodha* (64.00%) and *Shoka* (06.00%).

Wrong food and Sunlight were observed as maximum triggering factor i.e., 95.33% and 88.66% respectively. Bright lights and other high intensity visual stimuli can cause headaches in healthy subjects as well as patients with migraine headaches, but migraine patients seem to have a lower than normal threshold for light-induced pain. Sunlight, television and flashing lights all have been reported to precipitate migraine headaches.

Noise & air pollution was observed in 82.00%. Emotional (68.66%) and physical stress (74.66%) also acts as triggering factor. This may lead to *Dhatukshaya* and vitiation of *Vata Dosha*. Journey (74.66%) served as triggering factor because it also leads to vitiation of *Vata Dosha*. Fasting habits (60.66%) served as triggering factor because it possibly may precipitate migraine headaches by causing the release of stress-related hormones and lowering blood sugar.

#### Effect of therapies on signs & symptoms

Regarding effect of therapy on Chief complaints, group A showed significant results. Statistically highly significant ( $<0.001$ ) improvement in severity (84.61%), duration (76.92%) and frequency (86.20%) of headache was obtained. Regarding effect of therapy on Chief complaints in group B statistically significant ( $<0.01$ ) improvement in severity (77%) and highly significant ( $<0.001$ ) improvement in frequency (75%) of headache. There was statistically insignificant improvement in severity (13%), duration (14%) and frequency (18%) of headache in group C. There was statistically significant ( $P < 0.01$ ) improvement in severity (75%) and frequency (70%) of headache in group D. TABLE NO. 1, 2, 3, 4.



Effect of therapy on other chief complaints showed that in group A reduction of Nausea (*Hrillas*) 87.50% is statistically highly significant ( $P < 0.001$ ). Reduction of Vomiting (*Chhardi*) 89.28% is statistically highly significant ( $P < 0.001$ ). Reduction of Vertigo (*Bharma*) 84.37% is statistically highly significant ( $p < 0.001$ ). Reduction of Aura 81.81% is statistically significant ( $p < 0.01$ ). Reduction of Nausea (*Hrillas*) 66.66% is statistically significant ( $P < 0.01$ ). Reduction of Vomiting (*Chhardi*) 76% is statistically highly significant ( $P < 0.001$ ). Reduction of Vertigo (*Bharma*) 66% is statistically significant ( $p < 0.01$ ) in group B. All the complaints are statistically insignificant at the level of  $P > 0.10$  and  $P > 0.05$  in group C. There was statistically significant ( $P < 0.01$ ) improvement in severity (75%) and frequency (70%) of headache in group D. TABLE NO. 5, 6, 7, 8.

### Total effect of therapy:

The overall effect of therapy showed that in Group A 38% patients cured and 36% patients got marked improvement. In Group B 46.67% patients moderately improved and 35.55% patients marked improved. In Group C 90% patients unchanged. In Group D 48.89% patients moderately improved and 28.89% patients marked improved. FIGURE NO. 2

The pharmacodynamics of the drug depends on its physiochemical properties, which include *Rasa*, *Guna*, *Virya*, *Vipaka*, *Prabhava*, etc. The mode of action of the therapy can be inferred through the relief best owed by the therapy on the exhibited symptomatology.

*Chikitsa* is the elimination of *Samprapti*-Pathogenesis(6). Thus the therapy selected should provide positive effect on that particular disease, presumably by acting through the alleviation of *Samprapti* which is the resultant of various deranged humours and their interactions.

### Probable mode of action of *Laghu Sutashekhara Rasa*:

Action at Doshic level:

The *Snigdha Guna* (28.57%), *Madhura Vipaka* (66.67%), *Madhura Rasa* (20%) and *Ushna Virya* (66.67%) present in *Laghu Sutashekhara Rasa* tablet pacify the *Vata Dosh*.

*Ruksha Guna* (14.29%), *Kashaya Rasa* (20%), *Madhura Rasa* (20%) and *Tikta Rasa* (20%), *Madhura Vipaka* (66.67%) and *Sheeta Virya* (33.33%) pacify the *Pitta Dosh*.

*Laghu Guna* (14.29%), *Tikshna Guna* (14.29%), *Ruksha Guna* (14.29%), *Katu Rasa* (40%), *Tikta Rasa* (20%), *Kashaya Rasa* (20%), *Katu Vipaka* (33.33%) and *Ushna Virya* (66.67%) pacify the *Kapha Dosh*.

Action at Panchabhautika level:

*Vayu* (40%) and *Agni* (20%) *Mahabhoota* are present maximum in *Laghu Sutashekhara Rasa* compound drug. *Vayu* due to its *Chalatva* works as a media in *Urdhavaga Pravriti* and its *Laghutava* enhances the function of *Agni Mahabhoota*. Thus *Deepana – Pachana Karma* is also seen at *Bhautika* level.

*Prithvi* (20%), *Jala* (10%) and *Akasha* (10%) provide nourishment at *Bhautika* level due to their *Balya*, *Snehana* and *Mardavakara Karma* respectively.

The compound drug is thus having *Shothahara*, *Vedanasthapana*, *Deepana*, *Pachana*, *Sheeta prashamana* and *Tridosha Shamaka Karma*.

### Probable mode of action of *Brihat Dashmoola Taila Nasya*:

Action at Doshic level:

The *Snigdha Guna* (11.29%), *Guru Guna* (9.68%), *Madhura Vipaka* (33.33%), *Madhura Rasa* (18.37%), *Lavana Rasa* (4.08%) and *Ushna Virya* (85.18%) present in *Brihat Dashmoola Taila* pacify the *Vata Dosh*.

*Ruksha Guna* (27.42%), *Kashaya Rasa* (14.29%), *Madhura Rasa* (18.37%) and *Tikta Rasa* (28.57%), *Madhura Vipaka* (33.33%) and *Sheeta Virya* (3.70%) pacify the *Pitta Dosh*.

*Laghu Guna* (35.48%), *Tikshna Guna* (12.90%), *Ruksha Guna* (27.42%), *Katu Rasa* (34.69%), *Tikta Rasa* (28.57%), *Kashaya Rasa* (14.29%), *Katu Vipaka* (66.67%) and *Ushna Virya* (85.18%) pacify the *Kapha Dosh*.

Action at Panchabhautika level:

*Vayu* (38.78%) and *Agni* (19.39%) *Mahabhoota* are present maximum in *Brihat Dashmoola Taila*. *Vayu* due to its *Chalatva* works as a media in *Urdhavaga Pravriti* and its *Laghutava* enhances the function of *Agni Mahabhoota*. Thus *Deepana – Pachana Karma* is also seen at *Bhautika* level.

*Jala* (9.18%) *Mahabhoota* has *Kledana* and *Bandhana Karma*, which acts as a binding agent and *Akasha* (14.29%) *Mahabhoota* provides proper space for the process.

*Prithvi* (18.37%) *Mahabhoota* is having *Sanghataka* and *Adhogamana Karma*. Hence it takes back the already expelled morbid *Doshas* with an aim to remove them from the micro-channels.

Most of the contents in *Brihat Dashmoola Taila* are having *Shothahara*, *Vedanasthapana*, *Deepana*, *Pachana* and *Tridosha Shamaka Karma*.

### Probable mode of action of *Go-Ghrita Nasya*:

*Ghrita* is supreme in *Jangama Sneha* and is *Balavardhaka*, *Ojovardhaka*, *Vayasthapana*, *Agni Deepana* and *Dhatuposhaka*. By virtue of its *Sanskaranuvartana* property, it attains the properties of ingredients without losing its own. According to *Acharya Charaka*, *Ghrita* is effective in subsiding *Pittaja* and *Vataja* disorders; it improves *Dhatu*s and is overall booster for improving *Ojas*(7). *Ghrita* having *Balya*, *Brimhana*, *Rasayana* and *Medhya* effect which can be explained by two ways. Digestion, absorption and delivery to the target organ are made easy when any drug is processed with *Ghrita* due to its lipophilic action. Anti-oxidant effect of *Go-Ghrita* is due to its Vitamin A and Vitamin E content(8).

### Conclusion:

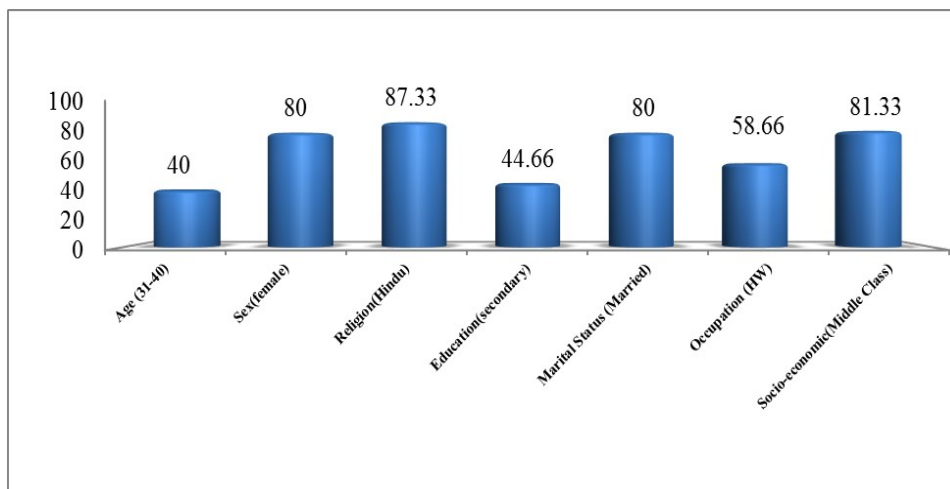
Patients from 31-40 yrs of age group, females, housewives, married and middle class people were more

prone to Migraine. Migraine sufferers had gradual onset with severe intensity and unilateral episodic pain with continuous rhythm. Triggering factors described in modern texts are the *Nidanas* mentioned by our ancient *Acharyas*. *Laghu Sutashekhara Rasa* is more effective than *Brihat Dashamoola Taila Nasya* and *Go Ghrita Nasya*. *Laghu Sutashekhara Rasa* is having significant improvement on all the parameters like *Shirahshoola*, *Hrillas*, *Chhardi* and on other associated symptoms of the disease *Ardhavabhedaka*.

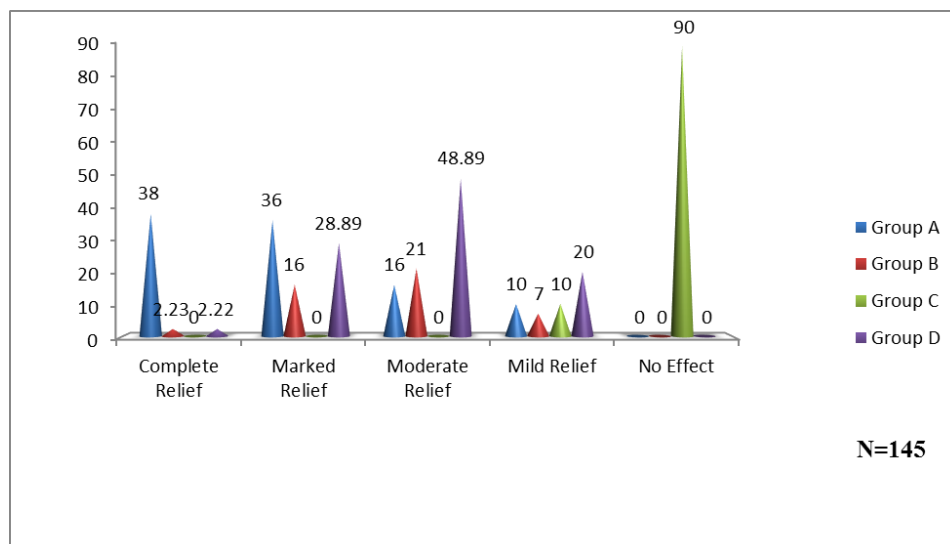
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**FIGURE NO. 1: GENERAL OBSERVATIONS (n=150):**



**FIGURE NO. 2: OVERALL EFFECT OF THERAPY:**



**TABLE – 01: EFFECT ON HEADACHE (CHIEF COMPLAINT) IN 50 PATIENTS OF ARDHAVABHEDAKA IN GROUP A.**

Headache	Mean		% of relief	S.D. ±	S.E. ±	T	P
	B.T.	A.T.					
Severity	02.60	0.4	84.61	0.141	0.044	4.90	<0.001
Duration	01.30	0.3	76.92	0.091	0.028	3.46	<0.01
Frequency	02.90	0.4	86.20	0.117	0.037	6.70	<0.001

**TABLE – 02: EFFECT ON HEADACHE (CHIEF COMPLAINT) IN 45 PATIENTS OF ARDHAVABHEDAKA IN GROUP B.**

Headache	Mean		% of relief	S.D.	S.E.	T	P
	B.T.	A.T.					
Severity	2.2	0.5	77.27	0.153	0.048	3.51	<0.01
Duration	1.0	0.5	50.00	0.052	0.016	3.00	<0.05
Frequency	2.8	0.6	78.87	0.141	0.044	4.90	<0.001

**Table – 03: EFFECT ON HEADACHE (CHIEF COMPLAINT) IN 10 PATIENTS OF ARDHAVABHEDAKA IN GROUP C.**

Headache	Mean Score		%	S.D. ±	S.E. ±	‘t’	P
	B.T.	A.T.					
Severity	2.2	1.9	13.63	0.048	0.015	1.96	>0.05
Duration	2.1	1.8	14.28	0.042	0.013	1.55	>0.10
Frequency	2.2	1.8	18.18	0.069	0.022	1.80	>0.10

**TABLE – 04: EFFECT ON HEADACHE IN 45 PATIENTS OF ARDHAVABHEDAKA IN GROUP D**

Headache	Mean Score		%	S.D. ±	S.E. ±	‘t’	P
	B.T.	A.T.					
Severity	1.6	0.4	75.00	0.091	0.029	4.12	<0.01
Duration	1.2	0.7	41.66	0.052	0.016	3.00	<0.05
Frequency	2.0	0.6	70.00	0.102	0.032	4.33	<0.01

