

MIGRAINE: NEW ADVANCES IN THE TREATMENT OF HEADACHES

Headaches are one of the most common medical disorders seen by physicians. One out of ten patient office visits are for the complaint of head pain. Approximately 70 percent of the U.S. population will experience at least one headache within a year. Thirty percent of these patients will experience recurrent severe headaches. Migraine headaches are one of the most common causes for lost time at work and can cause significant disability. One out of four households has a family member affected by recurrent migraine. National statistics show that approximately 21 million women and 7 million men are affected with severe recurrent migraine headaches. There are more migraine sufferers than all diabetics and asthma patients combined. There is a marked female predominance of migraine headache sufferers by a ratio of 3:1. Fortunately, the large majority of patients suffering from recurrent headaches can be effectively treated.

Migraine headaches affect persons of all ages, race and gender. Children are affected as commonly as adults. Frequently the onset of migraine headaches is around puberty. This may be related to the wide hormonal changes that occur at this time. Prior to puberty, children of both sexes are affected equally. After puberty, however, there is a clear female predominance. The peak incidence of migraine is between the ages of 25-45. One can develop migraine headaches later in life. After the age of 50, concern must be given to more serious causes of new onset of severe headaches. Migraine remains one of the leading causes of recurrent temporary disability.

It should be noted that 95 percent of headaches are not due to any serious underlying cause. The pain is far out of proportion to anything being physically wrong with the brain. The routine use of CAT scanning or MRI brain scanning is not indicated in patients who suffer from recurrent typical migraine headaches. It is important however that these patients have a normal neurological exam and have no history of seizures. Individuals who suffer from migraines frequently have a family history of other migraine sufferers. In contrast to tension type headaches, migraine headaches tend to run in families. Unfortunately, fifty percent of patients affected with migraines and other recurrent headache disorders never seek out or get medical attention. This can be explained by one of several factors including patient denial of the problem, not knowing where to go for treatment or failure to tell their doctors about their recurrent headaches. For individuals affected by more than two headaches per month, they should seek out care by physicians specializing in the treatment of headaches.

The cause of migraine headaches is not well understood. There are three main theories on why people get migraines. One theory states that there is some underlying problem with the blood vessels inside the skull surrounding the brain and in the blood vessels in the scalp (*vascular theory*.) These blood vessels constrict and dilate abnormally in response to various stimuli. Another theory is that there are certain groups of nerve cells in the brain that are abnormally sensitive to various headache triggering factors (*neurogenic theory*.) When these nerve cells are excessively stimulated, they reach a certain threshold and then fire off, causing a migraine headache. The third theory (*neurovascular theory*) is a combination of the nerve cell (neurogenic) and the blood vessel (vascular) theories. More recently the concept of a *migraine generator* has been proposed. Clinical research has demonstrated an area

deep in the brainstem that may be the central generator for migraines. This ties in with the trigeminal nerve system, whose nucleus is located in the brainstem. The trigeminal nerve receives the majority of pain impulses from the head and face, relaying them to the brain. The ophthalmic branch of the trigeminal nerve supplies pain information from the eye area and top, front portion of the head. When stimulated by pain impulses, this nerve causes the release of neuropeptides that cause additional blood vessel dilation and magnification of pain. This is a process known as neurogenic inflammation. This large nerve complex plays a major role in migraine and other head pain syndromes.

Brain Chemical Transmitters: Current research suggests that migraine sufferers have low levels of some brain neurotransmitters, particularly serotonin, which may contribute to the development of migraines. Other neurotransmitters, including dopamine and norepinephrine, have also thought to be involved in migraine attacks. Migraine sufferers have unusual sensitivity to dopamine receptor stimulation. Stimulation of these receptors causes nausea and vomiting.

