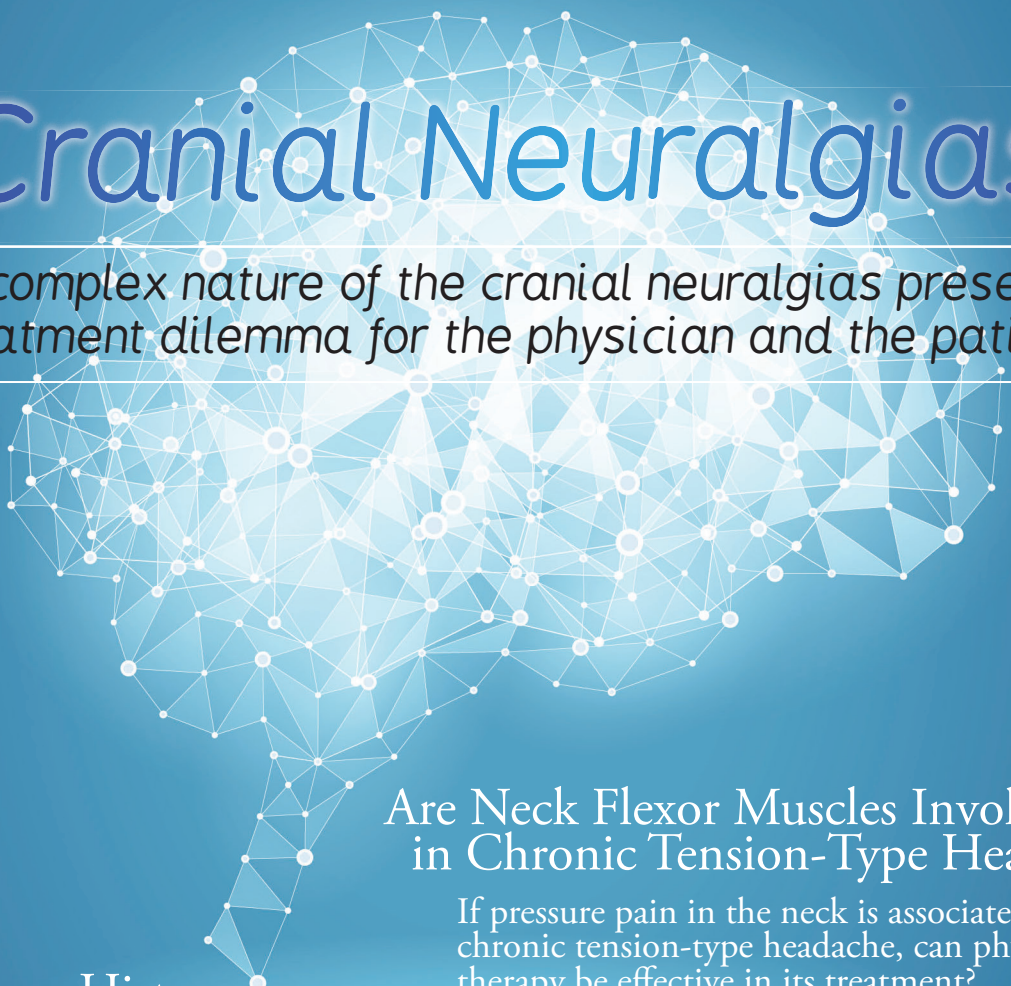
HeadWise®

A Voice for People with Migraine and Headache Disorders
From the National Headache Foundation

Cranial Neuralgias

The complex nature of the cranial neuralgias presents a treatment dilemma for the physician and the patient.



Are Neck Flexor Muscles Involved in Chronic Tension-Type Headache?

If pressure pain in the neck is associated with chronic tension-type headache, can physical therapy be effective in its treatment?

Sexual Abuse History & Migraine Transformation

A recent study confirmed the role of sexual abuse history in the transformation of episodic migraine to chronic migraine.

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If you think a headache is just a headache, think again. Millions of Americans suffer from migraines, cluster headaches, and other serious headache disorders. Chances are, headache disorders affect you or someone you love.