**TABLE – 05: EFFECT ON OTHER CHIEF COMPLAINTS IN 50 PATIENTS IN GROUP A.**

Symptoms	Mean		% of relief	S.D. ±	S.E. ±	T	P
	B.T.	A.T.					
<i>Hrillas</i> (Nausea)	2.4	0.3	87.50	0.087	0.027	7.58	<0.001
<i>Chhardi</i> (Vomiting)	2.8	0.3	89.28	0.117	0.037	6.70	<0.001
<i>Bhrama</i> (Vertigo)	3.2	0.5	84.37	0.170	0.053	5.01	<0.001
<i>Purvabhasa</i> (Aura)	2.2	0.4	81.81	0.125	0.039	4.54	<0.01

**TABLE – 06: EFFECT ON OTHER CHIEF COMPLAINTS IN 15 PATIENTS OF ARDHAVABHEDAKA IN GROUP B.**

Symptoms	Mean		% of relief	S.D.	S.E.	T	P
	B.T.	A.T.					
<i>Hrillas</i> (Nausea)	2.4	0.8	66.66	0.119	0.037	4.22	<0.01
<i>Chhardi</i> (Vomiting)	2.5	0.6	76.00	0.104	0.033	5.72	<0.001
<i>Bhrama</i> (Vertigo)	1.9	0.6	68.00	0.127	0.040	3.22	<0.01
<i>Purvabhasa</i> (Aura)	0.5	0.2	60.00	0.048	0.015	1.96	>0.05

**Table – 07: EFFECT ON CHIEF COMPLAINTS IN 10 PATIENTS OF ARDHAVABHEDAKA IN GROUP C.**

Chief Complaints	Mean Score		%	S.D. ±	S.E. ±	‘t’	P
	B.T.	A.T.					
<i>Hrillas</i> (Nausea)	1.8	1.6	11.11	0.042	0.013	1.50	>0.10
<i>Chhardi</i> (Vomiting)	1.2	1.0	16.66	0.025	0.008	2.44	>0.05
<i>Bhrama</i> (Vertigo)	1.6	1.4	12.50	0.034	0.011	1.80	>0.10
<i>Purvabhasa</i> (Aura)	1.4	1.1	21.42	0.042	0.013	2.25	>0.05

**Table – 08: EFFECT OF GROUP D DRUG ON CHIEF COMPLAINTS IN 45 PATIENTS OF ARDHAVABHEDAKA**

Chief Complaints	Mean Score		%	S.D. ±	S.E. ±	‘t’	P
	B.T.	A.T.					
<i>Hrillas</i> (Nausea)	2.1	0.8	66.66	0.124	0.039	3.56	<0.01
<i>Chhardi</i> (Vomiting)	2.0	0.6	70.00	0.102	0.032	4.33	<0.01
<i>Bhrama</i> (Vertigo)	1.2	0.5	58.00	0.094	0.030	2.33	<0.05
<i>Purvabhasa</i> (Aura)	0.5	0.3	40.00	0.042	0.013	1.50	>0.10

\*\*\*\*\*

## A STUDY OF THE MANAGEMENT OF *SHIRASHOOL* W.S.R. TO *ARDHAVBHEDAKA* (MIGRAINE).

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### ABSTRACT

Headache is one of the most commonly occurring health problem. Almost all individuals' experiences headache. It was observed that, around 40% of individuals worldwide are currently suffering from migraine headache which results in disturbance in daily routine of individuals. Migraine has ranked number 19 among all diseases worldwide which causing disability by the W.H.O. International Headache Society stated that, Migraine constitutes 16% of the primary headache and affects approximately 10-20% of general population (About 15% of women and 6% of men are the sufferers of migraine). Migraine can be defined as benign, recurring syndrome of headache, nausea, vomiting and/or other symptoms of neurological dysfunction in varying admixtures. Symptoms of Migraine were having similarities with *Ardhavabhedaka* which is a one of the types of the 11 *Shiroroga*. Modern management to treat this condition has various side effects like drug dependency, drug resistance and gastric irritation etc. These hazards may have serious disturbances if long term therapy is continued. and they also chance of relapse of headache within hours etc. In present case study the patient of *Ardhavabhedaka* was treated with *Nasya Karma* and *Shaman chikitsa*. We selected the drugs *Anu taila* for *Nasya Karma* and for *shaman chikitsa* *sootshekhar rasa*, *Kamdudha rasa*, *Gandharva Haritaki Churna* and *Bramhi Ghrita* were used. In that patient much relief in symptoms were observed. With all above the treatment patient got ultimate relief from migraine symptoms. Follow up of Patient were taken after 3 months and up to follow up there is no any recurrence of symptoms and adverse effects of the therapy.

**Keywords:** *Ardhavabhedaka*, *Shiroroga*, Migraine, *Sumatriptan*.

### 1. INTRODUCTION

Migraine is one of the common causes of recurrent headache. According to International Headache Society, Migraine constitutes 16 % of the primary headaches and affects 10-20 % of the general population. Migraine is highly prevalence in women than men. About 15% women and 6% men are afflicted by migraine.<sup>1</sup>

The term "Migraine" refers to a syndrome of vascular spasms of the cranial blood vessels. Migraine is a neurological condition that can cause multiple symptoms. It's frequently characterized by intense, debilitating unilat-

eral headaches. Symptoms may include nausea, vomiting, difficulty speaking, numbness or tingling, and sensitivity to light and sound (Sonophobia). Migraines often run in families and affect all ages.<sup>2</sup> Sometimes the headache may exist by focal neurological phenomena "aura" which is followed by headache. The most common categories of migraine headache are those without aura (previously known as common migraines) and those with aura (previously known as classic migraines).<sup>3</sup> The diagnosis of migraine headaches is determined based on clinical history, reported symptoms, and by ruling out other causes. Also, orthopedic tests, Cranial nerve examination, Complete

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blood count, urinalysis and Cranial magnetic resonance imaging was performed if required. Treatment for migraine helps to stop migraine symptoms and it also helps to prevent future attacks. To treat migraine many medications have been designed. Medications used to combat migraine falls under two broad categories such as Pain-relieving medication, Preventive treatment and Complementary treatment.

Pain-Relieving Medication, also called as acute treatment. It is the treatment which is generally used to stop an attack when it begins. Drugs for acute treatment includes NSAIDs, Triptans, Ergotamine, Opioids, Antiemetics. For the prevention of Migraine, the psychological state of the patient should also be evaluated since a relationship exists between head pain and depression. Many patients in chronic daily pain cycles become depressed; moreover, there is a greater-than-chance coincidence of migraine with both bipolar (manic-depressive) and unipolar major depressive disorders. Drugs with antidepressant actions are also effective in the prophylactic treatment of both tension-type headache and migraine.<sup>4</sup>

Ayurveda is the ancient Health science which has glorious past and bright future. It comprises many dimensions about health of human being. Many chronic diseases which cannot be treated properly by other medical sciences, or there are side effects of the medicine or recurrence of the disease, those diseases were well treated by Ayurveda principles and medicines. All symptoms of Migraine were having close resemblance with *Ardhavabhedaka*, which is one among the 11 types of *Shirorogas* explained in the classics which presents with *Bhedatodavat ardhaparshwa shirashula* having periodic attacks and with *prakasha, shabdha asahishnutha*.<sup>5, 6</sup> It is mentioned that *Ardhavabhedaka* if left untreated it leads to deafness and blindness.<sup>7</sup>

*Ardhavabhedaka* is best treated with *Shiro Virechana, Kaya Virechana, Nadisveda, Niruha* and *Anuvasana, Basti, Upanaha* and *Shiro Basti*. *Aacharya Sushruta* indicated

*Nasya* with *Sirishphala Nasya, Dashmooladyavpidana, Madhukadhyavapidan, Madhuradi - nasya*. specially *Madhura aushadhi siddha Ghrita, Taila Nasya* and *Madhura aushadhi* along with *ghrit taila lepana* were indicated.<sup>8</sup> Also, treatment for *Manas dosha Raja* and *Tama* is necessary for *Ardhavabhedaka*. In present case study the patient of *Ardhavabhedaka* was treated with *Nasya upakrama*<sup>9</sup> with *Anu taila*<sup>10</sup> and *Shaman chikitsa*. We selected the drugs *Kamdudha Rasa*<sup>11</sup>, *Mahavata Vidhvansa Rasa*<sup>12</sup> and *Gandharva Haritaki Choorna*<sup>13</sup> for *Vata Kapha Shamana karma* in that patient. Also, *Bramhi Ghrita*<sup>14</sup> is given to patient for the *manasik dosha* i.e. *Raja* and *Tama Dushti*. Patient got relief in his symptoms.

## 2. METHODS

### 2.1. Objectives

- ◆ To study *Ardhavabhedaka Samprapti* in detail.
- ◆ To study the literature of migraine in detail.
- ◆ To observe the effect of *Nasya karma* in Migraine.
- ◆ To establish safe, cost effective and ideal line of treatment for Migraine.

### 2.2. Case History:

A female patient of age 38 years old came to OPD with complaining of severe headache in the past 5-6 days. Nature of pain was so severe that it disturbs her routine work. Patient has history of Migraine for 2-3 years. She has periodic episodes of headache i.e. 2-3 episodes per month and one episode persists 2-5 days. Patient got relief in symptoms up to some extent when tight bandage is applied over the head and also in dark room. There is no any significant past history and Family history. She has taken allopathic treatment several times for the episodes and also on regular medication Tab. Migratan 50 mg OD (Sumatriptan)<sup>14</sup> for relief, but he does not get desirable effect so he came to take Ayurvedic treatment.

#### 2.2.1. Chief Complaints

*Dakshin Ardha Shira Pradeshi shool, Shirashool* affecting mainly Neck, Eye brows,



Temporal region and forehead. *Pat-tabandhanottar Upashaya*, Nausea, Sometimes Vomiting, Photophobia, *Agnimandya*, *Alpa malavrodha* since 2 to 3 years.

### 2.2.2. Past History

Taken modern medicines for migraine at various hospitals. Now on regular treatment of Tab. Tab. Migratan 50 mg OD.

### 2.2.3. Family History

No significant Family History.

### 2.2.4. Hetu:

#### A. Ahara

*Sheeta*, *Guru* and *Amla-rasa pradhan ahar*.

#### B. Vihar

*Ratrijagarana*, *Sheeta vata sevana*, *Mana Santap*.

### 2.2.5. Samprapti

*Hetu sevana* → *Vata-Kapha dominating Tridosha*, *Raja* and *Tama prakopa* → *Agnimandya* → *Aamotpatti* → *Rasavaha* and *Raktavaha Srotodushti* → *Vitiation of Rasa & Rakta dhatu* → *Dakshin Ardha shira pradeshi Sthana Sanshraya* → *Dakshin ardha Shirashool*, *Hrullas*, *Dakshin Netrashool*, *Bhram* → *Ardhavabhedaka*.

### 2.2.6. Diagnosis

*Dakshin Ardhavabhedaka*.

### 2.2.7. Chikitsa Vivarana

- ◆ Firstly, the *Ardhavabhedaka* was treated by proper medicines i.e. *Shodhan Chikitsa*. In *Ardhavabhedaka doshaprakop* is in *urdhva Jatrugata* region. Hence for *Shodhana Nasya Karma* was done. For that purpose, *Anu taila* were used.
- ◆ Along with *Nasya* for the *Agnimandya* and *Shamana* of *doshas Vata* and *Kapha*, As well as *Rasa* and *Rakta Dushti* were treated with *Kamdudha rasa*, *Mahavata Vidhvansa Rasa* and *Gandharva Haritaki Churna*.
- ◆ After 15 days patient having relief in symptoms but headache is recurring time to time. Thought the intensity and duration of Head-

ache much less than previous episodes, patient is irritable and disturbed. For that reason and keeping in mind *Raja Tama dushti Bramhi Ghrita* is given along with above treatment.

- ◆ After 30 days all symptoms were relieved. Patient were advised to continue treatment for 15 days.
- ◆ All *Pathyapathya* were explain to patient and again follow up taken after 3 months. During this period patient no recurrence of symptoms were observed.

### 2.2.8. Follow up:

Another follow up was taken after 3 months and it was observed that there is no recurrence of symptoms.

### 2.2.9. Drug Review:

*Nasya Karma* was done with *Anu taila* as *Shodhan chikitsa*. Four drugs were administered in order to achieve *Vata Kapha Shamana* namely *Mahavatavidhvansa Rasa*, *Kamdudha Rasa* and *Gandharva Haritaki Churna*. The details of ingredients, indications and mechanism of action are illustrated in Table No. 2.

## 3. RESULTS AND DISCUSSION:

Migraine is considered as psychosomatic disease. In present era, the various data showed that 75% people suffer from migraine due to stress. In Ayurveda also, it is stated that psychological factors like *Manasa Santapa*, *Shoka*, *Bhaya* are mentioned as the causative factors of *Shirashoola*. *Nasyakarma* has been advised as the important method of treatment in *Urdhavajatrugata Rogas*. A medicine administered through the nose goes into the head and expels the *vitiated Doshas*. *Anu taila* is having *Vata-Kaphanashaka* and *Vedana sthapaka* i.e. pain-relieving properties.

In *Ardhavabhedaka* there is *Vata Kapha prakopa* and also *Raja* and *Tama manasik dosha prakopa*. So, treatment used should be aimed at removing *doshaprakopa* from *Shirapradesh* i.e. *Shodhana* and also *Shamana* of *Vata Kapha and Manasik Doshas*. *Rasa* and *Rakta dhatu* were *Dushya* which should be treated effectively. For these conditions *Tikta*,

*Madhura ras pradhana* and *balya aushadhi* should be used. *Mahavatavidhvansa rasa*, act as *vata Shamaka*. *Kamdudha rasa* used in *Ardhavabhedaka* acts on *Rasa* and *Rakta Dhatu* reduces *hrullasa* and *Shirashool*. *Gandharva Haritaki* is *anulomaka* and hence helps in *sampraptibhanga*. For *manasik Dosha chikitsa* *Bramhi Ghrita* is used.

