

MIGRAINE: QUESTIONS AND ANSWERS FOR PATIENTS

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What is a migraine?

Migraine is not just a headache, but a complex neurological event that may cause a wide variety of symptoms. Apart from headache, some common symptoms of migraine include sensitivity to light, sound, touch, and smell, nausea, fatigue, dizziness, and difficulty concentrating. Distortion of vision or unusual visual patterns, numbness and tingling, or difficulty finding words or speaking may occur as part of what is defined as the “migraine aura”. Some patients have all of these symptoms in addition to the headache, whereas others may have only a few or none of them. Migraine attacks may be very different for each individual patient, and even in one patient they may vary from one attack to the next. Many patients (and their doctors) identify a headache as a migraine only when the pain is severe. But some patients can have migraine with a relatively mild headache, or even no headache at all. The most typical migraine attack includes a moderate or severe, one sided headache that is throbbing in quality and made worse by movement. Patients with migraine typically prefer to lie down in a dark, quiet room.

But there are a variety of other features that help to identify migraine.

Some questions that help to identify migraine are:

1. Does the headache interfere with your ability to function at work or home?
2. Do you have sensitivity to light, sound, smell, or touch during your headache?
3. Do you have nausea with your headache?
4. Are your headaches relieved by sleep?
5. Do other members of your family have headache?
6. If you are a woman, do your headaches occur more commonly around the time of your menstrual period?

If the answer to more than one of these questions is yes, then chances are that you have migraine.

Practically speaking, the overwhelming majority of patients who bring their headaches to the attention of their doctors have migraine.

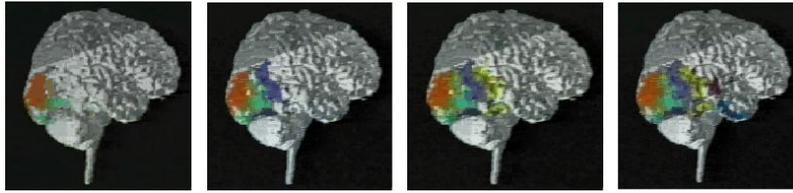
I have more than one type of headache – are they all migraines? What about sinus headache?

Migraine patients commonly have some headaches that are less severe, and others that are more severe. For some patients, the less severe headaches may occur frequently or daily, whereas the more severe headaches occur only once a week or once a month. Both types of headaches may in fact be migraines, and may respond well to migraine treatments.

Many patients believe that they have “sinus headaches”. In fact, most headaches that people call “sinus headaches” are actually migraines. The fact that headaches are triggered by changes in weather and helped by decongestants leads many patients to believe that they have “sinus headaches”. In fact, migraine headaches (and not headaches caused by inflammation of the sinuses) are triggered by weather changes, and decongestant medications may have some ingredients that may help with migraine. Contrary to popular belief, headaches caused by sinus problems are uncommon, whereas migraine is extremely common.

What causes a migraine?

Migraine was previously considered to be caused primarily by constriction and dilation of blood vessels in and around the brain. But more recent studies indicate that migraine is caused by fluctuations in brain chemicals and abnormal electrical activity in specific brain regions. Specialized brain scans of patients having migraine attacks show waves of abnormal activity that spread across the surface of the brain (the cortex), as well as excitation of nerve centers deep within the brain (the brainstem). Recent research has focused on treatments that work not by constricting blood vessels, but rather by reducing the patterns of abnormal brain cell activity that are believed to underlie migraine.



PET Scan of Patient Having a Migraine Attack. Scan shows dramatic wave of activity traveling across the surface of the brain in a patient with migraine. Woods, R.P., Iacoboni, M. and Mazziotta, J.C. (1994). *Bilateral Spreading Cerebral Hypoperfusion during Spontaneous Migraine Headache.* N England Journal of Medicine 331, 1689-1692.

Is migraine common?

Migraine is one of the most common of all disorders. Studies around the world using strict definitions of migraine indicate that at least 25% (1 in 4!!!) of women and 8% of men have migraine. It may in fact be even more common than this, because patients with occasional headaches or mild headaches may not be identified as having migraine.

Is migraine inherited?

Migraine commonly runs in families. While it may vary from generation to generation, it is clear that many families carry genes that cause migraine. Some of the genes that cause rare forms of migraine have been identified --- however, the genes that are responsible for common forms of migraine have yet to be discovered. It is likely that a variety of different genes cause migraine in different families.

Do I need an MRI scan?