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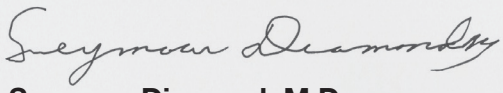
FROM THE EXECUTIVE CHAIRMAN:

Recently, an interesting article on biofeedback therapy in children with migraine crossed my desk. The article, "Biofeedback as Prophylaxis for Pediatric Migraine: A Meta-analysis," appeared in the online version of the journal, *Pediatrics* 2016; 138. I found the article of special interest as I had written an article, almost 41 years ago on the same topic, "Autogenic training with biofeedback in the treatment of children with migraine" which appeared in *Proceedings of Third Congress of the International College of Psychosomatic Medicine, Second International Symposium of Autogenic Therapy, Rome.* September 16-20, 1975; 190-192.

The article in *Pediatrics* also brought back memories of those first few years that I introduced biofeedback to my patients. The lead author of the recent article, Ander Stubberud, is on staff at the Norwegian University of Science and Technology, in Trondheim, Norway. In 1980, Ottar Sjaastad, MD, who was the Director of the Headache Institute in Trondheim visited me at the Diamond Headache Clinic and came to observe my patients who had been diagnosed with Chronic Paroxysmal Hemicrania. Also, he visited the biofeedback department that I had established at the Clinic in 1972. Doctor Sjaastad was very critical of my use of biofeedback in the treatment of migraine and had expressed his views with other colleagues in headache medicine.

Now, in 2016, I am happy that significance of biofeedback therapy in children with migraine has again been demonstrated via this recent article by the Trondheim group. It validates the fact that migraine research is in flux and should be open to new ideas regarding the causes and treatment of this disorder.



Seymour Diamond, M.D.
Chicago, Illinois

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NATIONAL HEADACHE FOUNDATION™

Mission
To cure headache, and end its pain and suffering.

Vision
A world without headache.

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FEATURED ARTICLES

IN EVERY ISSUE

CAQ-2016

The National Headache Foundation wishes to congratulate the following who successfully passed the exam in March, 2016, for the Certificate of Added Qualification in Headache Medicine and have met the requirements for CAQ:

John K. Baker, MD	Elgin, SC
Carol A. Barch, FNP-BC, MN	Mountain View, CA
Rene Gomez, MD, FAAN	Pennington, NJ
Laura Granetzke, FNP-C	Harrisburg, NC
Ashley Holdridge, DO	Milwaukee, WI
Bhuvana P. Mandalapu, MD	Austin, TX
Traci A. Purath, MD	Mt. Pleasant, WI
Michael A. Rogawski, MD	Sacramento, CA
Bradley D. Torphy, MD	Chicago, IL
Kristina Trybek, PA-C	Madison, WI
George J. Urban, MD	Chicago, IL

The next examination will be held from September 12 through 26, 2016. Candidates may take the exam in testing centers throughout the U.S. For clinicians interested in receiving CAQ, please contact the NHF staff at nhf1970@headaches.org or call 1-888-NHF-5552. For patients interested in locating health care providers who have received certification, please view Health Care Practitioner Finder at www.headaches.org or call one of our staff.

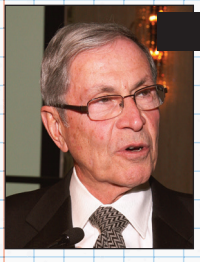
New Officers Elected

Effective May 21, 2016, Arthur H. Elkind, MD, has stepped down as President of the National Headache Foundation Board. He has served with distinction in this position since 2007. Dr. Elkind has been a member of the Board since 1988, and previously served as Secretary and as Vice President. In 2014, he received the *Elaine Diamond Service Award* from the NHF. He has graciously agreed to remain on the Board, and continue to serve as Chair of the Editorial Committee.

Vincent Martin, MD, has assumed the role of President. Doctor Martin had served as Vice President of the Board since September, 2012. Dr. Martin is Co-Director of the Headache and Facial Pain Program and Professor of Clinical Medicine in the Division of General Internal Medicine at the University of Cincinnati College of Medicine, Cincinnati, OH. He was elected to the NHF Board in 2009.