#### 4. CONCLUSION:

- ◆ *Ardhavabhedaka* is Psychosomatic disorder as explained in Ayurvedic classic as it has both *Sharira* and *Manas Dosha Dushti*.
- ◆ Emotional stress, Anxiety, Tension and other psychological factors play very important role in the etiopathogenesis of Migraine.
- ◆ *Nasya Chikitsa* is very much useful in *urdhvajatrugata rogas* such as *Ardhavabhedaka*.
- ◆ *Mahavatavidhvansa rasa*, *Kamdudha rasa*, *Gandharva Haritaki* are useful drugs in *Ardhavabhedak*. *Bramhi Ghrita* is useful for *Manas Dosha dushti* and *Brihan chikitsa*
- ◆ *Shamana Chikitsa* for both *sharira* and *Manas dosha* were nessesary to treat *Ardhavabhedaka*.
- ◆ *Ardhavabhedaka* can be successfully treated with Ayurveda. Recurrence of disease can be avoided or its intensity can be reduced.

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## 6. TABLES

Sr. No.	Subject	<i>Mahavata Vidhwasana</i>	<i>Kamdudha Rasa</i>	<i>Gandharva Haritaki churna</i>	<i>Bramhi Ghrita</i>
1	<i>Matra</i>	250 mg x BD	500 mg x BD	3gm x OD	20 ml x OD
2	<i>Kala</i>	<i>Adhobhakta</i>	<i>Adhobhakta</i>	<i>Nishakala</i>	<i>Pratah kala</i>
3	<i>Anupana</i>	<i>Koshna jala</i>	<i>Goghrita</i>	<i>Koshna jala</i>	<i>Koshna jala</i>
4	<i>Avadhi</i>	45 days	45 days	45 days	45 days

**Table No. 1. Drug administration**

S.N.	Drug	Ingredients	Mechanism of Action
1.	<i>Maha Vata Vidhvansa</i>	<i>Parad, Gandhaka, Nag, Vanga, Loha, bhasma, Abhrak bhasma, Pippali, Tankan, Maricha, Shunthi, Vatsanabha,</i>	<i>Vatashamana, Vedanahar, Jantughna, Yogvahi, Balya, Rasayan etc.</i>
2.	<i>Kamdudha Rasa</i>	<i>Mauktik, Praval, Shuktika, Kapardika, Shankh bhasma, Suvarna gairik, Guduchi Satva.</i>	<i>Pittashamana, Raktaprasadak, Kshobhanashak, Vatashamak, Jwaraghna, mooltral etc.</i>
3.	<i>Gandharva Haritaki</i>	<i>Haritaki, Eranda taila</i>	<i>Ajirnahar, Anulomana, Vatavyadhi and Rasayan etc.</i>
4.	<i>Bramhi Ghrita</i>	<i>Bramhi, Goghrita, Haridra, Aamalaki, Kushtha, Trivritta, Haritaki, Pippali, Vidanga, Saindhav, Sharkara, Vacha etc.</i>	<i>Smaranshakti Vardhaka, Swarabheda Nashaka, Medhya, Rasayan, Balya, Vandhyatva Nashaka, Agnivardhaka etc.</i>
5.	<i>Anu Taila</i>	<i>Chandan, Aguru, Patra, Bala, Darvitvaka, Yash-timadhu, Utpal, Pundarika, Sukshma Ela, Vidanga, Bilva, Tvaka, Musta, Shatavari, Sariva, Shaliparni, Devdar, Padmakesar, Chaag paya etc.</i>	<i>Tridoshaghna, Indriya Balakara, Urdhvajatru-gata Vikar Shaman, Nasyartha, Pichu etc.</i>

**Table No. 2. Drug Review – Ingredients and Mechanism of action**

Sr. No.	Parameter	Follow ups				
		Day 0	Day 7	Day 15	Day 22	Day 30
1	<i>Shirashool</i>	+++	+++	++	+	-



2	<i>Hrullas</i>	+++	++	+	-	-
3	<i>Bhrama</i>	++	++	++	+	-
4	<i>Netrashul</i>	++	+	-	-	-

**Table No. 3. Follow up wise improvement**

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## **Management of Migraine with Ayurvedic Intervention - A Case Report**

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*This work was carried out in collaboration between both authors. Both authors read and approved the final manuscript.*

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**Case Study**

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### **ABSTRACT**

Migraine is a common episodic neurological disorder with a multifaceted pathophysiology that displays as recurrent attacks of headache that are typically throbbing and unilateral/bilateral and often severe with concomitant symptoms such as photophobia, phonophobia stimuli. Similar disease condition with its cardinal feature is well describe as *Shirah Shoola* in Ayurveda caused by vitiated *Tridosha*. About 15% of the population suffers migraine. Prevalence of migraine is approximately 5.7% in men and 17.0% in women and accounts 2% years of life lost due to a disability in women of all ages. Modern science enforced several medications to manage migraine but fails to deroot it, additionally these drugs have adverse effects like GI upset, hypotension, lack of concentration etc. In contrast Ayurveda approach rather safe in use could be promising strategies that can pacify the characteristics of various *Shirah Shoola* as well as its associated disability. *Laghu Sutasekhara Rasa* orally and *Brihat Dashmoola Taila Nasya* is mentioned in *Rasatantrasara* and *Siddhayogasangraha* book with special indication to *Shiarh Shoola*. So an attempt has been made to assess the efficacy of these two drugs in the management of migraine in this single case study. Considerable improvement was seen in the clinical features of Migraine.

**Keywords:** *Brihat Dashmoola Taila; Laghu Sutasekhara Rasa; migraine; Shirah Shoola.*

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## 1. INTRODUCTION

The World Health Organization has identified migraine among the world's top 20 leading causes of disability [1]. Migraine is a neurological disorder characterized by recurrent attacks of pulsatile headache usually unilateral or bilateral widely variable in intensity, frequency and duration [2]. Migraine headaches are occurs due to combination of blood vessel enlargement and the release of chemicals from nerve fibers around these blood vessels causes inflammation, pain and further enlargement of the artery [3].

*Shiro Roga* includes the diseases that occur mainly in *Shiras* (head). As per Ayurveda Acharyas, *Shirah Shoola* is the main symptom in all *Shiro Roga*. According to *Madhavacharya*, *Shirah Shoola* is not only mentioned as symptom of various diseases but also considered as an independent disease itself [4].

*Acharya Sushruta* mentioned 11 types of *Shiro Roga* in *Uttara Tantra* in which each *Shiro Roga* differ according to the character of pain, intensity, site, time of onset, frequency, duration, precipitating factors, relieving factors etc. [5]. *Shirah Shoola*, which is characterized by varying intensity of pain, similar to the cardinal feature of migraine in modern literature.

Even though all type of *Shiro Roga* has *Tridosha* involvement depending upon *Dosha* predominance characters of *Shirah Shoola* also varies [6]. In ayurvedic classics, there are various drugs has been mentioned for the management of *Shirah Shoola*. Among them oral administration of *Laghu Sutasekhara Rasa* [7] and external administration through *Nasya* (*Nasal drops*) of *Brihat Dashmoola Taila Nasya* [8] has been mentioned with special indication to *Shirah Shoola*. An attempt had been made to find out the synergistic effect of *Laghu Sutasekhara Rasa* and *Brihat Dashmoola Taila*. The MIDAS (Migraine Disability Assessment) questionnaire was introduce to measure the impact of headaches on patient's life [9]. The total effect of therapy was assessed considering the overall improvement in symptoms and MIDAS score.

## 2. PRESENTATION OF CASE

A patient of 22 year age came to the hospital on 18/04/2019, OPD no-23104. She suffered from continuous rhythmic, unilateral headache with visual aura, mostly in temporal side which becomes severe at noon (acute onset) and it is

associated with nausea, vomiting, vertigo, since 3 years, annually seasonal course. She develops ptosis, eyelid edema, supra orbital pain, heaviness of eyes, photophobia, phonophobia during and after episode of headache. She experiences severe constipation and acidity since 2 year. She experiences disturbed sleep, recurrent mood swings, memory loss, unsatisfactory awakening. She experiences irregular menstrual history. She often took allopathic medicine (painkillers) for the headache which acts as symptomatic relief treatment. On general examination patient was conscious, alert, oriented to time, place and person. Height (5.4 feet) and Weight (55 kg) Blood Pressure - 120/80mm of Hg, Pulse Rate - 78 b/min, Respiratory rate- 14/m, Temperature- 98.4<sup>o</sup> F were noted. During her visit she was advised blood investigation in which Hb% was 11.4gm%, TLC was 7800/Cumm, DLC (N-56,L-26,E-14,M-04,B-0)% was within normal limits, ESR was 26 mm/hr, Urine examination (routine & microscopic) was normal, Biochemical investigation (Random Blood Sugar) was 97 mg/dL, Impression of MRI brain report showed no obvious cranial abnormality (Fig. 1). After evaluation patient was advised to continue medication for two months. She had habit of *Samshana* (improper diet pattern), habit of *Vegdharana* (holding natural urges), *Diwaswapna* (day sleeping), *Ati Vyayama* (excessive physical work), *Dhoopa Sevana* (exposure to sunlight). She had observable headache triggering factor –stress, sunlight, coffee, fermented eatables, cheese and journey. Alleviating factors- sleep, head massage. On the basis of examination and assessment of clinical feature, history and clinical reports available the case was diagnosed as Migraine. Ayurveda treatment regimen was followed for 2 months .which included 2 different medicines, 1 was in tablet form (1 tab thrice a day) and 1was in oil form for *Nasya* in morning hour. *Nasya* will be done, in 4 sittings, each sitting of 7 days at the interval of 1 week. The details of *Nasya* procedure following classical recommended guidelines has been presented in Table 1. She was advised to report after every 15<sup>th</sup> day. The details of posology are mentioned in Table 2. Improvement seen during treatment period in chief and associated complaints as well mentioned in Table 3. Improvement was assessed on the basis of symptoms before and after the treatment through a special MIDAS scoring scale mentioned in Table 4. Then in the follow up period one month, headache relieved in terms of frequency, duration and intensity with



relief in associated symptoms like nausea, vomiting, vertigo. She didn't consume any medicine in follow up period.

After oral administration of *Laghu sutashékara Rasa* along with Nasal administration of *Brihat Dashmoola Taila* for 2 month, improvement was found in

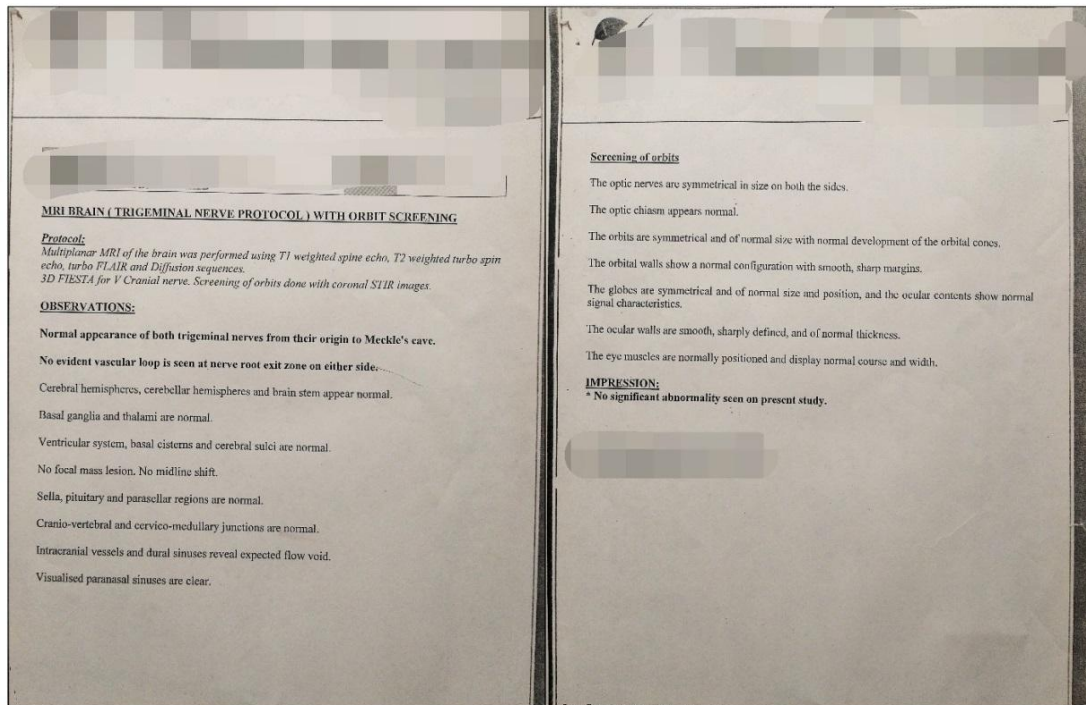
almost all considering clinical features of migraine which are summarized in Table 1. Intensity of the headache was reduced, duration of the headache was reduced as well as frequency of the headache was decreased considerably. There was also improvement in symptoms like photophobia and phonophobia.

**Table 1. Procedure of Nasya Karma**

Drug/Instruments	Dropper
<i>Purva-Karma</i> (pre procedure)	Arrangement of materials and Equipments, Counselling of the patient and taking informed consent.
<i>Pradhana-Karma</i> (main procedure)	Patient should lie in supine position on <i>Nasya</i> table with head lowering position. After covering the eyes with clean cotton cloth, the physician should raise the tip of the patient's nose with his left thumb and with the right hand the luke warm medicine should be instilled in both the nostrils alternately in proper way.
<i>Pashchata-Karma</i> (post procedure)	Gargles with luke warm water is advised to expel out the residue mucus lodged in <i>Kantha</i> (throat).

