



Headache Diagnosis and Treatment: An Overview

An Interview with John Claude Krusz, MD, PhD

BY TERI ROBERT



DR. KRUSZ is actively involved extensive research in the area of headache and pain disorders. He is in private practice in Dallas, operating from his multidisciplinary clinic, the Anodyne Headache and PainCare Center. He is Vice President of the American Board of Electroencephalography and Neurophysiology. Dr. Krusz serves as a Medical Advisor on the Board of Directors of MAGNUM and is on the editorial board of the American Journal of Pain Management, the quarterly publication of the American Academy of Pain Management. Dr. Krusz was elected to the Board of Directors of the Texas Pain Society and is in the special interest group for Refractory Headaches in the American Headache Society.

Q. When a new patient comes into your office with a headache, what is the first thing you do? Are there particular questions you ask or aspects of a patient's medical history that are especially important for diagnosis and treatment?

DR. KRUSZ. Everything is important. It is essential to spend time with the patient and obtain a thorough medical. In addition, patients should be asked about: the site of their headache, onset, intensity, duration, frequency, severity, associated symptoms, and precipitating factors. Looking at psychological and emotional factors and family history is also important.

I am particularly interested in the endocrine aspects of a person's history because they are often overlooked even though they can impact the patient's headaches. Although a woman's estrogen levels are often considered, the endocrine hormones and their potential impact on headache are not. Taking a sleep history is important as well. Poor quality sleep and sleep patterns can be a significant headache and migraine trigger. Sometimes a traumatic brain (concussive) injury history needs to be factored into the equation.

If there is a sudden onset of headache, or if the patient has frequent or daily headaches, it's important to rule out organic disorders, which may have morbid consequences. want to make sure that the patient does not have a condition such as brain tumor, ruptured intracranial aneurysm, giant cell arteritis, which are quite rare, or TMJD (Temperomandibular Joint Disorder).

Q. Are imaging studies recommended for all patients presenting with headache? What about lab work?

DR. KRUSZ. Imaging studies are not that useful unless you're aware of the fancier types of MRIs that are available. For example, a 3Tesla brain MRI can be quite useful in specific circumstances, such as documenting shearing injuries in a concussive-type injury.

(opposite)

Title: What the Headache Does to Me

Media: digital photograph

Artist: Stephanie Samanski

I order lab work to look for blood glucose dyscontrol, thyroid dysfunction, pituitary dysfunction, cortisol dysfunction, and sex hormone aberrations. Dyscontrol or dysfunction in these areas can cause headache or trigger migraine. These various imbalances make the body more vulnerable to headache. Because lab “normal” values are not always the patient’s true baseline, treating by symptoms rather than lab values must be considered.

Q. What types of headache are physicians likely to encounter in their practice?

DR. KRUSZ. Millions and millions of people suffer with headaches in this country, so it’s quite likely that every clinician will see patients with headaches at one time or another. The most common types of headache a practitioner will see are tension-type (TTH), migraine, and cluster. In any given practice, tension-type headaches are the most common, yet migraine is probably seen more often because fewer patients seek medical care for tension-type headache. It’s also quite common to see patients who present with what they believe to be sinus or tension headache when the headache is actually migraine.

Q. Could you describe each type of headache? Let’s start with migraine.

DR. KRUSZ. The most common form of migraine is migraine without aura (formerly termed “common” migraine). Migraine with aura, formerly termed “classic” migraine, is experienced by 15 to 25% of migraineurs. Most patients who experience migraine with aura do not have the aura phase with each migraine attack, and so they are diagnosed with both migraine with aura and migraine without aura. Either of these may be experienced without the headache phase, but skipping that phase does not change the diagnosis. Descriptive terms sometimes applied to such migraine attacks are “acephalgic” and “silent” migraine. Menstrual migraines are those triggered by the hormonal fluctuations of the menstrual cycle, and menstrual migraine is a description rather than a diagnosis.

Also, it’s not unusual to see patients who have been diagnosed with ocular (or ophthalmic) migraine. Patients with this diagnosis experience the visual symptoms of migraine with aura, but do not progress to the headache phase. Often these patients are diagnosed later with migraine with aura.