There are many different ***triggers for a migraine attack***. These include stress, alcoholic beverages (especially red wine), birth control pills and certain foods such as chocolate, nuts, strawberries, cheeses, and cured meats. One does not necessarily need to avoid these foods unless he/she consistently gets a headache after eating a specific food or drinking a specific beverage. It is best to avoid any alcoholic beverage, as these will almost always trigger a migraine attack. Too much sleep can precipitate a migraine attack. This frequently occurs on weekends and holidays. It is important that migraine patients get the same amount of sleep every day. Weather changes are a common migraine trigger. Poor physical conditioning or lack of regular exercise may also contribute to development of certain headaches

There are several types of migraine headaches. The two most common types of migraine are migraine headache with aura and those without aura. A typical aura is characterized by either flashing lights, colored wavy lines, or other visual disturbances. Other transient neurological symptoms may be part of an aura including numbness, weakness, slurred speech and other impairments of function. The aura, which generally last less than thirty minutes, will then be followed by the migraine headache itself. Migraine headaches usually develop on one side of the head or the other and may switch sides. The pain is generally pulsating and made worse by movement. Frequently migraine sufferers have nausea, vomiting and light or sound sensitivity with their headaches. They tend to prefer to lie down in a quiet, darkened room with an ice pack on their head or neck. Migraines may occur sporadically, monthly, weekly or even daily. They may also occur in groups with a patient having many migraine attacks over a period of time then none for weeks to months. These are known as ***cluster migraines*** and should not be confused with cluster headaches. Other *less common variants of migraine* include cluster headaches, hemiplegic migraines and basilar migraines.

Cluster headaches are a special problem. There is a marked male predominance of cluster headache sufferers on the order of 10:1. These headaches are particularly disabling. Cluster headaches always occur on one side of the head and do not switch sides from one attack to the other. The pain is sharp, stabbing, and excruciating behind or around the eye. The pain incapacitates the patient during an attack. Associated symptoms include tearing and redness of the eye, eyelid swelling or

drooping, nasal congestion and facial sweating. These symptoms occur on the same side as the headache. There is no aura and the headaches are usually not accompanied by nausea or vomiting. In contrast to migraine sufferers, patients with cluster headaches will pace the floor, holding their head. Affected individuals can have several headaches per day, each lasting 45-90 minutes. This may go on for several weeks or months at a time. Patients may then be headache free for several weeks to months or even years. Rarely patients may have chronic, persistent cluster headaches.

Chronic daily headaches (CDH) are a major problem for many patients. It is felt by many clinicians that study headaches that CDH represents a form of migraine. Unfortunately, unlike typical migraines, CDH are much more difficult to manage. Affected patients suffer from some degree of headache all the time. Their headaches vary in intensity throughout the day or over several days. These patients frequently over use and abuse abortive headache medications in an attempt to control their headaches. This will often add to the problem by causing a condition known as *rebound headache disorder*. Patients with CDH must be taken off these medications and put on an aggressive regimen of prophylactic (preventative) headache medications. Other therapies that may be helpful include a short course of neuromuscular therapy, biofeedback, daily self-administered stretching and regular exercise.

Occipital neuralgia is a very specific type of headache which can mimic a severe migraine. The typical headache is characterized by recurrent headaches on the same side from attack to attack. The pain frequently begins at the base of the skull spreading over that side of the head to the temple or behind the eye. These headaches are not associated with other symptoms such as nausea, vomiting or light sensitivity. While naproxen sodium (Aleve) may be helpful in some cases, the most effective therapy is an occipital nerve block. Importantly, these headaches are usually not responsive to narcotics and most other headache medication.

Rebound headaches tend to occur in patients who suffer from migraine headaches. They are a result of patients taking excessive amounts of abortive headache medications. The most commonly implicated medications include narcotics, aspirin, ibuprofen, ergotamines, and butalbital containing drugs such as Fiorinal or Fioricet. Excessive caffeine consumption either from coffee, sodas or over-the-counter medications can cause rebound headaches. Symptoms of rebound headache include pain, which does not respond to any medication, fatigue, listlessness, poor concentration, irritability, and dizziness. Patients who have more than two headaches per week or more than fifteen headache days per month should be on preventative medication. It is best to limit the amount of all abortive medications to no more than fifteen tablets per month. Patients who suffer from rebound headaches must be weaned of all medications that are contributing to the problem. During this time, it may be necessary to admit them to the hospital for adequate pain control. Until a patient's system is detoxified from the offending medications, even prophylactic medications will not help them. After weaning the patient off these drugs, appropriate migraine preventative medications can then be given. The patient must be warned that if they resume the uncontrolled consumption of abortive medications, their rebound headaches will return.