**Table 2. Posology of case study**

Drug	Dose	Duration	Time	Route	Form
<i>Laghu Sutasekhara Rasa</i>	500mg TDS.	2 month	After meal with luke warm water.	Orally	Tablet
<i>Brihat Dashmoola Taila</i>	6 - 8 drops (0.3- 0.4 ml) in each nostril.	2 month	4 sittings, each sitting of 7 days at the interval of 1 week.	Nasal	Oil



**Fig. 1. MRI report of brain**

**Table 3. Effect of therapy on symptoms of migraine**

Chief complaints	0 day	15 days	30 days	45 days	60 days
1. Headache	Persist for 7 times in a week continuously	4 times in a week continuously	4 times in a week but not continuous	2 times in a week. It was intermittent	Not a single episode
2. Nausea	Happens everytime with episode	Happened 3 times with episode	Not happened	Happened once with episode	Not happened
3. Vomiting	Everytime during episode	3 times with episode	Not occurred	Not occurred	Not occurred
4. Vertigo	Not usual	One time during episode	One time during episode	Not occurred	Not occurred
5. Aura	Everytime before episode	Everytime before episode	Everytime before episode	Everytime before episode	Not occurred

**Table 4. Effect of therapy on MIDAS score**

MIDAS score	BT	AT
	3	2

treatment of *Shirah Shoola* [13]. *Snehana Nasya* with medicated oil has been selected here to pacify the *Tridosha* mainly *Vata Dosha* by virtue of its *Snehana Guna* [14].

Both interventions works as *Doshapratynika* and *Vyadhipratynika Chikitsa* in *Shirah Shoola*. In present era due to high level of stress, there is imbalance in the hormonal level. So it should be treated carefully.

### 3. DISCUSSION

Migraine is a disabling medical illness. Migraine is the condition nearer to *Shirah Shoola*, which has been explained as *Tridoshaja Vyadhi* by *Acharyas*.

As indigestion along with constipation and acidity (*amlapitta*) is one of the causative factor of *Shirah Shoola* [10]. *Vata* imbalance arises due to improper metabolism, mental and physical stress, sleeplessness, etc. *Pitta* causes dilation of the blood vessels, which causes the onset of a migraine attack [11]. Treatment plan of migraine was therefore centered on the pacification of *Pitta Dosha*, and restoration of digestive function in the body. Ingredient of *Laghu Sutasekhara Rasa* has *Katu*, *Tikta Rasa*, *Ushna veerya*, *Deepana-Pachana* (appetizer- digestive) properties, which causes *Amapachana* and thus provides proper metabolism and ultimately balances the *Agni* which ultimately regulates excessive *Pittotpatti*.

*Nasa* (nose) is considered as therapeutic gateway of *Shirah* (head). Thus medicine administered through *Nasya Karma* can affect the vitiated *Doshas* in *Shirah* (head). So systematically performed *Nasya Karma* cures almost all the diseases of *Urdhwajatrugata* (supra clavicular region) [12]. Ingredients of *Brihat Dashmoola Taila* having *Katu*, *Tikta*, *Madhura Rasa*, *Laghu*, *Ruksha Guna*, *Ushna Virya*, *Katu Vipaka*, posses *Tridosha Shamaka* properties, has been in use as *Nasya* for

#### 3.1 Do's & Don't's

- Advised to avoid *Nidana* (causative factor) of migraine (*Shirah Shoola*).
- Advised to avoid skipping meals and keep amounts consistent.
- Advised to follow the proper diet regimen.
- Advised to avoid caffeine, alcohol etc.
- Advised to avoid stress, anxiety, depression.

### 4. CONCLUSION

This case study was done to manage migraine by using *Laghu Sutasekhara Rasa* orally and *Brihat Dashmoola Taila Nasya*. By this single case study it may be concluded that the drug *Laghu Sutasekhara Rasa* found effective not only in relieving the cardinal features but also helps in relieving constipation and acidity. However to generate more effective conclusion in this regard study needs to be conducted on a larger sample.

### CONSENT

As per international standard or university standard, patients' written consent has been collected and preserved by the author(s).

## ETHICAL APPROVAL

As per international standard or university standard written ethical approval has been collected and preserved by the author(s).

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## COMPETING INTERESTS

Authors have declared that no competing interests exist.

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# Efficacy and safety of panchgavya GHRIT along with flunarizine in prophylaxis for migraine patients: a comparative study

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## Efficacy and safety of panchgavya GHRIT along with flunarizine in prophylaxis for migraine patients: a comparative study

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### ABSTRACT

**Background:** Propranolol and flunarizine have proven to be useful tools in migraine prophylaxis. This trial aims the comparison of the efficacy of flunarizine, flunarizine and placebo and flunarizine and panchgavya ghrith in migraine prophylaxis.

**Methods:** The present study was a prospective, randomized, open-label, blinded-endpoint trial. Patients with chronic migraine were randomized (1:1:1) to flunarizine and flunarizine and placebo and flunarizine and panchgavya ghrith in three treatment groups. The study was carried out in outdoor patients in the department of Psychiatry, T.S. Mishra Medical College and Hospital, Lucknow and K.G.M.U, Ayush Department, Lucknow after clearance from Institutional Ethical Committee. Data was analysed using SPSS software.

**Results:** The prevalence of migraine was found to be higher in the age group greater than 30 years and females. Overall there was more reduction in CGI scores in flunarizine with panchgavya ghrith and the other two groups equally at the end of 4, 6 8 and 10 weeks. Decrease in MIDAS score was observed after the therapy. Clinical Global Impression rating scale employed revealed that to start with subjects scored 7 which stands for pathology interfering in many life functions which reduced drastically in Group C as compared to Group B and Group A in descending order. Pain scales namely VAS (visual analogue scale), NPRS (Numeric Pain Rating Scale), VRS (verbal rating scale) when employed denoted there was decreased migraine frequency, decreased perception of pain, less intake of abortive medication consumed by subjects implying there were reduction in number of migraine days and there was decrease in the abortive medications taken for the same. Group C scored better on pain scales followed by Group B and Group A. Lower proportion of individuals in group C had Behavioural Toxicity and Neurological Side effects as compared to Group A and B.

**Conclusions:** Panch gavya ghrith when administered along with flunarizine was more efficacious and safe when compared with other two groups. However large multicentric RCTs of long duration and involving more number of subjects are required to ascertain these facts.

**Keywords:** Flunarizine, Migraine, Panch gavya ghrith

### INTRODUCTION

Migraine is a widespread, chronic and intermittently disabling disorder characterized by recurrent headaches with or without aura.<sup>1</sup> The prevalence of migraine is about 6-8% in men and 12-15% in women as per the conducted studies. Approximately 3000 migraine attacks occur every day for each million of the general population which impress upon the incidence and prevalence of migraine.<sup>2</sup> The rate of migraine varies

globally, and more so with the data available in many countries at present, recent anecdotal evidence suggests higher rates in certain places like India.<sup>3</sup> Recurrent migraines can be disabling: the cost of missed workdays and impaired performance associated with migraines in the United States totals around \$13 billion each year.<sup>4,5</sup> Preventive therapy, which can reduce the frequency of migraines by 50 percent or more, is used by less than one half of persons with migraine headache.<sup>6</sup> In Ayurveda *Arddhavabhedaka* - a comparable clinical condition of

migraine is a commonly occurring vascular headache presenting with pain on one half of the head as cardinal feature. It is described as a separate clinical entity in the classics of Charaka and Susruta while Vagbhata included this condition in the classification of *vataja-siroroga*. Pain in one half of the head may also appear as a symptom in various conditions viz. *anyatovata (netraroga)*, *vata-paryayam (netraroga)* and *ardditavata (vataroga)*. According to Ayurveda, action of a drug is based on its guna, veerya, vipaaka and prabhaava. These as themselves or as combinations determine the status of drug action in the body. Fate of the drug always depends on rasapancaka and it goes in line with modern pharmacodynamics.<sup>7</sup> Besides that the drug action also depends the action of agni on that particular drug. Most of the Ayurvedic drugs act only after absorption and are said to have systemic or general action. Many a time, the term 'action' and 'effect' of a drug are used as synonyms. Many a drug has been mentioned in Ayurvedic psychiatry. Panchagavya gritha (PGG) is mentioned in Apasmara chikitsa. It is one of the commonly used yogas not only for apasmara, but also many other psychiatric conditions including OCD, Migraine Depression and types of Schizophrenia in the form of oral route of drug intake and nasya karma. The combination contains 5 ingredients.

Gos'akr't (Cow dung), Godadhi (Curd), Goksheera (Milk), Gomootra (Cow's urine) and Goghr'ta (Ghee).<sup>8</sup> All the drugs are taken in equal quantities and the gritha is prepared as per the common preparatory techniques regarding gritha.<sup>9</sup> Literature revealed that cow ghee, cow milk and cow urine possesses intellect and memory enhancing, rejuvenating and aphrodisiac activities.<sup>10-12</sup> Cow dung juice has antibacterial and cow curd has aphrodisiac activity.<sup>13,14</sup> Similarly various researches are reported on single cow products for their effects on CNS. Thus combination of these products may show cumulative desired effect of PGG on cognition i.e. improvement of learning and memory.

Previously PGG has been assessed for anticonvulsant, hepatoprotective and antiepileptic activities; however no work has been carried out on assessment of anti migraine activity of PGG. Sometimes, if migrainous headaches are recurring twice a month or more, a prophylactic treatment is required.<sup>15-17</sup> There is a variety of medication usually employed in the migraine prophylaxis, a hint that none is entirely effective. Moreover, usually there are patients who do not respond to one or more prophylactic drugs. Besides, there are individual differences in the responsiveness to different prophylactic agents and even sometimes, an inability to sustain an initial good response to a particular agent. Such facts may be arguments for the concomitant use of two modalities of drugs in migraine prophylaxis. Propranolol and flunarizine have proven to be useful tools in migraine prophylaxis.<sup>18-21</sup> This trial aims the comparison of the efficacy of flunarizine, flunarizine and placebo and flunarizine and panchgavya ghrit in migraine prophylaxis.

## METHODS

The present study was a prospective, randomized, open-label, blinded-endpoint (PROBE) trial. Patients with chronic migraine (CM) were randomized (1:1:1) to flunarizine and flunarizine and placebo and flunarizine and panchgavya ghrit (PGG) in three treatment groups. The study was carried out in outdoor patients in the department of Psychiatry, T.S. Mishra Medical College and Hospital, Lucknow and K.G.M.U, Ayush Department, Lucknow after clearance from Institutional Ethical Committee. Psychiatrist had enrolled participants, administered scales and assessed the clinical outcomes. Side effect monitoring was done and by a pharmacologist and a psychiatrist using DOTES scale. Nasya karma of panchgavya ghrit was done and taught to subjects attendant by competent Ayurvedic practitioner in O.P.D setting. The trial was conducted from September 2016 to January 2017. The patients were included in the study after fulfilling the inclusion/ exclusion criteria after obtaining full informed consent as diagnosed in psychiatry OPD of T.S. Mishra Medical College and Hospital. Systematic Random Sampling was applied and concealment was done by envelop method. Statistician had generated allocation sequence and assigned participants to their respective groups. The sample size was 60.

### Inclusion criteria

Inclusion Criteria was ICHD-IIR criteria for CM (as reported by the patient). Experienced  $\geq 7$  days of headache lasting  $\geq 30$  min during T0 (-2 week to 0 week), On  $\geq 4$  of these days, subjects were required to have experienced migrainous headache, patients could receive preventive medications (medications for acute attack) other than the medications given during study period, with and without medication overuse, Subject  $> 10$  years of age, either gender, headache history  $> 2$  years, willing to follow the dietary restriction, willing to complete daily diary, willing to take the medication Or comply with procedure during the entire study period.

### Exclusion criteria

Tension-type headache, cluster headache, and other primary headaches, secondary headache and other neurological disease, relatively severe systemic diseases (cardiovascular disease, acute infectious disease, hematopathy, endocrinopathy, allergy, and methysis), headache caused by otorhinolaryngology diseases or intracranial pathological changes, oral contraceptives, pregnancy, or lactation period, use of prophylactic migraine medication in the last 3 months, participation in another clinical trial, headache type other than CM, migraine onset after the age of 60 years, previous history of migraine prophylaxis before enrollment, history of hepatic or renal disorder, nephrolithiasis or other severe systemic disease, severe depression. Marked depression, anxiety or psychosis, major medical illness under



treatment, clotting disorders, more than 2 visits/month for mental healthcare. Use of any other alternative medication during study apart from rescue medication ultracet a combination of tramadol 37.5mg and acetaminophen 325mg as and when required.

Primary outcome measures were to assess reduction of total number of migraine days, quality of life and comparison of side effects in three groups Secondary outcome measures were to assess the disability associated with migraine, reduction of number of days of acute abortive medication intake and, reduction of number of acute abortive medication tablets taken.

**RESULTS**

Majority of patients were aged between 31-45 years and were females in all the three groups. A higher proportion of patients had duration of migraine less than 10 years and had a positive family history of migraine (Table 1). The prevalence of migraine was found to be higher in the age group greater than 30 years approximately twice as compared to less than 30 years age group, females were effected about thrice as compared to males, duration of illness was upto 10 years in maximum subjects, family history was positive in majority of subjects (Table 1). Around 80% of the patients were non-vegetarian and details of the prior treatment indicated that 41(68%) patients were totally dependent on allopathic medicine; 30 (50%) patients had tried both allopathic and alternative medicine such as Homeopathy, Unani/ Siddha, Ayurveda. It was found that exertion, lack of sleep and hunger were the three most important factors for aggravating migraine, at the time of enrollment all the patients reported more than six attacks in a year. Majority of patients of those who were enrolled had migraine attack once a week. Most complained of nausea, photo phobia, phono phobia, and vomiting as associated symptoms. A total of 60 patients were screened and relief in headache started to develop after 4 weeks and became conspicuous after 6weeks however patient fared much better, with better compliance less drop outs and minimal side effects in Group C.

Overall there was more reduction in CGI scores in flunarizine with panchgavya ghrit and the other two groups equally at the end of 4, 6 8 and 10 weeks. However it was not statistically significant (p>0.05) (Table 2).

Decrease in MIDAS score was observed after the therapy. At the start of therapy most number of patients had Grade IV (severe disability)which came down to Grade II in group A and B and Grade I in group C inferring that little or no disability was observed in third group however mild disability was still present in Group I and II.