Many patients with migraine are concerned that they have a brain tumor, an aneurysm, or some other potentially serious cause of their headaches. However, the vast majority of patients with migraine have no cause that can be identified on a scan. It is often difficult for patients to understand how they can experience such incapacitating symptoms without some cause that can be identified with a brain scan. But the fact is that it is extremely rare for a scan to identify any underlying cause of a headache. Serious brain problems cause headaches that are much different than migraine. For example, brain tumors cause headaches that are constant, unremitting, and worse with time. Unlike patients with migraine, patients with brain tumors do not have severe headaches that last for one or a few days, and in between these headaches they feel well. So if the headache is present constantly (even if it is not that severe), we are more likely to order a scan than if the headache is quite severe, lasts for a day or two, and has features that are consistent with migraine. Similarly, aneurysms do not cause headaches that occur repeatedly over time without having other significant symptoms that let us know that an aneurysm is present. This means that the first time someone experiences a severe headache, a scan may be warranted. However, if the headache happens repeatedly over time, with symptoms that are consistent with migraine and no abnormalities on neurological examination, then in most cases a scan is not needed.

Are there triggers for migraine that I can avoid?

Some common triggers for migraine are skipped meals, irregular caffeine intake, irregular sleep, the menstrual cycle in women, change in the weather, air travel, and emotional or physical stress. Migraine patients are particularly sensitive to changes in their environment or in their own body function. Obviously some of these triggers are beyond patients' control. But some simple modifications in lifestyle can have a significant impact on headache. The main theme for the headache lifestyle is **consistency** -- migraine patients should try to eat regularly, keep a regular sleep schedule, and have regular caffeine (or none). Some triggers may be confusing, because there may be a long delay between when the trigger happens and when the migraine happens. For example, a patient may skip lunch, and then later in the evening develop a migraine that was "set off" by skipping a meal earlier in the day. Similarly, many patients do not experience migraine during a time of emotional stress, but afterward. Migraines commonly occur during the "let-down" from stress. Ironically, weekends or the first day of a vacation are common times for migraine because of this "let-down" phenomenon. Caffeine is another good example of the concept of consistency being important for migraine patients. Caffeine is both a treatment for migraine and a trigger for migraine. We believe that it is a treatment when it is at its peak level, but it becomes a trigger when the levels are falling. This means that moderate amounts of caffeine may be

fine for some migraine patients, as long as caffeine intake is kept extremely consistent from one day to the next. Consistent diet, sleep, and caffeine can be very helpful in reducing migraine.

Are there specific foods that I should avoid?

A variety of foods and beverages have been identified as triggers for migraine --- these include chocolate, nuts, aged cheese, fermented foods, alcohol in general, and red wine in particular. But elimination of these foods is generally not necessary. Rather, many patients can have these foods without evoking a headache, as long as they are in moderation and not on an empty stomach. For example, many patients can have wine without triggering a headache as long as they have food first. But a headache may occur if, for example, they skip lunch and have wine and cheese together before dinner. Similarly, many patient can have a small amount of nuts or chocolate without problems. But if they have a bag of nuts or chocolate bar instead of lunch, then they will get a headache. Our recommendation is not necessarily to eliminate specific foods or beverages, but rather to maintain a balanced diet and most importantly avoid skipping meals.

Can changes in weather trigger migraines?

Yes . Patients with migraine commonly report that their attacks occur more frequently in association with changes in barometric pressure. While patients obviously can't control the weather, it is good for them to pay attention to all of the other manageable lifestyle factors during times when the weather is changing.

Is exercise good for migraines?

Aerobic exercise can be extremely helpful in reducing the frequency and severity of migraine. Unfortunately, many patients with frequent migraine significantly reduce their exercise because they are feeling poorly. Some patients find that exercise triggers or exacerbates migraine. This leads to a cycle where migraines interfere with exercise, which contributes to worsening of migraine, which further reduces exercise, etc..... A primary goal for migraine patients should therefore be to get aerobic exercise as much as possible. The type of exercise is not critical --- running, swimming, treadmill or elliptical training, racquet sports, or many others are all fine, as long as there is sufficient cardiovascular exertion.

Are there any medications that can make migraines worse?