Mixed headache disorder is a commonly seen headache syndrome. Patients with this type of problem may have two or three types of headache. This can be any

combination of migraine, tension, CDH, or rebound headache. Occipital neuralgia is frequently an accompanying problem. If occipital neuralgia is part of the problem, it must be treated first as it can trigger other headaches.

Patients frequently present with the complaint of ***sinus headaches***. These individuals are usually frustrated by the fact that they have seen their family physician and sinus specialists, none of whom can actually find a sinus problem. Diagnostic tests for "sinus infection" are almost always normal. These headaches occur around the eyes, brow and cheek areas – the same areas where the sinuses are. Sinus headaches are, for the most part, a part of the migraine syndrome. They have nothing to do with sinus disease or allergies. The reason sinus headaches respond to decongestants (sinus medications) is that this class of drugs has a similar mechanism of action to that of the migraine specific medications. Less than five percent of the time are "sinus headaches" actually due to sinus disease.

Effective treatment exists for migraine headache disorders. Treatment generally depends on the type of migraine and the frequency with which they occur. In general, for individuals who have no more than two headaches per week or have an occasional migraine, abortive therapy is indicated. Medications used in the abortive treatment of headache include aspirin, ibuprofen, naproxen, acetaminophen as well as the butalbital containing compounds. Narcotic medication can be used as long as they are not needed for frequent headaches and are not taken on a regular basis. More specifically, no more than 1 dose per week and preferably less. In general, it is best to limit all analgesics to no more than four tablets per week or fewer. However, most of the time patients need medications that are specifically designed to abort an acute migraine attack. Drugs such as Cafergot (or other ergotamine-containing preparations) are very effective in stopping migraine headaches. Patients will need medication to treat nausea or vomiting if these are major symptoms. Migraineurs develop a condition known as *gastroparesis* which is a temporary paralysis of the stomach muscles during a migraine attack. When this condition occurs, taking oral medications is usually not effective.

The class of medications known as the "triptans" has been developed specifically for treatment of migraine attacks. The triptans mimic the action of serotonin, stimulating the receptors for this neurotransmitter resulting in relief of the migraine symptoms. Triptans work by: 1) causing vasoconstriction of the meningeal arteries, 2) decreasing the trigeminovascular system activity and 3) inhibiting release of pain producing neurochemicals. Imitrex (sumatriptan) was the first triptan developed for the treatment of acute migraine headaches. It was initially available as a self-administered, injectable kit. Imitrex is also available in a tablet and nasal spray form. There are other triptan drugs that have subsequently been approved for the treatment of migraine. These include Amerge (naratriptan), Maxalt (rizatriptan), Zomig (zolmitriptan), Axert (almotriptan), Frova (frovatriptan) and Relpax (eletriptan.) Other triptan-type medications are in development, including longer acting forms. In general, the triptans should not be used more than two times per day and not more than three doses per week. They are contraindicated for use in patients with heart disease or uncontrolled high blood pressure.

With the use of a triptan medication onset of pain relief is rapid, usually within 30 minutes with an injection. With the tablets, relief is usually obtained within 60-90

minutes. Like all other antimigraine medications, the triptans are most effective when given early in the course of migraine (within the first 20 minutes of onset of symptoms), although they can be given at any time during an attack. These drugs are also effective in controlling the nausea and vomiting that frequently occurs with migraine headaches. The side effects of the triptans are generally mild and self-limited. These can include chest tightness or heaviness, a warm flushed feeling, lightheadedness, lethargy or fatigue. For patients with severe nausea or vomiting, additional suppository medications are most effective.