**Table 1: Distribution of patients according to Sociodemographic variables.**

Variables	Flunarizine group (n=20)		Flunarizine and placebo group (N=20)		Flunarizine and panchgavya ghrit (N=20)	
	N	%	N	%	N	%
<b>Age (in yrs)</b>						
Upto 30	6	30	7	35	6	30
31-45	14	70	13	65	14	70
<b>Gender</b>						
Male	5	25	4	20	6	30
Female	15	75	16	80	14	70
<b>Duration of migraine</b>						
0-10 years	10	50.0	11	55.0	12	60.0
11-20 years	5	25.0	5	25.0	4	20.0
21-30 years	5	25.0	4	20.0	4	20.0
<b>Family history of migraine</b>						
Present	14	70.0	15	75.0	14	70.0
Absent	6	30.0	5	25.0	6	30.0

**Table 2: Change in CGI Score from Baseline among the patients.**

Change from baseline with time		Flunarizine (n=20)			Flunarizine with placebo (n=20)			Flunarizine with panchgavya ghrita (n=20)			chi sq, p-value
		Same	Decrease	Increase	Same	Decrease	Increase	Same	Decrease	Increase	
After 2 weeks	No.	12	7	1	8	10	2	9	11	-	3.83, 0.430
	%	60	35	5	40	50	10	45	55	0	
After 4 weeks	No.	10	9	1	7	12	1	7	13	-	2.51, 0.642
	%	50	45	5	35	60	5	35	65	0	
After 6 weeks	No.	8	12	--	7	13	--	6	14	--	0.440, 0.803
	%	40	60	0	35	65	0	30	70	0	
After 8 weeks	No.	7	13	--	7	13	--	5	15	--	0.616, 0.735
	%	35	65	0	35	65	0	25	75	0	
After 10 weeks	No.	6	14	--	6	14	--	3	17	--	1.37, 0.504
	%	30	70	0	30	70	0	15	85	0	

**Table 3: Mean change in parameters pertaining to migraine scores from baseline in three groups.**

Parameter	Group	Day								
		0	7	14	28	42	56	70	84	
CGI	Group 1	7								
	Group 2	7								
	Group 3	7								
CGI-I	Group 1		4	3	3	3	2	2	1	
	Group 2		4	3	3	2	2	1	1	
	Group 3		3	3	2	2	1	1	1	
MIDAS	Group 1	26								8
	Group 2	27								6
	Group 3	29								5
VAS	Group 1	10	9	8	6	5	3	2	1	
	Group 2	10	9	7	6	5	4	2	1	
	Group 3	10	7	5	3	3	1	1	1	
VRS	Group 1	Severe	Severe	Severe	Moderate	Moderate	Mild	Mild	Mild	
	Group 2	Severe	Severe	Severe	Moderate	Moderate	Moderate	Mild	Mild	
	Group 3	Severe	Severe	Moderate	Mild	Mild	Mild	Mild	Mild	
NPRS	Group 1	8.33	7.33	7	6	5	3.33	2.33	1.33	
	Group 2	8.66	8.33	7.66	6	5.33	4.33	2.33	1.33	
	Group 3	9	7	5	3.33	2	1	1	0.66	

**Table 4: Side effects assessed by DOTES.**

Side effects assessed by DOTES	Group A (Flunarizine)								Group B (Flunarizine with placebo)								Group C (Flunarizine with panchgavya ghrit)							
	0	14	28	42	56	70	84	0	14	28	42	56	70	84	0	14	28	42	56	70	84			
<b>a. Behavioural toxicity</b>																								
Insomnia	-	1	2	4	3	2	2	-	1	2	2	2	1	1	1	2	1	1	-	-	-			
Drowsiness	-	2	4	5	4	3	3	-	3	5	4	4	4	3	1	4	3	2	1	-	-			
<b>b. Neurological</b>																								
1. Rigidity	-	2	3	2	1	1	1	-	3	3	2	1	1	-	-	2	1	-	-	-	-			
2. Tremors	-	3	3	2	2	1	1	-	3	3	2	1	-	-	-	1	1	-	-	-	-			
<b>c. A.N.S and G.I.T</b>																								
1. Dry mouth	-	4	3	2	1	-	-	-	3	2	1	1	-	-	-	2	1	-	-	-	-			
2. Blurred vision	-	-	1	2	-	-	-	-	-	2	1	-	-	-	-	-	-	-	-	-	-			
3. Constipation	-	3	2	2	1	-	-	-	-	2	1	1	-	-	-	-	-	-	-	-	-			
4. Nausea	-	2	4	6	4	2	2	-	2	3	4	3	3	2	-	4	3	3	2	1	-			
5. Diarrhoea	-	1	2	2	-	-	-	-	1	2	2	-	-	-	-	3	2	2	1	-	-			
<b>d. Others</b>																								
<b>1. Dermatologic (RASH)</b>																								
1. Weight gain	-	-	3	3	2	2	1	-	3	3	2	2	2	2	-	2	2	1	-	-	-			

Clinical Global Impression rating scale employed revealed that to start with subjects scored 7 which stands for pathology interfering in many life functions which reduced drastically in Group C as compared to Group B and Group A in descending order. The implications were

that there were rapid rate of recovery in clinical status of Group C as compared to other two groups. Pain scales namely VAS (visual analogue scale), NPRS (Numeric Pain Rating Scale), VRS (verbal rating scale) when employed denoted there was decreased migraine

frequency, decreased perception of pain, less intake of abortive medication consumed by subjects implying there were reduction in number of migraine days and there was

decrease in the abortive medications taken for the same. Group C scored better on pain scales followed by Group B and Group A (Table 3).

**Table 5: Side effect and symptoms associated with migraine reported by the patient, observed by the clinician or elicited by the therapist.**

Side effects reported	Group A								Group B								Group C							
	0	14	28	42	56	70	84	0	14	28	42	56	70	84	0	14	28	42	56	70	84			
Anxiety	-	2	2	1	-	-	-	-	2	1	1	-	-	-	-	-	-	-	-	-	-	-		
Depression	-	2	1	-	-	-	-	-	2	1	-	-	-	-	-	-	-	-	-	-	-	-		
Dizziness	-	1	1	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-		
Sedation	-	2	1	1	-	-	-	-	2	2	1	-	-	-	-	1	-	-	-	-	-	-		
Fatigue	-	2	1	-	-	-	-	-	2	1	-	-	-	-	-	-	-	-	-	-	-	-		
Vertigo	-	3	2	1	-	-	-	-	2	2	1	-	-	-	-	-	-	-	-	-	-	-		
Headache	-	2	1	-	-	-	-	-	2	1	-	-	-	-	-	-	-	-	-	-	-	-		
Increased appetite	-	3	2	-	-	-	-	-	3	2	-	-	-	-	-	-	-	-	-	-	-	-		
Epigastric pain	-	2	1	-	-	-	-	-	1	-	-	-	-	-	-	-	-	-	-	-	-	-		
Heart burn	-	3	3	2	-	-	-	-	3	3	2	1	-	-	-	-	-	-	-	-	-	-		
Vomiting	-	2	1	-	-	-	-	-	2	1	-	-	-	-	-	-	-	-	-	-	-	-		
Muscle ache	-	2	1	-	-	-	-	-	2	1	-	-	-	-	-	-	-	-	-	-	-	-		
Menstrual irregularity	-	3	3	2	2	-	-	-	2	2	1	-	-	-	-	-	-	-	-	-	-	-		
Photophobia	-	5	4	3	2	1	-	-	4	3	3	2	1	-	-	3	2	1	-	-	-	-		
Phonophobia	-	4	3	1	-	-	-	-	4	3	2	1	-	-	-	3	2	1	-	-	-	-		

Lower proportion of individuals in group C had Behavioural Toxicity and Neurological Side effects as compared to Group A and B (Table 4). Lower number of patients reported side effects associated with migraine in group C as compared to group A and B (Table 5).

**DISCUSSION**

Since the pharmaceutical treatment of migraine is complex, with no agreed upon guidelines individuals often need abortive medication during acute attacks and some prophylactic measure to reduce attacks. Some abortive drugs such as Triptans and ergotamine tartrate are often expensive and not commonly used in resource-poor countries, resulting in a significant amount of pain and disability.<sup>22</sup> Another problem is the actual overuse of such medications which causes ‘medication overuse headache’ (MOH), further complicating management strategies.<sup>23</sup>

A large percentage of patients do not respond to pharmacological interventions for migraine headache, develop unacceptable side-effects, or are reluctant to take medications.<sup>24</sup> As a result many patients resort to many complementary and alternative therapies like acupuncture, biofeedback therapy, relaxation therapy, herbal remedies and vitamin or mineral supplementation.<sup>24-26</sup> Recent studies have demonstrated the effectiveness of acupuncture and Yoga in the

reduction of migraine headache. The use of complementary and alternative medicine (CAM) in migraine is a growing phenomenon which, though increasingly widespread, is poorly understood.<sup>27-29</sup> Ayurveda is a traditional medical system used by a majority of India's 1.1 billion population.<sup>30</sup> Though Ayurvedic therapy is popular among migraine sufferers, there are very few studies which have compared pharmacotherapy pertaining to combination of two lines of treatment aiming for the holistic view of treatment with aim of increasing compliance ,increasing potency of drugs and reducing side effects caused by allopathic medicines when administered alone. Migraine was distinguished from common headache by Tissot in 1783 for the first time who ascribed it to a supra-orbital neuralgia provoked by reflexes from the stomach, gall bladder or uterus. Later, migraine was classified as a neurological disorder. Our hypothesis is quite similar to Tissot's idea on the pathogenesis of migraine, viz. that it usually arose from stomach disturbance.<sup>31</sup> Incidentally, there is a close correlation between the symptoms of migraine with those of *Amla-pitta* (state of acid-alkali imbalance in the body) causing symptoms such as: *brahma*(confusion), *moorcha* (fainting), *aruchi* (anorexia), *aalasya* (fatigue), *chardi* (vomiting), *prasek* (nausea), *mukhmadhurya* (sweetness in the mouth) and *shiroruja* (headache). The correlation between the cause and symptoms of *Amla-pitta* match the current diagnosis criteria of migraine.

Complimentary and Alternative Medicine (CAM) is often perceived by the public to be more helpful than conventional care for the treatment of headache.<sup>32</sup> This study is also in line with the prior ayurvedic researchers which stress upon effectiveness safety and tolerability of ayurvedic medications in migraine prophylaxis.<sup>33</sup> This study is first of its kind as we could not find any previous study from literature search reporting a comparison between the efficacy of flunarizine, flunarizine and placebo and flunarizine and panchgavya ghrith in migraine prophylaxis. The non-cross-over design had subjects having migraine without aura, although less powerful than the cross-over design, had the advantage of avoiding the carryover effect, a feature of great importance in migraine prophylaxis trials. From this comparative study we can make a preliminary assessment that combination of standard prophylaxis in allopathic medication along with panch gavya ghrith caused decrease in measures of symptom severity, better tolerability, lesser side effects, better compliance, lesser drop outs, good treatment response and efficacy among patients with migraine, implying that panch gavya ghrith when administered along with flunarizine was more efficacious and safe when compared with other two groups. However large multicentric RCTs of long duration and involving more number of subjects are required to ascertain these facts.

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# COMPARATIVE CLINICAL STUDY OF AYURVEDIC TREATMENT AND CONVENTIONAL STANDARD TREATMENT IN THE MANAGEMENT OF ARDHAVABHEDAKA (MIGRAINE)-A RANDOMIZED CONTROLLED ....

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**COMPARATIVE CLINICAL STUDY OF AYURVEDIC TREATMENT  
AND CONVENTIONAL STANDARD TREATMENT IN THE  
MANAGEMENT OF ARDHAVABHEDAKA (MIGRAINE)-A  
RANDOMIZED CONTROLLED TRIAL**

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**ABSTRACT**

**Background:** *Ardhavabhedaka*-hemicranial headache is a common disease that affects millions of individuals worldwide. The pain may be very bad and hurt so much that a person may have a hard time doing anything. The survey results suggested that both patients and physicians believe migraine treatment is elusive and that patients are becoming increasingly frustrated and dissatisfied with treatment outcomes. *Ardhavabhedaka* is a *Tridoshaja* and *Vata kaphaja* dominant disease according to *Acharya Sushrut* and *Acharya Charak* respectively. Its diagnosis is based on mainly clinical history. **Material and Methods:** In this study, eligible 107 patients were selected and randomly divided in two groups through computer generated randomization. *Laghu Sutashekhara Rasa* orally and *Brihat*

*Dashmoola Taila Nasya* were given in trial group and Tab. Flunarizine was given in control group for 60 days. The primary outcomes measured were percentage changes in chief complaints, associate complaints and MIDAS of *Ardhavabhedaka* in comparison to both groups. **Results:** Regarding effect of therapy on Chief complaints in trial group, 83.21% relief was found in severity of headache, 82.53% in duration of headache and 82.06% in frequency of headache. In control group, 83.02% relief was found in severity of headache,

82.61% in duration of headache and 82.29% in frequency of headache. In MIDAS, 64.14% and 48.04% improvement was found in trial group and control group respectively. No any adverse drug reaction was found during whole study. **Conclusion:** Overall assessment of the therapy showed that administration of *Laghu Sutashekhara Rasa* and *Nasya* with *Brihat Dashamoola Taila* provided statistically significant improvement on subjective and MIDAS criteria.

**KEYWORDS:** *Ardhavabhedaka*, *Brihat Dashamoola Taila*, *Laghu Sutashekhara Rasa*, *Migraine*.

## INTRODUCTION

*Ardhavabhedaka* is mentioned as one of the *Shiroroga* by Acharya Sushruta<sup>[1]</sup> and Acharya Vagbhata described it as a *Bheda* of *Vataja Shiroroga*.- “*Ardhetu Murdha: So Ardhavabhedaka*.”<sup>[2]</sup> Symptoms of *Ardhavabhedaka* includes *Bhedatodavat Ardharparshwa Shirahshoola* (severe tearing pain in one half of the head) having periodic attacks and with *Prakasha Shabda asahishnuta* (Photophobia and Phonophobia) are almost simulates with the condition of Migraine attack i.e. heightened sensitivity to light and sound (sonophotophobia), nausea, auras (loss of vision in one eye or tunnel vision), difficulty of speech and intense pain predominating on one side of the head. *Ardhavabhedaka* is a *Tridoshaja*<sup>[3]</sup> and *Vata kaphaja*<sup>[4]</sup> dominant disease according to *Acharya Sushruta* and *Acharya Charak* respectively. Its diagnosis is based on mainly clinical history. In this study, 107 patients were selected and randomly divided in two groups through computer generated randomization. *LaghuSutashekhara Rasa*<sup>[5]</sup> orally and *Brihat Dashamoola Taila Nasya*<sup>[6]</sup> were given in Group A and Tab. Flunarizine was given in Group B for 60 days. For the present study, an attempt has been made to compare the Ayurvedic treatment with conventional standard treatment in the management of *Ardhavabhedaka*.