Yes. The most commonly used medications that worsen migraine are:

1. Birth control pills or postmenopausal hormone replacement. Some women can take birth control pills or hormone replacement with no problem, but for others it markedly worsens migraines. Women who have migraine with aura and who smoke should not use birth control pills, because of increased risk of stroke. For women in whom migraine is worsened by birth control, the first step may be to try to find a pill that contains a lower dose of estrogen, or one that is taken more continuously without monthly "off days". Even with this change, however, some women simply cannot tolerate birth control pills because of exacerbation of headache. For postmenopausal women, hormone replacement can also significantly worsen migraine. Most women's headaches improve substantially following menopause – an exception to this general rule is when they are taking hormone replacement therapy. If there is not a major reason to take hormone replacement, it is better for migraine patients to avoid it.
2. Antidepressants. Certain types of commonly used antidepressants, particularly the selective serotonin uptake inhibitors (SSRI's) can exacerbate migraine for some patients. Examples of medications in this class include Prozac, Paxil, Zoloft, and Lexapro. The antidepressant Wellbutrin may also exacerbate migraine in some patients. Since depression commonly occurs along with migraine, some patients may need to switch to a different antidepressant. Alternative options include amitriptyline (Elavil), nortriptyline (Pamelor), or others which may in fact help with migraine.
3. Pain medications. As discussed below, some pain medications used to treat migraine, when used regularly, can actually worsen migraines.

Other classes of medications may also exacerbate migraine. If a patient has a worsening of migraine, they should think about whether any change in medication was made at the time that the migraines got worse.

Are there any vitamins or supplements that help with headache?

There are a variety of supplements that have been claimed to help with headache. Of these, only a few have some scientific studies that support their potential benefit for reducing migraine.

These include:

- 1. Riboflavin - 400 mg. per day.** Riboflavin is Vitamin B2, which is important for energy metabolism. The rationale for using riboflavin in migraine is that it may help boost brain energy metabolism. It is generally well tolerated, although it turns the urine a rather exotic orange color. While many multivitamins contain riboflavin, they do not typically have the amounts that have been studied for migraine. Patients should not try to achieve 400 mg. of riboflavin by taking multivitamins, because this may result in toxicity due to excessive amounts of the other vitamins that are part of the tablet.
- 2. Magnesium 300-500 mg. per day.** Magnesium is an element that is important for a variety of functions in the body. There is evidence that fluctuations in levels of magnesium, specifically low levels of magnesium, can be a trigger for migraine. Taking magnesium may therefore help reduce these fluctuations in magnesium levels. Magnesium is generally well tolerated, although in some patients it may “loosen up” the gastrointestinal tract. Occasionally it causes stomach upset and diarrhea.
- 3. Coenzyme Q10 (CoQ10) 300-600 mg. per day.** CoQ10 is a naturally occurring component of cells that is involved with energy metabolism. For migraine patients, it has been proposed that CoQ10 may help increase brain energy metabolism in a manner that helps reduce migraine (the same rationale as for Vitamin B2). It is extremely well tolerated without any significant side effects. Its main negative is that it can be expensive.
- 4. Melatonin 3- 6 mg. at bedtime.** Melatonin has been used for some time as a homeopathic sleep aid and to help with jet lag. There are now studies suggesting that it may be helpful for some patients with migraine and other types of headache. Since many patients with migraine also have sleep disturbance, melatonin may be worth a try both for headache and sleep. Most patients have no side effects, but occasionally patients have morning drowsiness.
- 5. Petasites (butterbur) 75 mg. twice day.** This herb has been used for hundreds of years for different pain conditions including headache. Recent studies indicate that it can reduce the frequency and severity of migraine in some patients. It is generally well tolerated, with the most common side effect being burping (very rarely a significant side effect, and may in fact be a desirable effect if you are an adolescent boy or live in a fraternity).

What medication should I take when a migraine attack occurs?

There are number of different medications that can help to stop a migraine attack – these are called “acute” treatments, as opposed to preventive treatments that are taken to prevent an attack from occurring, as discussed below. The most commonly used acute medications include anti-inflammatories (e.g. aspirin, ibuprofen, naproxen), triptans (e.g. Imitrex, Maxalt, Relpax, etc.), and ergotamines (e.g. Migranal, DHE). A general principal for any medication that is taken for migraine is that it is best to take it **as soon as possible** after the attack begins. For some patients, this may be before the pain actually starts. For example, some patients become sensitive to light or sound before the headache starts --- it is best to take the medication when you are aware of these symptoms that precede the headache, rather than waiting for the pain. In general, if it even crosses your mind that a migraine attack may be starting, this is the time to take the medication.