Q. Tell us more about migraine without aura. How long does this type last? How is it most often treated?

DR. KRUSZ. Migraine without aura generally lasts from 2 to 72 hours without treatment or when treatment fails. The headache is more often unilateral, but may be bilateral, pulsatile, of mild to moderate intensity, and aggravated by routine physical activity such as walking, bending over, or climbing stairs. Accompanying symptoms may include nausea, vomiting, sensitivity to light, and sensitivity to sound.

Acute treatments include: triptans, ergotamines, NSAIDs

(nonsteroidal anti-inflammatory drugs), and antinauseants. Preventive treatment includes: neuronal stabilizing agents (often called anti-convulsants), SSRIs, SNRIs, calcium channel blockers, beta blockers, and many others. “Natural” preventives include: Coenzyme Q10, feverfew, Vitamin B2, and magnesium.

Q. What about migraine with aura?

DR. KRUSZ. The headache of migraine with aura is like that of migraine without aura except that it has at least one of the following symptoms of aura (but no motor weakness): fully reversible visual symptoms including positive features (e.g. flickering lights, spots, or lines) and/or negative features (e.g., loss of vision); fully reversible sensory symptoms including positive features (e.g. pins and needles) and/or negative features (e.g., numbness); and fully reversible dysphasic speech disturbance.

Or, it may have at least two of the following symptoms: homonymous (on the same side as the other symptoms) visual symptoms and/or unilateral sensory symptoms; at least one aura symptom that develops gradually over 5 or more minutes and/or different aura symptoms that occur in succession over 5 or more minutes, with each symptom lasting no more than 60 minutes.

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Other forms of migraine include: basilar-type, familial hemiplegic, sporadic hemiplegic, and retinal migraine. Complications of migraine include: chronic migraine, status migrainosus persistent aura without infarction, migrainous infarction, and migraine-triggered seizure.

Q. Tell us about tension-type headache.

DR. KRUSZ. Tension-type headache has also in the past been called psychomyogenic headache, stress headache, muscle contraction headache, ordinary headache, and essential headache. Tension-type headache usually lasts 30 minutes to 7 days with at least two of the following: bilateral location; a pressing/tightening (nonpulsing) quality; and mild to moderate intensity (not aggravated by routine physical activity). People describe this headache as the feeling of a band or vise around their heads. There is no nausea or vomiting with tension headache; there may be sensitivity to sound or light, but usually not both.

Tension-type headache is most often treated with tramadol, or muscle relaxants such as tizanidine (Zanaflex). Preventive treatment includes: neuronal stabilizing agents, SSRIs, SNRIs, calcium channel blockers, beta blockers, and many others. Natural preventives include: Coenzyme Q10, feverfew, Vitamin B2, and magnesium. For people with tension headache, complementary therapies such as massage and biofeedback that relieve stress can be very helpful. These modalities may also bring acute relief for some patients.

Q. What about cluster headache?

DR. KRUSZ. Cluster headache has also been called Horton's headache, Harris-Horton's disease, ciliary neuralgia, Sluder's neuralgia, migrainous neuralgia, and histaminic cephalgia. Symptoms of cluster headache are: severe and unilateral orbital, supraorbital, and/or temporal pain that will last from 15 to 180 minutes if untreated. Cluster headache is accompanied by at least one of these symptoms: ipsilateral (on the same side if the head) conjunctival injection and/or lacrimation; ipsilateral nasal congestion and/or rhinorrhea; ipsilateral eyelid edema; ipsilateral miosis and/or ptosis; ipsilateral forehead and facial perspiration; and restlessness or agitation. The frequency of attacks may range from one every other day to several per day. Acute treatment for cluster headache includes: DHE-45 injections, sumatriptan injections, and O₂ by mask, which are generally first-line abortives, especially in patients whose headaches are of briefer duration. Other triptans and ergotamines can be used for those whose headaches last longer. The newer Imitrex STATDose injection dosage of 4mg allows cluster sufferers to administer three injections in 24 hours rather than two of the original 6mg dosage. Some sufferers can achieve relief with a 2mg dosage, which can be accomplished by prescribing individual dosage vials for the patient to administer subcutaneously with an insulin syringe.

Verapamil (an L-type calcium channel blocker) was the preventive of choice for some time. More recently, neuronal stabilizing agents such as Depakote (divalproex sodium or valproic acid, which is used to treat epilepsy and manic episodes of bipolar disorder), Topamax (topiramate, which is an anticonvulsant), and Keppra (levetiracetam, also used for epilepsy) have been effective for some patients. Recent studies show some preventive possibilities with melatonin.