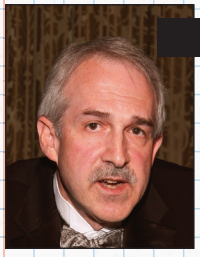
The new Vice President of the Board is Mark W. Green, MD. Doctor Green is the Director of the Mount Sinai Center for Headache and Pain Medicine, and Professor of Neurology, Anesthesiology, and Rehabilitation Medicine at the Icahn School of Medicine, New York, NY. He was elected to the Board of the NHF in May, 2010. Dr. Green was the recipient of the *Lifetime Achievement Award of the National Headache Foundation* in May, 2016.

Effective April 30, 2016, Roger K. Cady, MD, has resigned from his position as Associate Executive Chairman of the NHF Board. He has served diligently in that position since February, 2010. First elected to the Board in 1998, Dr. Cady served as Vice President from 2006 through 2010. He has graciously agreed to remain on the Board. In 2012, Dr. Cady received the *Lifetime Achievement Award of the National Headache Foundation*. Doctor Cady, until the end of April, 2016, was Director and Founder, of the Headache Care Center and ClinVest, in Springfield, MO. He is now the Vice President – Neurology of Alder Biopharmaceuticals, in Bothell, WA. HW



Arthur H. Elkind, MD

- Stepped down as the President of the National Headache Foundation Board.
- Remains as the Chair of the Editorial Committee.



Vincent Martin, MD

- Assumed role of President of the National Headache Foundation Board.

Mark W. Green, MD

- New Vice President of the National Headache Foundation Board.

Roger K. Cady, MD

- Resigned from his position as Associate Executive Chairman of the NHF Board.
- Accepted a position as Vice President – Neurology of Alder Biopharmaceuticals, in Bothell, WA.

National Headache Foundation Lectureship

Since 1970, the National Headache Foundation has been the premier educational and informational resource for those living with headache disorders, their family members, physicians, allied health professionals, and health policy decision makers. Staying true to our mission, the NHF created the National Headache Foundation Lectureship Award to preserve the highest level of neurobiological research and advancement in medicine today.

Recipients of the award prove themselves to be up-and-coming physicians and scientists who have demonstrated interest in the management of common and complex headache problems. In addition, the honorees have impressive research experience as evidenced by the poster presentations and published articles which have been reviewed by the Award Committee. This committee is comprised of physician members of the NHF Board of Directors and the Honorary Board. The Lectureship is presented annually at a scientific meeting.

Sheena Aurora, MD

The recipient of the 2016 Lectureship was Sheena Aurora, MD. Dr. Aurora's lecture, "What's Scintillating about Migraine," was presented on February 14, 2016, at the postgraduate course, The Practicing Physician's Approach to the Difficult Headache Patient, hosted by the Diamond Headache Clinic Research & Educational Foundation, in Newport Beach, CA. At the time of the lectureship, Doctor Aurora was Clinical Associate Professor, Neurology & Neurological Sciences, at Stanford University School of Medicine, and a consultant in neurology at Stanford Hospital and Clinics Stanford, CA. She is now Medical Launch Leader – Headache and Pain, at Eli Lilly and Company, Indianapolis, IN.

She received her M.D. at Christian Medical College, Ludhiana, India, and completed a residency in neurology and a fellowship at Henry Ford Hospital, Detroit, MI. Doctor Aurora received board certification in Neurology, from the American Board of Psychiatry and Neurology in 1997. In 2006, she received certification in Headache Medicine from the United Council for Neurologic Subspecialties.

She previously served as Co-Director of Swedish Headache Center, Swedish Neuroscience Institute, and Assistant Professor, Department of Neurology, University of Washington, Seattle, Washington through 2012. She has received the Harold G. Wolff Award by the American Headache Society on three occasions – 1999, 2001, and 2007. In 2002, Doctor Aurora received the Migraine Innovators Award. Doctor Aurora has authored 25 publications on headache. HW

Seymour Diamond, MD Lectureship

Annually, in honor of the National Headache Foundation's Executive Chairperson and one of its founders, the Foundation presents the *Seymour Diamond, M.D. Lectureship Award* which recognizes the most significant paper in headache published during the past year.