## MATERIALS AND METHODS

The study was approved by Institutional Ethics Committee (No.Ethics approval no. – PGT/7-A/Ethics/2015-16/2625) and CTRI registration was also done (CTRI/2016/02/006598). Patients were selected from the O.P.D. of Dept. of Shalakyatantra and referred from other dept. of institute. Patients’ written informed consent was taken before starting the treatment. Patients were selected using ‘Simple random sampling method’. The study was conducted in 107 subjects. Both the drugs, *Laghu Sutashekhara Rasa* and *Brihat Dashamoola Taila* were

procured from the Pharmacy, IPGT & RA, Jamnagar and authenticated in the Pharmacognosy and Pharmaceutical Laboratory, IPGT & RA, Jamnagar.<sup>[7]</sup>

**Criteria for inclusion:** Age Control group between 18 to 60 years and having sign and symptom of *Ardhavabhedaka* (Migraine) According to *Ayurvedic* Classics as well as Modern science.

The diagnosis of the disease was done on the basis of clinical manifestations like recurrent attacks of headache, mostly unilateral in site, variable in intensity, frequency and duration with or without nausea, vomiting, aura and GI tract symptoms.

**Criteria for exclusion:** Patients having any chronic debilitating disease with other neurological pathology or having Sinusitis, Hypertension, Secondary headache caused by meningitis, tumor, encephalitis, cervical spondylitis and refractive errors, age Control group below 18 & above 60 etc. were excluded from the study.

**Sample Size<sup>[8]</sup>: 107**

### **Grouping**

#### **Group A-Trial group**

(1) *Brihat Dashamoola Taila Nasya*: *Nasya* was done in the dose of 6 drops in each nostril for 4 sittings of seven days with the interval of 07 days after each sitting. Total duration was 60 days.

(2) *Laghu Sutashekhara Rasa Vati*: *Vati* was given in the dose of 500 mg three times a day before meal with warm water for 60 days.

#### **Group B- Control group**

Flunarizine Tab 10mg OD at night after meal was given for 60 days.

### **Follow up**

After completion of the treatment, the patients were followed for one month at the interval of 15 days.

### **Investigations**

Routine hematological (Hb%, TC, DC, ESR), urine analysis (Routine and micro examination) and RBS were carried out before treatment to rule out any systemic diseases.

**Scoring pattern<sup>[9,10,11]</sup>****Subjective symptoms**

The improvement in patients was assessed on the basis of relief in the signs and symptoms of the disease. The details of the score adopted for the main signs and symptoms in this study are as follows:

## ❖ Severity of Headache

0 = No headache.

1 = Mild headache, patient is aware only if he/she pay attention to it.

2 = Moderate headache, can ignore at times.

3 = Severe headache, can't ignore but he/she can do his/her usual activities.

4 = Excruciating headache, can't do anything.

## ❖ Frequency of Headache: Assessed in term of (frequency in days)

0 = Nil

1 =  $\geq 20$  days

2 = 15 days

3 = 10 days

4 =  $\leq 5$  days

## ❖ Duration of Headache: (Assessed in term of hours/day)

0 = Nil

1 = 1-3 hours/day

2 = 3-6 hours/day

3 = 6-12 hours/day

4 = More than 12 hours/day

## ❖ Nausea

0 = Nil

1 = Occasionally

2 = Moderate, but does not disturb the routine work

3 = Severe, disturbing routine work

4 = Severe enough, small amount of fluid regurgitating from Mouth

## ❖ Vomiting

0 = Nil

- 1 = Only if headache does not subside
- 2 = Vomiting 1-2 times
- 3 = Vomiting 2-3 times
- 4 = Forced to take medicine to stop vomiting

❖ Vertigo

- 0 = Nil
- 1 = Feeling of giddiness
- 2 = Patient feels as if everything is revolving
- 3 = Revolving signs + black outs
- 4 = Unconscious

❖ Aura

- 0 = Nil
- 1 = Lasts for 5 minutes.
- 2 = Lasts for 15 minutes
- 3 = Lasts for 30 minutes
- 4 = Lasts for 60 minutes

❖ Gradation For Associated Symptoms

- 0 = No symptoms
- 1 = Mild (can do his/her work)
- 2 = Moderate (forced to stop work)
- 3 = Severe (forced to take rest)
- 4 = Excruciating (force to take medicine)

**Overall assessment**

The improvement was assessed on the basis of subjective symptoms and MIDAS criteria.<sup>[12]</sup>

**Subjective:** The assessment was done by adopting the following scoring pattern for subjective symptoms-

1. Complete Remission: 100% relief in objective and subjective signs and symptoms.
2. Marked improvement: 76 – 99% relief in objective and subjective signs and symptoms.
3. Moderate improvement: 51 – 75% relief in objective and subjective signs and symptoms.
4. Mild improvement: 26 – 50% relief in objective and subjective signs and symptoms.

5. Unchanged: Below 25% relief in objective and subjective signs and symptoms.

### Statistical estimation of results

The obtained data were analyzed statistically. The values were expressed as percentage of relief and Standard Error Mean. The data were analyzed by paired 't' test, Unpaired 't' test and Wilcoxon Signed Rank test.

$P > 0.05$  = Insignificant

$P < 0.05$  and  $0.01$  = Significant

$P < 0.001$  = Highly significant

### OBSERVATIONS AND RESULTS

In this clinical trial of *Ardhavabhedaka*, there are total 107 patients registered, and were randomly distributed into two groups i.e. Group A and Group B. Among them 74 patients were registered in Group A and 33 patients in Group B. 04 patients were drop out in Group A and 03 patients were drop out in Group B. The general observations are shown in Figure 1

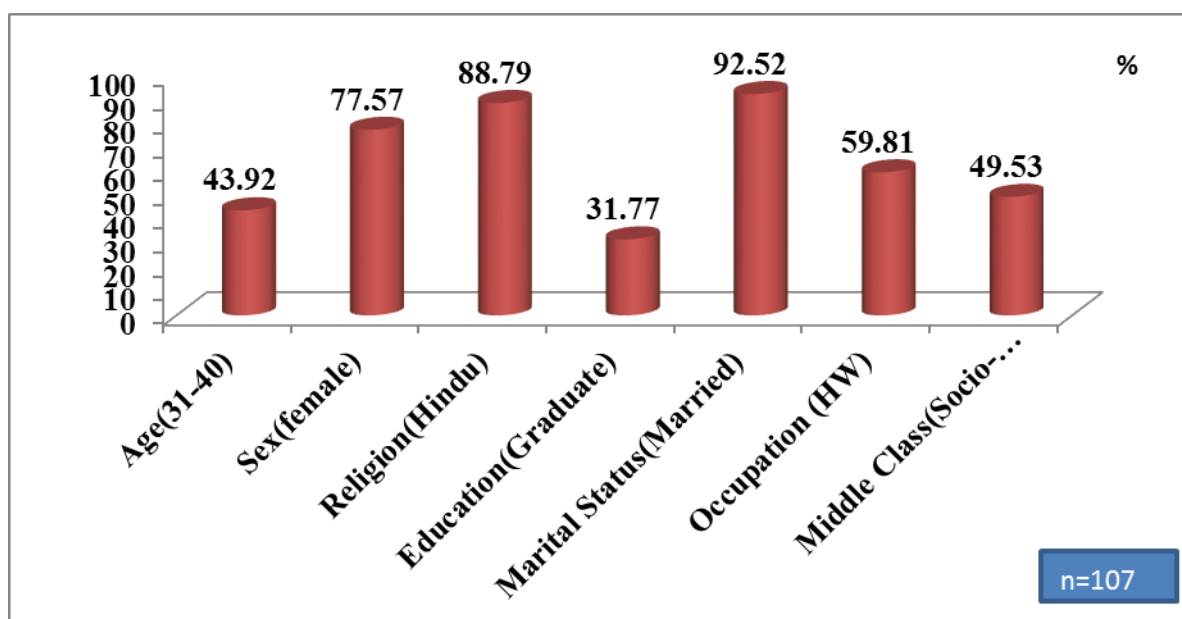


Figure 1: General Observation.

Observation reveals that, regarding the chief complaints 100% patients were having *Shirah-Shoola* (headache), followed by *Hrillas* (nausea) and *Chhardi* (vomiting) 85.05% and 39.25% respectively, *Bhrama* (vertigo) 51.40%, and Aura 36.45%, which are identical to the textual *Lakshana* (symptoms) of *Ardhavabhedaka* and migraine.



Regarding the associated symptoms 85.04% patients were having Photophobia, 76.64% patients were having Phonophobia, 49.53% were having Heaviness of eyes, 45.79% were having Supra orbital pain, 43.92% patients had Blurring of vision, 40.18% patients had Lacrimation, 38.32% patients had Stiffness of neck followed by other symptoms, which tally with textual *Lakshanas* of *Ardhavabhedaka* and migraine.

Regarding the *Shirah-Shoola*, Maximum (68.22%) patients were having unilateral headache, that also particularly more in temporal and occipital region i.e., 71.02% and 55.14% respectively, nature of pain was *Tivra* (sharp) in 98.13% patients. Regarding the quality of headache, maximum patients (59.81%) were having *Shankhanistoda*, *Shirogaurava* (49.53%), *Ghatasambheda* (33.64%) followed by others. The intensity of headache was excruciating in 68.22% of patients. Maximum patients (52.33%) were having chronicity of >5 years. Maximum patients (65.42%) were having gradual onset of headache. The duration 6-12 hours of headache was seen maximum i.e., 57.94%. Regarding frequency, the episode at an interval of 10 days was seen maximum i.e., 60.75%. Maximum patients (85.98%) were found to be having continuous nature of headache. This shows that majority of the patients either have never consulted a doctor or have stopped doing so, which suggests the chronicity of disease. It was observed that patients rely on painkiller without any medical advice given by physician, in a hope to get rid of the headache quickly. But it was not going to stop the pathology. And the patients, who were taking anti-migraine drugs, were not responding. This results in chronic migraines i.e., rebound or transformed migraine headache.

The maximum *Nidanas* (etiological factors) observed in patients were *Diwaswapna* (day sleeping) (79.44%), *Vegadharana* (holding natural urges) (49.53%) *Lavana Rasa Pradhana Aahara* (dominancy of salty taste in food) (46.73%), *Adhyashana* (intake food in high quantity) (48.60%), *Amla Rasa Pradhana Ahara* (dominancy of sour taste in food) (39.25%) followed by *Ratri Jagarana* (awakning in night) (23.36%) and *Atisheeta Jala Sevana* (drinking very cold water) (26.17%). This shows faulty lifestyle, which is accepted by today's generation. Intake of junk food, taking food at any time, fasting habits of females etc lead to *Agnimandhya* (poor digestion) and *Tridosha imbalance*, which contributes chiefly in the pathogenesis of the disease. Also tyramine and other amines present in today's junk and sour-spicy food causes dilation of the nerves in the brain, resulting in a rush of blood. Faulty diet causes Constipation (42.99%) and Hyperchlorhydria (67.29%), which was observed by

patients at the time of migraine headache. These findings also suggest involvement of *Vata-Pitta Dosha*.

Similarly *Ratrijagarana* and *Diwaswapa* aggravate *Vata* and *Kapha Dosha* respectively. Also disturbed sleep was observed in maximum patients i.e., 26.17%. Disturbances such as sleep deprivation, too much sleep, poor quality of sleep and frequent awakening at night are associated with both migraine and tension headaches, whereas improved sleep habits helps in reducing the frequency of migraine headaches. Sleep also has been reported to shorten the duration of migraine headaches.

Environmental factors, like *Atapa* (sunlight) (34.57%), *Dhuli* (dust) (13.08%) causes the *Atiyoga of Indriyas* and serves as a triggering factor. Emotional natures of females, the responsibilities of the family were the cause of mental factors such as *Chinta* (stress) (47.66%), *Krodha* (anger) (64.48%), *Bhaya* (fear) (30.84%), *Shoka* (grief) and *Vishada* (depression) (14.95%).

#### Effect of therapies on signs & symptoms

Regarding effect of therapy on Chief complaints, both the group showed significant results. Statistically highly significant (<0.001) improvement in severity (83.21%), duration (82.53%) and frequency (82.06%) of headache was obtained in trial group (Group A), followed by statistically highly significant (<0.001) improvement in severity (83.02%), duration (82.61%) and frequency (82.29%) of headache in Group B. Table 1

**Table 1: Effect of therapy on Chief complaints.**

Group A									
Headache	n	Mean		% of relief	S.D. (±)	S.E. (±)	t	W	P
		B.T.	A.T.						
Severity	70	03.64	00.57	83.21	00.75	00.09	2485.00	2485.00	<0.001
Duration	70	03.27	00.73	82.53	00.81	00.10	2485.00	2485.00	<0.001
Frequency	70	03.18	00.57	82.06	00.82	00.10	2485.00	2485.00	<0.001
Group B									
Headache	n	Mean		% of relief	S.D. (±)	S.E. (±)	t	W	P
		B.T.	A.T.						
Severity	30	03.53	00.60	83.02	00.91	00.17	465.00	465.00	<0.001
Duration	30	03.07	00.53	82.61	00.86	00.16	465.00	465.00	<0.001
Frequency	30	03.20	00.57	82.29	00.67	00.12	465.00	465.00	<0.001

Effect of therapy on associated complaints showed that in trial group 95.43% relief in Nausea, 100% in Vomiting, 97.56% in Vertigo and 93.75% in Aura was obtained, which was

statistically significant. While in Control Group, Nausea was relieved by 89.47%, Vomiting by 92.86%, Vertigo by 89.47% and Aura by 90.00% which were statistically significant. This shows that trial group therapy was more effective than control group therapy on chief complaints. Table 2.