Q. Of all the medications available for both acute and prophylactic treatment, are there particular medications or classes of medications that you find especially helpful for particular types of headaches?

DR. KRUSZ. For acute treatment, tramadol (Ultram) and tizanidine (Zanaflex) are my chosen first-line treatment for non-migraine headache. Acute use of opioids is sometimes helpful, but in cases that need this [NN13]level of acute treatment, it is essential to look at the possible underlying causes of the headache and a need for prevention and a need for preventive treatment.

The triptans are excellent first-line choices for many patients with both migraine and migraine-like headache. Post-traumatic headache often exhibits migraine-like symptoms and also responds well to triptan therapy. In all cases, care should be taken to limit use of acute medications of a given class to two days a week in order to avoid medication-overuse headache.

For preventive/prophylactic treatment, calcium channel blockers are well worth trying in cases of cluster headache and hemiplegic migraine. Tricyclic antidepressants, although still

used, have high profile for side effects, especially weight gain, which makes patients understandably reluctant to use them. SSRIs and SNRIs are taking the place of tricyclics in the arsenal of preventive medications. Beta blockers, ACE inhibitors, and other such drugs can be of some use. Increasingly, neuronal stabilizing agents (anticonvulsant medications) are showing promise as preventive agents for both headache and migraine.

Intractable or refractory headache is a problem most practitioners will encounter. Patients with this type of headache are often sent to the emergency room, but ER protocols are not well suited to their care. The future of aggressive headache treatment is in the specialty clinic, a far more cost- and time-effective mode of treating intractable headache, including refractory and chronic migraine. Compared with the emergency department, the headache clinic can offer a wider range of effective and definitive treatments and offer headache patients the maximum degree of success for control of migraines. Agents successfully utilized in this setting include: magnesium sulfate, anti-nauseants, steroids, DHE-45, propofol, lidocaine, levetiracetam, tramadol, ketamine, and methocarbamol. (For more information on this protocol, see <http://www.helpfor-headaches.com/articles/iv-meds.htm>.)

Q. There's been much commentary and some studies about sinus headache vs. migraine-and lots of people complain about both. How common is the true sinus headache?

DR. KRUSZ. Unfortunately, there is no consensus among the medical community about the criteria for diagnosing sinus headache. What we do agree on is that most sinus headaches are really migraines or migrainous headaches, and that sinus headaches rarely occur without the presence of an infection or physical defect. Sinus headache symptoms may include purulence in the nasal cavity, facial pain, pressure, congestion, nasal obstruction, discharge, and fever. Hyposmia (a decrease in smell) and anosmia (a lack of smell) may also be symptoms.

The location of the pain often leads to the misdiagnosis of "sinus" headache. During a migraine, the trigeminal nerve (TN) becomes inflamed. A branch of the TN runs across the sinus cavities and can cause pain and a feeling of sinus pressure. This feeling makes it easy for a patient to mistake a migraine for a sinus headache. Distinguishing between the two is a matter of examining the patient and family medical history, the qualities of the headache, and the symptoms accompanying the headache. It's important to rule out infection.

Q. What actually causes and occurs physiologically during headaches?

DR. KRUSZ. That work would be worth two or three Nobel Prizes! In general, we think that migraine is a situation where the brain is overly sensitive to painful signals and perhaps allows excessive signaling to occur for different stimuli (triggers). These potential triggers include sounds, smells, lights,

lack of sleep, missed meals, barometric pressure changes, menstrual cycle changes, and the like. Electrical signaling changes, called cortical spreading depression, are one of the first events that may occur during migraine. This might, in turn, let brain stem pain processing centers allow more painful signals to pass through them. Of course, this is a simplistic explanation, but it is how we envision the migrainous process to occur.

In terms of tension-type headache, it was once thought that this type of headache involved sustained contraction of pericranial muscles. In fact, it was once called muscle contraction headache. We know now that this isn't the case. The exact cause of tension-type headache has still not been clearly established, but it is thought to be the result of abnormal neuronal sensitivity and pain facilitation. Tension-type headache can be triggered by physiological or psychological stress.