1. Anti-inflammatories – Aspirin (Bayer, Bufferin, Excedrin), ibuprofen (Motrin, Advil), or naproxen (Alleve, Nuprin) can be effective migraine therapies in some patients. The key for effectiveness is taking adequate doses and taking them very early in the attack. For aspirin, a minimum of 650 mg. should be taken. For ibuprofen, a minimum of 400 mg. should be taken, and for many patients 600 mg. or 800 mg. is a more appropriate dose. For naproxen, 440 mg. is the recommended dose. Any of these medications can cause stomach irritation, so they are best taken with food.

Aspirin is also commonly packaged in combination preparations that include caffeine and/or acetaminophen in addition to aspirin (Anacin, Extra Strength Excedrin, Excedrin Migraine). For some patients, it is actually the caffeine that they respond to, rather than the aspirin. Some headache experts believe that the aspirin preparations that contain caffeine are more likely to be associated with “rebound” headache that leads to dependence on the medication. It is important to be aware of this possibility.

2. Triptans – Triptans are a class of medications whose chemical name all end in “triptan”. For example, Imitrex is sumatriptan, Maxalt is rizatriptan, Zomig is zolmitriptan, etc.. These are medications that work only for migraine – they do not generally treat other types of pain. For many patients, these medications can be extremely effective in stopping a

migraine attack. Often, only one tablet can stop an attack that would have otherwise lasted for an entire day. Triptans come in a variety of forms --- regular tablets, “melt in your mouth” tablets, nasal sprays, and injections that include both needle injections and needle free injections.

a. Different patients have individual responses to specific triptans – i.e. just because one works without side effects doesn’t mean that this will be true for all of them. If a patient has a poor response or side effects with one type of triptan, it is definitely worth trying a different one. Or if the tablets do not work, it may be worth trying a nasal spray or injection.

b. The triptans are generally quite safe – When they were originally released more than 15 years ago there was concern regarding the possibility that these medications might increase the risk of heart attack or strokes. These concerns, which were based on the idea the triptans are working by constricting blood vessels, have proven to be largely unfounded. While we still do not recommend triptans for patients with established heart problems or strokes, the great majority of patients can take them without worry. They work very specifically in certain sites in the brain, and they are cleared very quickly from the body – both of these features reduce the possibility that they will cause significant adverse effects. Some patients occasionally experience a feeling of chest pressure or jaw tightness with a triptan – it is important to realize that these symptoms are not caused by anything to do with the heart. Triptans are now available in many countries in Europe without a doctor’s prescription. This is an indication of the idea that these medications are safe for general use.

3. Ergotamines – Different forms of ergotamines have been used for many years to treat migraine. The forms that are currently available in the U.S. include a DHE (dihydroergotamine) nasal spray (brand name is Migranal), and DHE injection. At present, these are used primarily in patients who have not responded well to triptan tablets. Other preparations, including a lung inhaler similar to those used for asthma may be available soon.

Other acute medications for headache:

Butalbital complex (Fiorinal, Fioricet) – This medication contains a combination of a barbiturate, caffeine, and aspirin or acetaminophen. Like ergotamines, it has been used for many years to treat migraine. While it can work for some people, it is not a preferred treatment, particularly because it can be highly dependence-producing. Studies indicate that frequent use of butalbital leads to progression of migraine from an intermittent to a more constant problem.

Pain medications (Codeine, Vicodin, Percocet, Demerol, Morphine) – These medications are all in a class of medications known as opiates. They are also referred to as narcotics. Although these medications typically aren’t as effective for headache as they are for other kinds of pain, they can be as a “rescue” when other more specific medications for headache fail. If they are used for headache, they should be taken only occasionally. The regular use of pain medications, as with butalbital, can change a headache from an episodic problem that is manageable with acute medications into a frequent and even daily headache. While it is OK to take an opiate occasionally in a desperate situation, the use of opiates more than once or twice a month should be avoided.

Anti-nausea medications (Compazine, Phenergan, Metaclopramide) ---These medications can be helpful for migraine patients, particularly those with significant nausea. They may also have a beneficial effect on the migraine attack itself, apart from simply treating the nausea.

Should I take a daily medication to prevent headaches?

The decision about whether or not to take a daily medication to prevent migraines depends on a variety of factors. Important questions include : How often do they occur? How many days per month are the symptoms of migraine present (not just headache, but other symptoms as well)? When the headaches occur, do acute medications work? Are you willing to take a medication every day, that may have side effects, in order to reduce the number of your headaches? Typically if a patient is having a migraine more than once per week or if a significant percentage of their attacks do not respond to acute therapy, then a daily preventive medication should be considered. One important point to consider is that preventive therapy need not be lifelong --- some patients need a daily medication to get them out of a cycle of headaches and into a new equilibrium. Once they are there, the preventive medication can be stopped and they do not return to their previous headache pattern.