Alyssa A. LeBel, MD

The 2016 recipient of the Seymour Diamond, M.D. Lectureship is Alyssa A. LeBel, MD. Doctor LaBel is Director of the Chronic Pain Program at Boston Children's Hospital, and Director, the Pediatric Headache Program, Boston Children's Hospital at Waltham, WA. She received a B.A. in Psychobiology at Wellesley College, where she was elected as a Phi Beta Kappa. Dr. LeBel received her M.D. from Tufts University School of Medicine, Boston, MA, and completed a residency in Pediatrics at Boston Floating Hospital for Infants and Children, New England Medical Center, and Tufts University School of Medicine, and finished a residency in Child Neurology at Massachusetts General Hospital.

Doctor LaBel serves as an Ad-Hoc reviewer for the New England Journal of Medicine, the journal *Pain*, and Analgesia and Anesthesia. She is a member of the Committee for Headache Education of the American Headache Society. Doctor LaBel has published numerous articles in the professional literature.

Doctor LaBel's lecture, "The Migraine Brain in Transition: Girls versus Boys," is based on the article of the same title, which appeared in the journal, Pain, 2015; 156:2212-2221. Her coauthors were: Vanda Faria, Nathalie Erpelding, Adriana Johnson, Robert Wolff, Damien Fair, Rami Burstein, Lino Becerra, and David Borsook. The lecture was presented at the 29th Annual Practicing Physician's Approach to the Difficult Headache Patient, on February 14, 2016, in Newport Beach, CA. The course is sponsored by the Diamond Headache Clinic Research & Educational Foundation. HW

Tired of searching the internet for answers?

It's time to learn from those in the know. In every issue of HeadWise®, our experts respond to reader-submitted questions about migraine and headache disorders.

CAROTIDYNIA VERSUS MIGRAINE

My migraines are often accompanied by severe pain in my throat/neck, which my neurologist has termed carotidynia. Is this a form of migraine? The throat pain can strike before the headache, or occur alone. Triptans help, and I take a steroid when the throat pain hits – but is there another pain reliever that would be more effective? –Deborah S.

Carotidynia is not a form of migraine. It is an inflammatory condition of the carotid artery which is associated with tenderness over the artery. Also, pain is relatively constant, not episodes like migraine. Migraine can cause pain into the throat so it still could just be a variation of migraine. It could not be diagnosed without a lot more information including an examination, but talk to the doctor whether this could be migraine. If frequent, they might want to try some migraine preventive agent. Triptans and steroids help many causes of pain, so a good response does not help in the diagnosis.

Mark Green, MD
Mount Sinai Medical Center
New York, NY

TREATMENT WITH TRICYCLIC ANTIDEPRESSANTS

I have had luck with nortriptyline and imipramine in the past, but for short periods – 3 months for nortriptyline and 5 months for imipramine. My primary physician suggested doing a rotation of antidepressants since they do not seem to work for long periods for me, even after increasing the dosages. Do you know of any success stories with this type of regimen and are there any downsides to trying it? –Mindy D.

We frequently rotate the tricyclic antidepressants in certain patients. These drugs would include protriptyline, nortripyline, doxepin, and amitriptyline. I would continue that method if it works. There are no down sides to this form of treatment. I started prescribing tricyclic antidepressants for headaches in the early 1960s. Side effects from these agents, such as dry mouth and constipation, can be remedied.

Seymour Diamond, MD
National Headache Foundation
Chicago, IL

LONG-TERM BOTOX THERAPY

I have been using Botox for migraine for about 17 years. After my last dose, I had all the symptoms of an allergic reaction. Can you become hypersensitive after so many years? – Dasha I.

What is meant by an allergic reaction? If this means a rash or hives, yes it is theoretically possible but we have not seen it in our own clinic experience. If you have been using Botox injections for 17 years, I must assume that is has been used outside of the usual 31 site injection paradigm, since it has only been approved for chronic migraine less than 4 years ago. If there is a question about an allergic reaction, hold off on future injections until you see an allergist who could do a skin test before proceeding. Since Botox is a very expensive drug, it would be a shame to waste a 100 unit vial, so perhaps your physician could give or sell you a small quantity in a syringe to bring to the allergist for testing.

Edmund Messina, M.D.
Michigan Headache Clinic
East Lansing, MI

ARE THERE "EXTREME" TENSION HEADACHES?

I have been told by my doctor that I do not have migraines, but tension headaches. They can sometimes last up to 5 days. Does anyone have extreme tension headaches? I end up in urgent care a few times a year. – Lisa R.

