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.[1]

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.[2] Each is characterized by episodes of neurologic dysfunction, sometimes accompanied by headache, as well as gastrointestinal, autonomic, and psychological features.[3] The aura is a potential feature of each condition. Each has an internationally recognized classification system.[4]

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.[5] [6] [7] 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.[8] 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%.[9] 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.[10]

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.[11] 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.[12] 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.[13]

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.[14] Further papers discussed the link and expanded the understanding of the association and the clinical features.[15] [16] [17] One of the most interesting angles has been the increasing use and effectiveness of anticonvulsant drugs in migraine.[18]

In 2006, Ludvigsson et al reported that children with migraine with aura have a substantial increased risk to develop subsequent epilepsy.[19]

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.[20] [21] The cutting edge science is quite clear on this association, but physicians in the trenches have been slow to catch on.[22] It is now accepted that patients with one disorder are at least twice as likely to have the other.[23] [24] [25] [26] [27] 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.[28] 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.[29]

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.[30]

Epilepsy and atypical migraine may share symptoms and even be difficulty to differentiate on EEG.[31] [32] 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.[33] [34] [35]

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.[36] 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.[37] 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.[38] 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.[39] 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.[40] 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.[41]

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.[42] [43] [44] 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.[45] Epileptic visual auras last for only seconds, limiting the patient's opportunity to scrutinize and describe the hallucinations.[46] The aura is often concurrent with head or eye movement and alteration of consciousness.[47] 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%.[48] 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.[49] 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.[50] [51] 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.[52] 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.[53] [54] [55] [56] 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".[57]

"Losing connection with our inner beauty is par for the course in our hectic, day-to-day world," says Kat James in *Better Nutrition*.[58] 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.[59] 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".[60] 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.[61] 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.[62] 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.[63]

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.[64] 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. [65]

You can think of bala as a cooling version of ashwaganda.[66] 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.[67]

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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