A variety of different types of prescription medications are used to prevent migraines. The most commonly used of these are mentioned briefly below.

Beta blockers (e.g. propranolol –Inderal; metoprolol-Lopressor, Toprol; timolol). These medications were originally developed to treat high blood pressure. Side effects may include fatigue, exercise intolerance, and depression.

Tricyclic antidepressants (e.g. amitriptyline –Elavil; nortriptyline – Pamelor). These medications were originally developed to treat depression, but can be highly effective for some migraine patients. They can be sedating, so they can be particularly useful for patients who have trouble sleeping. However, some patients experience sedation during the daytime. Other possible side effects include dry mouth and weight gain.

Dilvalproate sodium (Depakote). Depakote was originally developed as a medication to prevent seizures. It is approved by the U.S. FDA for prevention of migraine. Potential side effects include tremor, weight gain, and thinning of the hair.

Topiramate (Topamax). Topamax was also originally developed to prevent seizures, but is now widely used to prevent migraines. It is also FDA approved for this use. Possible side effects of topamax include cognitive slowing, tingling of the extremities, and weight loss.

Onabotulinum toxin (Botox). Botox was recently approved by the FDA for the prevention of chronic migraine (headaches occurring more than 15 days per month) . Possible side effects include increased headache, and muscle weakness in the head and face, and potentially elsewhere in the body.

Calcium channel blockers (Verapamil, diltiazem). These were originally developed to treat high blood pressure. They may be used to treat specific types of headaches like cluster headache, but also migraines in general. Side effects include dizziness and constipation.

As is apparent from this list, each of these types of medications has potential side effects. The challenge is to find the right medication for each individual patient, and find a dose that reduces headaches without causing significant side effects.

Is there anything new for migraine?

There are a variety of new potential treatments that are in development. As our understanding of migraine advances, we have been able to identify new targets for treatment. One example is the medication memantine (Namenda). Memantine inhibits the waves of brain activity that are believed to be a trigger for migraine. Because it was already on the market for the treatment of memory and cognition problems due to Alzheimer’s disease, and known to be well tolerated, we have begun to use it to treat patients with migraine. We have now treated hundreds of patients with the medication, and with some we have had excellent results. Some patients experience dizziness, and because the medication can be energizing, some patients have found that it interferes with sleep if they take it too close to bedtime. In general, however, most patients have no side effects. Memantine has not been proven with formal clinical trials to be effective for migraine prevention, but we believe it is an excellent candidate for further study. It may be worth a try for patients who have tried other standard migraine treatments. A variety of other new treatments are being developed based on a growing understanding of novel brain mechanisms underlying migraine. These include a variety of types of stimulation devices, that are designed to try to stop or prevent migraine by sending electrical or magnetic pulses to nerves and parts of the brain that may be causing headache.

New treatments are on the way. In the meantime, patients should focus on minimizing lifestyle factors or medications that may worsen migraine, establish a plan for acute therapy when a migraine attack occurs, and decide whether non-prescription or prescription preventive therapy is appropriate.

Is there anything I can do to help to advance the cause of migraine and find new treatments?

Migraine is one of the most common of all disorders affecting the general population, and it is a major cause of disability, lost work productivity, disruption of family life, and reduction of quality of life. Despite its massive economic and social costs, however, migraine receives relatively little attention as a significant public health problem. Many physicians have received very little training in the diagnosis and management of headache during medical school and

residency training. Migraine research receives very little funding. You can help change this. The first step is to educate yourself about your condition, and do what you can to control it. The next step is involve your health care providers, and to be active in informing them about your migraine symptoms, rather than simply accepting your condition as “something you have to live with”. Finally, there are multiple opportunities to become involved with advocacy for the cause of migraine, and to help support migraine research. We can talk to you about this here at the UCLA Headache Research and Treatment Program, and you can also visit the websites listed below that provide multiple different opportunities to get involved.

USEFUL WEBSITES:

American Council for Headache Education

www.achenet.org

Migraine Research Foundation

www.migraineresearchfoundation.org

National Headache Foundation

www.headaches.org

Help for Headaches website

www.helpforheadaches.com

National Institute of Neurological Disorders and Stroke

www.ninds.nih.gov/disorders/migraine

Alliance for Headache Disorders Advocacy

www.allianceforheadacheadvocacy.org