There seems to be uncertainty about what type of headache that you have. In general, any disabling headache is migraine until you prove it as something else. It would reasonably be presumed that a headache requiring urgent care clinic treatment would be considered severe. By definition, tension-type headaches are mild to moderate in pain. Tension-type headaches are also known for what they are not. They are not severe. They are not throbbing. They are not worsened by movement. Nausea is rarely present. There are many in the Headache Medicine community who believe tension-type headaches and migraine exist on a continuum (the Convergence hypothesis). Under this paradigm, tension-type headaches are considered mild migraines.

But whether we are calling a rose a "rose" or something else or tomato a "to-ma-to", you are not having your headache managed well. The Spectrum clinical trial (which supports the Convergence hypothesis) demonstrated that tension-type headaches respond well to the migraine medication, sumatriptan. So it would not be unreasonable to use a triptan to treat your "extreme" headache. It would also be important to be sure that you are treating at the mild pain stage (when medications are most likely to be effective). It might be best to find a physician who has an interest in treating headaches as they would likely be more aggressive in bringing your acute headache under control. You might need an injectable therapy like, ketorolac, sumatriptan, or dihydroergotamine. I have many patients who self-administer these medications as a rescue treatment for their severe headaches so they do not need to visit a clinic, urgent care, or emergency department. Also, keep track of your headaches; when are they occurring, what was happening around that time, how were you sleeping? This information can provide valuable clues that will allow for better control when they do occur.

But if, at the end of the day, it turns out that you are wired to have 2 to 3 "extreme" attacks a year, then develop a treatment plan that will allow for aggressive early treatment to resolve the attacks.

Duren Michael Ready, MD FAHS
Baylor Scott & White, Central Division
Temple, TX

Leave a legacy to the National Headache Foundation.

Charitable Giving

There are different ways that individuals can support the mission of the National Headache Foundation through donations. A present donation of money or other items of value is the most frequent manner of support. Provisions for specific bequests or residual bequests in one's will or trust are often utilized. As part of one's estate planning or planned giving, an individual can provide for charitable giving that may minimize gift and estate taxes while providing for (a) the smooth transfer of ownership, (b) the care and support of dependents, and (c) the avoidance of disputes among survivors.

Three commonly used planned giving vehicles are:

1. **Charitable remainder annuity trust.** Assets (generally securities) are transferred to a trust. The trust makes fixed annual payments to the donor or other specified beneficiaries named by the donor. When the trust terminates upon the death of the donor or other specified beneficiaries, the remainder of the assets in the trust pass to the charity. A trust document is required. The donor retains the ability to change the designated charity.

2. **Charitable remainder unitrust.** Assets are transferred to a trust. The donor or other specified beneficiaries named by the donor receive fluctuating payouts from the trust (a percentage of the value of the principal) and, upon the death of the donor or other specified beneficiaries, the remainder of the assets passes to the designated charity. A trust document is required. The donor retains the ability to change designated charity.

3. **Charitable gift annuity.** The donor, under a contract with a charity, transfers cash or securities to the charity. The charity pays the designated beneficiary a fixed income for life. Upon the death of the beneficiary, the remaining balance passes to the charity. No trust document is required and the charity cannot be changed.