In cluster headache, the location of the pain suggests the involvement of the first branch of the trigeminal nerve. New PET technology has allowed a closer study of cluster headache and has led to the theory that this is primarily a brain disorder that produces secondary changes in cranial blood circulation as a result of trigeminal-autonomic system activation.

Q. What role does vasoconstriction play in headache?

DR. KRUSZ. It used to be axiomatic that constriction of blood vessels was part of the migraine process. These days, we're not so sure. In fact, vasoconstriction is not considered a necessary factor in the clinical expression of migraine. Just because a migraine-specific medication, such as sumatriptan, has vasoconstrictive properties, this doesn't mean that it is the only mechanism in migraine. In fact, sumatriptan and other migraine-specific agents do many more things in the brain than address vasoconstriction. They also slow down the electrical firing, which can occur as part of the neurovascular basis for migraine. Obviously, this is an evolving story.

Q. Tell us more about medication-overuse headache (MOH). What is it, how do you diagnose it, and what types of medications contribute to it?

DR. KRUSZ. Medication-overuse headache (also known as analgesic rebound headache, analgesic overuse headache, and drug-induced headache) is caused by overuse of the medications used to treat the original episodic headache. MOH can occur in patients who have tension or cluster headache or migraine. After reviewing a patient's history, I would suspect MOH if that patient is taking medication and still has daily or near-daily headaches.

Opioids, aspirin, acetaminophen, ibuprofen, triptans, barbiturates, and benzodiazepines are all associated with MOH. Overuse of OTC analgesics may be an even greater problem than overuse of prescription medications because they are so readily available and patients often don't realize or stop to think

that OTCs present as many potential dangers as prescription medications.

MOH is a primary factor in episodic headache becoming chronic daily headache (CDH) and in episodic migraine becoming transformed migraine (TM-daily headache superimposed with episodic migraine). Thus, a vital element in treating CDH or TM is stopping the MOH cycle. MOH stops only when you discontinue the offending agent for a period of time, then limit acute treatment with medications in the same class to two or three days a week. Ultimately the best treatment is to find effective preventives that reduce the need for acute treatment to a frequency below that at which MOH would be an issue.

Q. At what frequency of headache do you recommend prevention/prophylaxis?

DR. KRUSZ. Patients with mild to moderate headache that respond well and quickly to acute treatment may want and be able to forego preventive treatment. However, when patients experience one or more disabling headache per week, prevention is definitely in order. Effective preventive regimens not only reduce the frequency of headaches, but the severity as well, making them more responsive to acute treatment.

Q. How significant is the psychological impact of headache?

DR. KRUSZ. It is very significant. Patients with frequent headache often develop feelings of inadequacy, low self-worth and self-esteem, and guilt about not performing well within their families and on the job. They often have less social contact.

Q. What about the comorbidity of headache and depression?

DR. KRUSZ. True comorbidity of headache and major depressive disorder is most frequently seen in the migraine patient. The prevalence of major depressive disorder in the population is 17%. In the migraine population, it's 47%. With headache other than migraine, comorbidity is more frequently seen in migraine-like headaches such as some post-traumatic headaches. Here we're speaking of depression as a comorbid disorder, where the coexist, but neither causes the other.

Q. Is the typical headache patient helped by psychological treatment?

DR. KRUSZ. Yes. This is particularly true for patients who also experience major depressive disorder and need medications. But psychological treatment can also help patients develop skills for coping with a chronic disease, and it helps ensure that their medications are optimized. Medications used to treat depressive disorder are also often used in headache and migraine prevention. The doctor and psychiatrist or psychologist should consult

on medications in order to choose those that are most likely to be beneficial for both conditions.

When depressive disorder is not present, treatment is still often valuable in developing coping skills and overcoming feelings of isolation, inadequacy, and guilt.

When approaching headache or migraine patients about psychological treatment, it's important to convey that you are not telling them their pain is "all in their heads," but that such treatment can improve their quality of life and the efficacy of their medical regimen.



TERI ROBERT is a writer and patient advocate in the field of headache and migraine disease. She is the author of *Living Well With Migraine Disease & Headaches* and the *Guide to Headaches and Migraine* available at www.headaches.about.com, and she serves as the Support Advisor for MAGNUM, the National Migraine

Association. Teri has lived with headaches and migraines since childhood.