**Table 2: Effect of therapy on associated complaints.**

Group A									
Symptoms	N	Mean		% of relief	S.D. (±)	S.E. (±)	t	W	P
		B.T.	A.T.						
<i>Hrillas</i> (Nausea)	59	02.81	00.13	95.43	01.40	00.17	1770.00	1770.00	<0.001
<i>Chhardi</i> (Vomiting)	31	00.66	00.00	100	00.93	00.11	496.00	496.00	<0.001
<i>Bhrama</i> (Vertigo)	34	01.21	00.03	97.56	00.57	00.09	595	595	<0.001
<i>Purvabhasa</i> (Aura)	29	01.10	00.07	93.75	00.63	00.12	378	378	<0.001
Group B									
Symptoms	N	Mean		% of relief	S.D. (±)	S.E. (±)	t	W	P
		B.T.	A.T.						
<i>Hrillas</i> (Nausea)	27	02.81	00.30	89.47	01.09	00.21	378.00	378.00	<0.001
<i>Chhardi</i> (Vomiting)	09	01.55	00.11	92.86	00.73	00.24	45.00	45.00	<0.05
<i>Bhrama</i> (Vertigo)	19	01.00	00.10	89.47	00.31	00.07	153.00	153.00	<0.001
<i>Purvabhasa</i> (Aura)	10	01.00	00.10	90.00	00.32	00.10	45.00	45.00	<0.05

The other associated symptoms like Blurring of vision, Photophobia, Ocular pain, Eyelid oedema, Phonophobia were relieved by 97.14%, 91.50%, 96.00%, 91.30%, 90.20% in Group A and 94.94%, 91.11%, 93.33%, 87.50% and 86.84 in Group B respectively, which were statistically highly significant (<0.001). The other associated symptoms like Hyperchlorhydria and Constipation were relieved by 96.96% and 93.55% in Group A and 47.06% and 46.67% in Group B respectively, which were statistically significant in Group A and insignificant in Group B. This shows that trial group therapy was more effective than control group therapy on associated symptoms. Table 3.

**Table 3: Effect of therapy on other associated complaints.**

Group A									
Associated complaints	n	Mean		% of relief	S.D. (±)	S.E. (±)	T	W	P
		B.T.	A.T.						
Ocular complaints									
Blurring of vision	32	01.09	00.03	97.14	00.35	00.06	496.00	496.00	<0.001
Transient loss of vision	10	01.00	00	100	00.35	00.04	55.00	55.00	<0.001

Lacrimation	26	01.03	00.03	96.29	00.28	00.05	325.00	325.00	<0.001
Eyelid oedema	21	01.09	00.09	91.30	00.32	00.07	210.00	210.00	<0.001
Ocular pain	23	01.09	00.04	96.00	00.37	00.08	253.00	253.00	<0.001
Supra orbital pain	28	01.14	00	100	00.36	00.07	406.00	406.00	<0.001
Heaviness of eyes	33	01.06	00.06	94.11	00.36	00.06	465.00	465.00	<0.001
Photophobia	63	01.68	00.14	91.50	00.76	00.10	1770.00	1770.00	<0.001
Burning sensation	17	01.00	00.06	94.11	00.24	00.06	136.00	136.00	<0.001
<b>Ear complaints</b>									
Phono phobia	60	01.70	00.17	90.20	00.77	00.10	1596.00	1596.00	<0.001
Tinnitus	12	01.08	00.08	92.31	00.43	00.12	66.00	66.00	<0.001
Hearing loss	08	01.00	00.12	87.50	00.35	00.12	28.00	28.00	<0.05
Earache	18	01.00	00.11	88.89	00.32	00.07	136.00	136.00	<0.001
<b>Nasal complaints</b>									
Rhinorrhoea	07	01.00	00.28	71.42	00.49	00.18	15.00	15.00	>0.05
Burning sensation	21	01.05	00.05	95.45	00.32	00.07	210.00	210.00	<0.001
<b>GIT complaints</b>									
Constipation	29	01.07	00.07	93.55	00.38	00.07	378.00	378.00	<0.001
Hyperchlor Hydria	52	01.26	00.04	96.96	00.51	00.07	1326.00	1326.00	<0.001
<b>Other complaints</b>									
Sleep disturbance	20	01.60	00.25	84.37	00.59	00.13	190.00	190.00	<0.001
Mood swings	47	01.04	00.11	89.79	00.38	00.06	903.00	903.00	<0.001
Stiffness of neck	25	01.16	00.20	82.75	00.45	00.09	253.00	253.00	<0.001
Loss of memory	12	01.00	00.08	91.67	00.29	00.08	66.00	66.00	<0.001
Fear	15	01.00	00.07	93.33	00.26	00.07	105.00	105.00	<0.001
<b>Group B</b>									
Associated complaints	n	Mean		% of relief	S.D. (±)	S.E. (±)	T	W	P
		B.T.	A.T.						
<b>Ocular complaints</b>									
Blurring of vision	14	01.28	00.07	94.94	00.43	00.11	105.00	105.00	<0.001
Lacrimation	16	01.19	00.19	84.21	00.52	00.13	105.00	105.00	<0.001
Eyelid oedema	16	01.00	00.13	87.50	00.34	00.08	105.00	105.00	<0.001
Ocular pain	15	01.00	00.07	93.33	00.26	00.07	105.00	105.00	<0.001
Supra orbital pain	20	01.05	00.10	90.48	00.39	00.09	171.00	171.00	<0.001
Heaviness of eyes	18	01.17	00.11	90.48	00.54	00.13	136.00	136.00	<0.001
Photophobia	25	01.80	00.16	91.11	00.70	00.14	325.00	325.00	<0.001
Burning Sensation	10	01.20	00.10	91.67	00.74	00.23	45.00	45.00	<0.001
<b>Ear complaints</b>									
Phonophobia	19	02.00	00.26	86.84	00.65	00.15	190.00	190.00	<0.001
Tinnitus	09	01.00	00.11	88.89	00.33	00.11	36.00	36.00	<0.05
Earache	05	01.00	00	100	00	00	15.00	15.00	>0.05
<b>Nasal complaints</b>									
Burning sensation	05	01.00	00.40	60.00	00.55	00.24	06.00	06.00	>0.05
<b>GIT complaints</b>									
Constipation	15	01.00	00.53	46.67	00.52	00.13	28.00	28.00	>0.05
Hyperchlor Hydria	17	01.00	00.71	29.41	00.47	00.11	15.00	15.00	>0.05

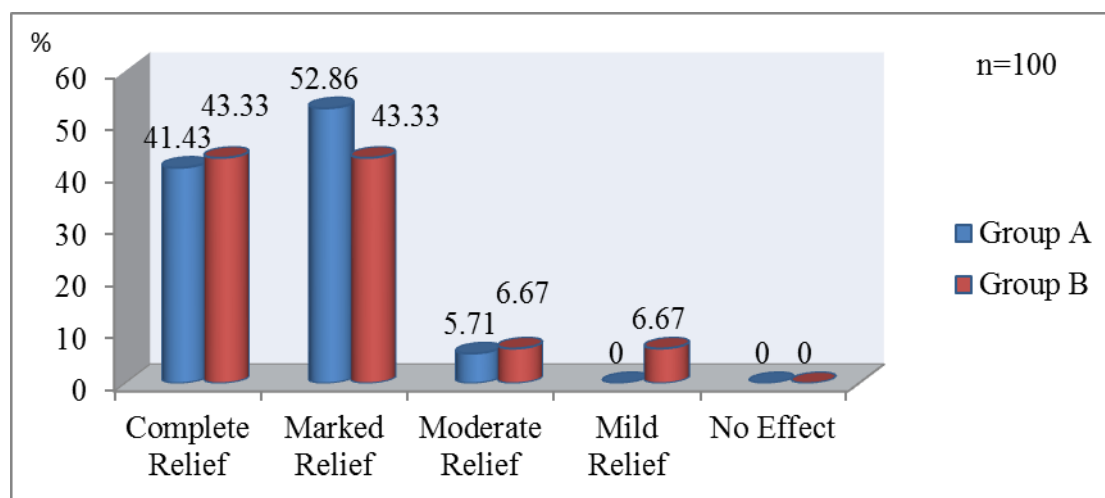
Other complaints									
Sleep disturbance	09	01.56	00.22	85.71	00.87	00.29	36.00	36.00	<0.05
Mood swings	13	01.23	00.15	87.50	00.49	00.14	78.00	78.00	<0.001
Stiffness of neck	08	01.12	00.25	77.78	00.64	00.23	21.00	21.00	>0.05
Fear	09	01.11	00.11	90.00	00.50	00.17	36.00	36.00	<0.05

Regarding effect of therapy on MIDAS (Migraine Disability Assessment Score), both the group showed significant results. Table 4.

**Table 4: Effect of therapy on MIDAS.**

Group	n	Mean		% of relief	S.D. (±)	S.E. (±)	t	W	P
		B.T.	A.T.						
Group A	70	03.58	01.28	64.14	00.62	00.07	2485.00	2485.00	<0.001
Group B	30	03.40	01.77	48.04	00.56	00.10	465.00	465.00	<0.001

**Total effect of therapy:** The overall effect of therapy showed that in Group A 41.43% patients had complete improvement, followed by marked improvement in 52.86% and moderate improvement in 5.71%. In control group i.e., Group B complete and marked improvement was seen in 43.33% and 43.33% respectively; and 6.67% had moderate improvement. Not a single case was noted unchanged in any of the groups. Figure 2.



**Figure 2: The overall effect of therapy.**

### Recurrence of Chief Complaints in Follow up Period in Group A & Group B

Regarding follow up period, mostly patients in Group B i.e., Flunarizine Group, had recurrence of disease while in Group A i.e. *Laghu Sutashekhara Rasa* and *Brihat Dashamoola Taila Nasya*, only 30.00% patients had complaint of *Shirahshoola*, 11.43% patients complaint of *Hrillas*, 01.42% patients had *Chhardi* while *Bhrama* and *Purvabhasa*

was observed in 04.28% and 01.42% patients respectively. It also proves *Ayurveda* therapy is better than modern management.

## DISCUSSION

In *Shiroroga*, *Ardhavabhedaka* is found to be the most common complaint after *Vatika Shirahshoola*. The disease *Ardhavabhedaka* is characterized by paroxysmal and unilateral headache, which may be severe in nature. All the three *Doshas* are involved in the pathogenesis of the *Ardhavabhedaka* with the predominance of *Vata* or *Vata-Kapha* along with *Rakta Dushya*. The disease may not be fatal but if not managed properly then it may damage eyesight or hearing. *Ardhavabhedaka* can be scientifically correlated with Migraine due to its cardinal feature “half sided headache” which is also explained by commentator *Chakrapani* as “*Ardha Mastaka Vedana*”<sup>[13]</sup> and also due to its paroxysmal nature. Moreover, the symptoms nausea, vomiting and giddiness are also seen, which shows the involvement of *Pitta Dosh*, which can be explained as under: Vomiting & burning sensation symptoms are seen when *Prana Vata* combines with *Pitta*.<sup>[14]</sup> *Udana Vayu* with *Pitta* results in *Murcha*, *Daha*, *Bhrama* and *Klama*.<sup>[15]</sup> The symptom *Bhrama* is due to *Rajoguna* and *Pitta – Vata Dosh* involvement.<sup>[16]</sup> On studying the etiology and symptoms, the disease *Ardhavabhedaka* can be realized as *Vatika* or *Vata-Kaphaja* disorder. Preliminary *Vata* alone or combined with *Kapha* may be the pioneer *Doshas* for *Ardhavabhedaka* but due to nature of disease it may assume *Sannipatika* appearance swiftly.<sup>[17]</sup>

In this clinical trial both group’s viz. Trial Group and Control Group were able to bring statistically highly significant improvement on Intensity, Duration, and Frequency of headache and on almost all the Chief Complaints viz. Nausea, Vomiting, Vertigo and Aura. The associated symptoms like Blurring of vision, Photophobia, Ocular pain, Eyelid edema and Lacrimation were relieved by statistically significant in both the groups. In comparison of MIDAS criteria of both groups Ayurvedic group showed more significant results than control group. In follow up period recurrence of *Shirahshoola*, *Hrillas*, *Chhardi*, *Bhrama*, *Purvabhasa* observed more in control group than Ayurvedic group. This shows that Group A showed more effective result in follow up period than Group B. Earlier one clinical study also showed significantly good results in Ayurvedic group than control group.<sup>[18]</sup>

### Probable Mode of action of *Laghu Sutashekhara Rasa*

Taking a lead from the modern patho-physiology of migraine i.e. vascular theory; the in flowing tissue i.e. blood (*Rakta*) seems to be the targeted pathological tissue (*Dushya*) in its



origin. *Rakta* being the similar factor of *Pitta* (on physiological & pathological grades); *Pitta* seems to be a major contribution pathological human in the origin of *Ardhavabhedaka* and it is also *Vata* dominance headache hence *Tridosha Shamaka* dominantly *Vata-Pitta Shamaka* line of treatment is taken here. *Laghu Sutashekhara Rasa* containing *Rasaushdhi* as well as herbal drugs indicated for *Ardhavabhedaka* described in *Rasatarangini*, which is having digestive, anti-oxidant, anti-inflammatory properties and *Vata-Pittahara* quality.

*Laghu Sutashekhara* relives *Amlata* and *Tikshanta* of *Pitta* by acting on *Amashaya* and *Pakvashaya*. Thus it regularizes *Pittotpati*. The driver *Dosha Vata* also gets pacified by the contents hence *Chhardi* (vomiting) and *Bhrama* (vertigo) subsides in *Ardhavabhedaka* by use of *Laghu Sutashekhara Rasa*. It works as *Doshapratynika* and *Vyadhipratynika Chikitsa* in *Ardhavabhedaka*.