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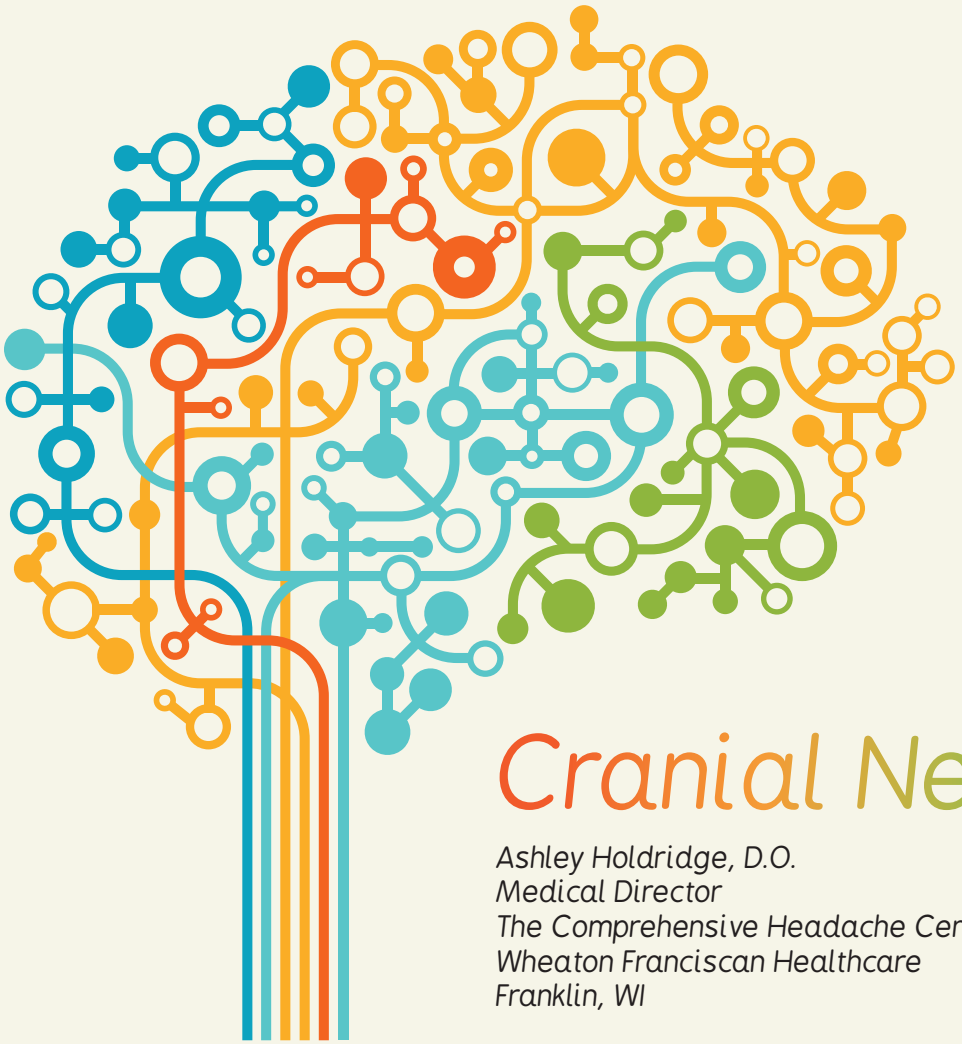


Cranial Neuralgias

Ashley Holdridge, D.O.
Medical Director
The Comprehensive Headache Center
Wheaton Franciscan Healthcare
Franklin, WI

Painful cranial neuralgias (nerve pain) and other facial pains create puzzling presentations with many overlapping features. Due to the complicated anatomy of the head and neck, many patients experiencing cranial neuralgia and other facial pains have consulted multiple physicians. Often, these patients have undergone elective procedures that leave them feeling worse than when they started. The patients will describe excruciatingly painful episodes that trigger both physical and emotional turmoil for the individual as well as their families.

By definition, a cranial neuralgia is:
a paroxysmal (recurrent), brief, intense, lightning-like pain within the distribution of a particular cranial nerve. Cranial nerves originate in the brainstem. The most frequently encountered types of cranial neuralgias are trigeminal neuralgia (TN), glossopharyngeal neuralgia (GPN), and nervus intermedius neuralgia (NIN).

Other unusual pains with neuralgic components will also be described in this article in consideration of the overlap in symptoms that the patient will often encounter.

Trigeminal Neuralgia (TN) involves facial pain in the area of the trigeminal nerve. It affects around 5.7 per 100,000 women and 2.5 per 100,000 men. The peak incidence of TN occurs between the ages of 50 to 60 years with the prevalence increasing with age. When a cause for TN can be identified, the result is usually from a blood vessel putting pressure on the trigeminal nerve (which is also known as cranial nerve V). The pain may also be due to a problem with nerve insulation – the process being called demyelination.