Dihydroergotamine (DHE) is another medication used in the treatment of acute migraine headaches. It is available as an injection, suppository or nasal spray. It must be given with additional medication to control nausea and vomiting. The nasal spray, Migranal, is available as a small portable kit. DHE and the triptans should never be used together, in the treatment of a single headache, because of the risk of serious side effects. DHE, like the triptans, must be given with caution in patients who have a history of high blood pressure or heart disease. Women who are pregnant cannot take these two medications, as well as other antimigraine medications, because of the high risk for potential complications.

In patients who have two or more migraine headache attacks per week, or more than six headache days per month, preventative medications are indicated. There are several different groups of medications that have been shown to be effective in preventing recurrent migraines. These different groups include the tricyclic antidepressants (amitriptyline, imipramine and others), serotonin reuptake inhibitors (e.g. Prozac, Lexapro, Zoloft, Effexor), antiseizure medications (such as Depakote, Topamax, Neurontin), beta-blockers, calcium channel blockers (verapamil), Methergine, and rarely short courses of corticosteroids. These last two are generally reserved for refractory cases of migraine headaches that have not responded to other medications. Antidepressant medications are safe and effective to use for blocking the development of migraine attacks. They work by raising the levels of serotonin and other neurotransmitters in the brain. ***It is important to note that the use of antidepressant medications, such as the tricyclic compounds or serotonin reuptake inhibitors, for headache prevention is not related to their use for treatment of depression.*** Cluster headaches can frequently be controlled with some of the previously mentioned medications. Particularly effective agents include Depakote, Topamax, verapamil, lithium, and methergine. Additionally, oxygen inhalation or lidocaine nasal spray may be helpful. Imitrex injectable has been approved by the FDA for abortive treatment of cluster headaches.

Botulinum toxin (Botox) therapy is a newer, novel approach for headache prevention. This medication is injected in certain areas around the head and neck. Patient selection for Botox therapy is critical in order to obtain the best results. Botox can be useful in the overall management of select patients with headaches that are otherwise difficult to control. It is very safe and has a low incidence of side effects.

Non-pharmacologic management is important in both preventing and treating migraines. Preventative measures include identifying and eliminating triggers. The most common trigger is stress. Stress management, self-relaxation and biofeedback are all important in reducing the frequency and severity of attacks. In patients with significant neck muscle tightness and pain, a short course of neuromuscular therapy

may be of benefit. This needs to be combined with a regular home stretching rehabilitation program. Regular exercise is beneficial both for general health and headache reduction. If a particular food can be identified as a trigger it should be eliminated. Processed meats, fermented foods, yeast containing bakery goods and all alcoholic beverages can be triggers. Some patients have found that aspartame (Nutrasweet) triggers their headaches. Migraine sufferers need to try to get the same amount of sleep every night. Too much or too little sleep can precipitate a migraine. If a migraine occurs applying an ice pack, lying down and trying to sleep can frequently be helpful. Keeping a headache diary is helpful both for the patient to track their progress and their physician to optimize headache treatment.

In summary, migraine and other headache disorders are very common. They can be quite disabling for some individuals. The head pain is far out of proportion to any underlying identifiable disease problem. Patients may have more than one headache type, all of which need comprehensive, aggressive treatment. Ninety-five percent of all headaches are due to benign causes. Fortunately, most people can be effectively treated for their acute and recurrent migraine headaches. It is not necessary for headache sufferers to let their headaches affect their quality of life and daily activities. Great advances have been made in the treatment of headaches. Extremely effective treatment is readily available to give headache sufferers their life back. Affected individuals should see their family doctor for treatment of their headaches. Children affected with recurrent headaches should also be taken to a physician for treatment. Neurological consultation and referral to a headache center can be obtained for further evaluation and treatment.

Further information on headache diagnosis and treatment may be obtained by contacting Dr. Kasscieh or visiting Sarasota Neurology, P.A. website at: **www.DrKasscieh.com**.

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