#### **Probable mode of action of *Brihat Dashamoola Taila Nasya***

There are various modalities for the alleviation of *Shirahshoola*. According to *Acharya Charaka*, *Nasyakarma* is the best treatment for the *Shiroroga*<sup>[19]</sup>, because, nose is the nearest pathway for the elimination of *Doshas* from the head. *Ardhavabhedaka* being one of the *Shiroroga* can be best treated with *Nasya* in which morbid *Doshas* are situated in the head. In the present study *Brihat Dashmoola Taila* used for *Nasya* for treatment of *Ardhavabhedaka*. *Brihat Dashamoola Taila* is mentioned in *Bhaishajya Ratnavali* in *Shirorogadhikara* chapter with special indication to *Ardhavabhedaka*. Also in a clinical study, the effect of *Dashamoola* in the management of sensory and motor disorders pertaining to sympathetic and parasympathetic outflow amongst the patients presenting with primary neurological disorders have been investigated significant improvement in nerve conduction velocity.<sup>[20]</sup> So, *Brihat Dashamoola Taila* was taken for *Nasya* therapy.

#### **CONCLUSION**

On the basis of similarities between the signs, symptoms, complications, prognosis, chronicity and etymology; *Ardhavabhedaka* and Migraine are similar clinical entities. Migraine is a clinical diagnosis based on symptoms that are subjective and verifiable only by the patient. *Ardhavabhedaka* is clinically *Vata-Kapha* dominantly *Tridoshaja Vyadhi*. Patients from 31-40 years of age group, females, housewives, married and middle class people were more prone to Migraine. Migraine sufferers had severe intensity and unilateral episodic pain with continuous rhythm. It can be inferred that in this study Trial group where

in *Laghu Sutashekhara Rasa* along with *Brihat Dashamoola Taila Nasya* is given; was showing better results in *Ardhavabhedaka* (Migraine) than Control group (Flunarizine).

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# Response to Ayurvedic Treatment in Prevention of Migraine: An Update of Multicentric Observational Clinical Study

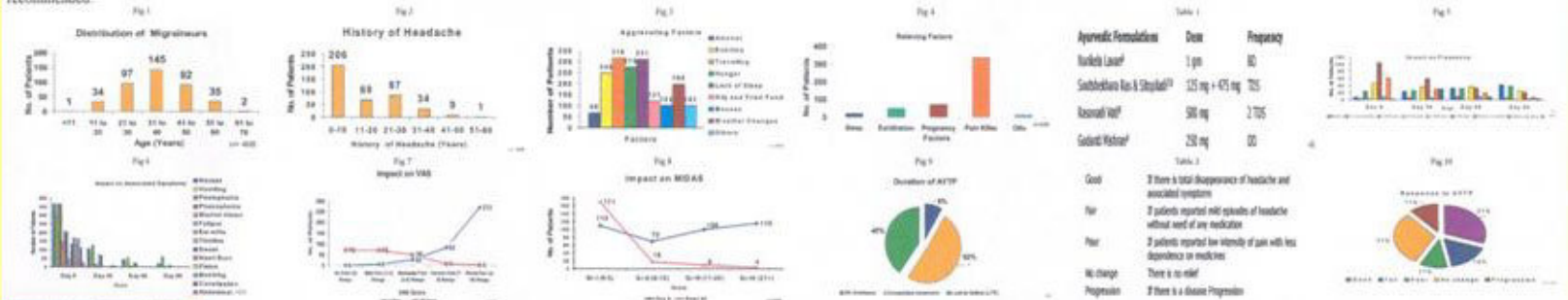
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**Introduction:** Migraine is characterized by various combination of neurologic, gastrointestinal and autonomic symptoms which leads to significant impact on work, home and social situations. The current treatments of migraine is divided into two categories 1. Management of acute attack and 2. Prophylaxis. However, most of the prophylactic treatment have limited effects and moderate to severe side effects. Overuse of painkillers also cause Medication Induced Headache (MIH) and comorbid disorders.

**Objectives:** To study the relevance of Ayurvedic concepts (Ayurveda- traditional Indian system of medicine) i.e. diet, lifestyle and medicines in the prevention of migraine 2. To observe the prospective effect of Ayurvedic treatment on frequency, intensity of pain associated symptoms and its impact using Visual Analog Scale (VAS) and Migraine Disability Assessment Scale (MIDAS). To analyze the impact of uniform Ayurvedic Treatment Protocol (AYTP) at various centers using International Headache Society (IHS) diagnostic criteria.

**Material and Methods:** In the present study the principle investigator has used AYTP for the first time with an established indication in this model of observational research. Ayurvedic physicians were trained and equipped with uniform products and protocol. Hence, the data has been collected meticulously maintaining the internal and external quality control assurance. 406 patients from seventeen different centers from nine districts of Southern India from May 2005 to March 2007. Using central registry system (post card) monitored under VCPC Research Foundation (VCPCRF), Dehradun. Patients fulfilling IHS diagnostic criteria were enrolled and a questionnaire comprising of age and sex (Fig 1), dietary habits, family history and the patients history of headache (Fig 2), aggravating factors (Fig 3) and relieving factor (Fig 4). The frequency, associated symptoms, severity using VAS score, impact of migraine using MIDAS score were evaluated using individual case record form. Other features like acidity, flatulence, constipation or irregular bowel, dryness in mouth, non-tolerance to hunger and fatigue were also noticed in migraineurs. The exclusion criteria was patients not fulfilling IHS criteria i.e. renal failure, pregnancy, cardiac and cancer patients.

**Treatment Protocol:** The given treatment was derived following Ayurvedic concept of diagnosing of *Amla-Pitta* a state of acid-alkali imbalance causing one of the symptom of *abiruraga* (pain in head). All medicines were prepared at Bharat Bhaishajaya Shala Pvt. Ltd, Dehradun and given to all the patients in daily dosages (Table 1). Lifestyle changes like three meals, three snacks providing adequate calories and meals devoid of nicotine, caffeine, reheated food, aerated drinks and minimum of eight hours of sleep were recommended.



**Statistical Analysis:** Statistical Analysis was done by uni-variate and bivariate frequency tables by using version SPSS 13.0 at department of Biostatistics, National Institute of Mental Health and Neuro Science (NIMHANS), Bangalore, India.

**Result:** The result of the observational study carried out at multiple centers demonstrates that AYTP significantly reduces the frequency of episodic attacks (Fig. 5), gradual disappearance of associated symptoms (Fig. 6) and the severity of pain (Fig. 7). It also has great impact on MIDAS scoring (Fig. 8). The overall response (Fig. 9) was considered good 31%, fair 16%, poor 11%, no change 31% and progressive 11% (VCPCRF's criteria) (Table 2). However, only 52% patients completed recommended 120 days AYTP (Fig. 10) AYTP did not cause any noticeable side effect.

**Discussion:** A comprehensive questionnaire revealed that enrolled migraineurs have a habit of skipping breakfast, long gap of eating, spicy and reheated food items, 4-6 cups of tea with caffeine, with irregular sleeping habits. In few cases, patients had prior history of hepato-biliary disorders. AYTP in conjunction with regulated lifestyle and diet restore acid-alkali balance, bring normal functioning of gastro-intestinal system and gradually reduces severity and frequency of migraine headaches. The findings reveal that the patient who completes 120 days treatment with good compliance of lifestyle and diet have no sign and symptom of migraine and lead to a normal life. The herbs- mineral formulations (Table 1) used in the study is the first report of the use of these formulations for the treatment of migraine, although their use has been described in classical Ayurvedic texts for treatment of other ailments. Migraine was distinguished from common headache by *TISSOT* in 1783 for the first time who ascribed it to a supra-orbital neuralgia, provoked from reflex of stomach, gall bladder or uterus. Observations based on our findings also indicate that common migraine might be a reflection of physiological disturbance of gall bladder and gastrointestinal tract. However, the acclaimed hypothesis is to be validated by developing experimental models and large studies. The findings strongly advocate the comprehensive research on this unique phenomenon in the treatment of migraine.

**Conclusion:** Our conclusion from the past and the present study established a strong prime facie evidence in the effect of AYTP in preventing migraine. However, further studies are necessary to understand the mechanism and the various pathways involved in the AYTP for migraine. Though AYTP is well tolerated and do not cause any noticeable side effect, still safety studies are planned and shall be carried out.

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## An Ayurvedic approach to migraine with *Godanti*

Gupta Rashmi, Gupta Gopal Das

### Abstract

A lot of people get migraines about 11 out of 100. The headaches tend to start between the ages of 10 and 46 and may run in families. Migraines occur more often in women than men. Pregnancy may reduce the number of migraines attacks. Until the 1980s, scientists believed that migraines were due to changes in blood vessels within the brain. Today, most believe the attack actually begins in the brain itself, and involves various nerve pathways and chemicals in the brain. This has been observed that, migraine attack can be triggered by stress, food, environmental changes, or some other factors. However, the exact chain of events remains unclear. Prevention can be done by avoiding smoking, caffeine, and alcohol, exercise regularly, get enough sleep each night and meditation. Common prescribing drugs include: Beta-blockers, Anti-depressants, Anti-convulsants, Calcium channel blockers. But the permanent improvement cannot be achieved. With the use of *Godanti Bhasma*, herbal compound formulation and some meditation exercise will correct the chemical disturbance in the brain. This will help to complete treat the disease and also these drugs safe even in pregnancy.

**Keywords:** Migraines, Beta-blockers, *Godanti Bhasma*, *Pathyadi kashaya*

### 1. Introduction

A migraine is a type of primary headache that some people get repeatedly over time. Migraines are different from other headaches because they occur with symptoms such as nausea, vomiting, or sensitivity to light. In most people, a throbbing pain is felt only on one side of the head. Migraines are classified as either "with aura" or "without aura." An aura is a group of neurological symptoms, usually vision disturbances that serve as warning sign. Patients who get auras typically see a flash of brightly colored or blinking lights shortly before the headache pain begins. However, most people with migraines do not have such warning signs<sup>[1]</sup>.

#### 1.1 Triggering Factors<sup>[1]</sup>

- Allergic reactions
- Bright lights, loud noises, and certain odors or perfumes
- Physical or emotional stress
- Changes in sleep patterns
- Smoking or exposure to smoke
- Skipping meals
- Alcohol or caffeine
- Menstrual cycle fluctuations, birth control pills
- Tension headaches
- Foods containing tyramine (red wine, aged cheese, smoked fish, chicken livers, figs, and some beans), monosodium glutamate (MSG), or nitrates (like bacon, hot dogs, and salami)
- Other foods such as chocolate, nuts, peanut butter, avocado, banana, citrus, onions, dairy products, and fermented or pickled foods

#### 1.2 Symptoms<sup>[1]</sup>

Migraine headaches, which can be dull or severe, usually:

- Feel throbbing, pounding, or pulsating
- Are worse on one side of the head
- Last 6 to 48 hours

Symptoms accompanying migraines include:

- Nausea and vomiting
- Sensitivity to light or sound

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- Loss of appetite
- Fatigue
- Warning signs (auras) that can precede a migraine include seeing stars or zigzag lines, tunnel vision, or a temporary blind spot.

Symptoms that may linger even after the migraine has gone away include:

- Feeling mentally dull, like your thinking is not clear or sharp
- Increased need for sleep
- Neck pain

### 1.3 Complications

Migraine headaches generally represent no significant threat to your overall health. However, they can be chronic, recurrent, frustrating, and they may interfere with your day-to-day life. Stroke is an extremely rare complication from severe migraines. This risk may be due to prolonged narrowing of the blood vessels, limiting blood flow to parts of the brain for an extended period of time [1].

### 1.4 Treatment

There is no specific cure for migraine headaches. The goal is to prevent symptoms by avoiding or altering triggers. When you do get migraine symptoms, try to treat them right away. Many of the prescription medications for migraines narrow your blood vessels. Therefore, these drugs should not be used if you have heart disease. Several studies are supporting use of herb formulation for treating migraines.

This work has been done in random OPD patient of migraines with using *Godanti Bhasma* and *Pathyadi kashaya*.

**1.5 Godanti Bhasma** [2] has been described as best drug for headache in *Rasamrata*- A text book of *Rasashastra*.

### Properties

**English Name**- Gypsum

**Chemical Name**- Calcium sulphate,  $\text{CaSO}_4 \cdot 2\text{H}_2\text{O}$

This is going to be used in *Ayurvedic* formulation after 20<sup>th</sup> century.

**Best Quality**- White like moon and stone has multiple layers. It is found at Rajasthan and Gujrat.

Purification should be done with juice of *Neem (Azadirachta indica)* leaves. *Bhasma* should be made by burning by heat in unoxxygenation state.

**Dose**- 1-2 gm per day

Drug should be used along with *Madhu*, *Mishari*, *Cow Ghrita* and Milk.

**Other uses**- PEM, PUO, Leucorrhea, Chronic Bronchitis.

**1.6 Pathyadi Kashaya** [3] has been described for the treatment of various type of headache as per *Sharangadhar Samhita* in 13<sup>th</sup> century.

This is decoction of 6 drugs- *Triphala (Haritaki, Amalki & Vibhitaki)*, *Haridra*, *Neem*, *Gudachi*.

**Dose**- 20ml two time in a day.

**As per analysis of physical and chemical property of these drugs mention below-**

**Triphala**- It corrects our digestion and assimilation process. Means, it will normalize our gut.

**Haridra and Neem** both acts as antibiotic and prevent unwanted production of inflammatory chemical mediators.

**Guduchi** acts as antioxidant and free radical scavenges.

This study suggesting that, these drugs are normalizing our Gut-Brain axis. This prevents production of harmful undigested material, prevents production of unusefull chemical mediator by antigen- antibody reaction and also removes the free radical from blood. These all harmful chemicals are responsible for altering the chemistry of brain, which is the main factor for triggering the attack of migraines. All these drugs are also safe in pregnancy and cardiac patients [4].

### 1.7 For Prevention [1]

- Avoid smoking, caffeine, and alcohol
- Exercise regularly
- Get enough sleep each night
- Learn to relax and reduce stress – try progressive muscle relaxation (contracting and releasing muscles throughout your body), meditation, biofeedback, or joining a support group.

### 2. Asanas for Migraines [5]

Savasana, Urdhva Mukha Svanasana, Matsyendrasana, Pascimottanasana, Janusirsasana, Uttanasana, Prasarita Padottanasana, Adho Mukha Svanasana, Forward Virasana

### 3. Conclusion

With this study migraine can be completely treated and prevented by use of herbomineral, herbal formulation and yogic exercises in spite of any modern chemical drugs. Even though these formulations are free from any complication and restriction of use.

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