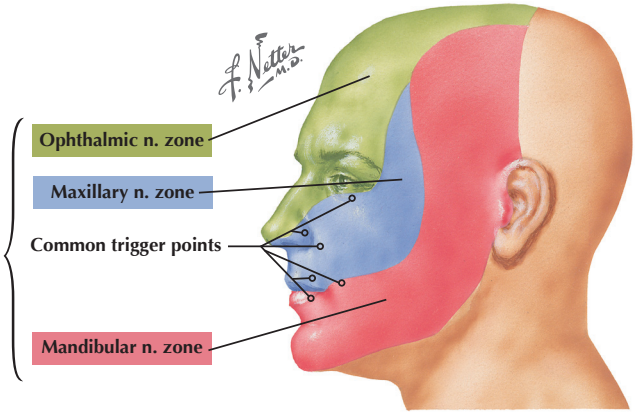
Typically, TN is only found on one side of the face but can involve both sides of the face (bilateral). Patients have described the pain of TN as, "plugged into the mains and switched on and off" and "rockets and explosions." Patients may complain of multiple stereotypical attacks per

day; upwards of 70 attacks in one day have been reported. Common triggers to the acute pain include brushing one's teeth, applying make-up, or shaving. In some instances, a quick diagnosis can be made as makeup will noticeably be absent from a particular area of the face.

The pain is typically located around the cheek bone or lower face and involves the forehead in less than 5% of cases. This location is important in differentiating TN from other types of headache or facial neuralgias.

FIGURE 1

Facial regions innervated (supplied with nerves) by the Cranial Nerve V. Trigeminal neuralgia typically affects the regions of the face in the Maxillary (V2) and Mandibular (V3) regions.



The overall course of TN has a relapsing-remitting nature with at least 50% of patients reporting at least a 6-month remission – free from pain. The pain of TN can occur at night in one-third of patients. Unfortunately, TN almost always returns and becomes unresponsive to treatment. The pain can be quite disabling and impacts on all aspects of the patient's life.

The diagnosis of TN is usually based on the patient's symptoms. However, an MRI of the brain, with and without contrast, is the most useful screening study to rule out secondary causes such as multiple sclerosis or brain tumors which may present with symptoms typical of TN.

Symptomatic treatment of TN dates back to 1958 with the introduction of an anti-seizure drug, phenytoin. Since that time, various other seizure agents have been tried with varying degrees of success. The most effective and first-line agent in TN therapy is carbamazepine. Unfortunately, the use of carbamazepine is limited by its adverse reactions including drowsiness, potential blood side effects, and potential drug interactions. Oxcarbazepine is a derivative of carbamazepine which has a better side effect profile and may be more effective in those patients in whom carbamazepine was ineffective. Topiramate, in randomized controlled trials in China, was found to be more effective than carbamazepine after 2 months of treatment. Lamotrigine has been effective in classic and symptomatic TN, which occurs secondary to multiple sclerosis. However, the potential of Stevens-Johnson syndrome, a serious skin condition, may limit its use. Gabapentin and pregabalin have shown success with less side effects than the previously mentioned agents. Baclofen is another drug that has been shown to be effective when used alone or in combination with other agents.

Common Drugs Used in the Management of Trigeminal Neuralgia

DRUG	POTENTIAL SIDE EFFECTS
Baclofen	Drowsiness, dizziness, weakness, confusion
Carbamazepine	Drowsiness, aplastic anemia, ataxia, Stevens-Johnson Syndrome
Gabapentin	Dizziness, somnolence, edema
Lamotrigine	Dizziness, blurred vision, Stevens-Johnson Syndrome
Oxcarbazepine	Low sodium, changes in vision, low platelets
Pregabalin	Dizziness, somnolence, blurred vision
Topiramate	Paresthesias, weight loss, glaucoma

When medical therapies fail or the disease is causing a significant impact on quality of life, the physician may suggest neurosurgical procedures which have been effective. Microvascular decompression of a nerve which involves relieving the compression caused by a blood vessel on a nerve, has been used successfully. Other procedures can be used to prevent pain signal transmission through nerves. These include using heat (using radiofrequency ablation, chemical (rhizolysis), mechanical (using balloon compression), and radiation (gamma knife). Some data suggest that many patients prefer a surgical option rather than ongoing medical management. The following list provides definitions of these procedures:

1. **Radiofrequency lesioning/ablation (same technique):** Radio frequency waves are used to heat needles. When these needles come in contact with a particular nerve, the nerve is destroyed or "lesioned" and can no longer transmit pain signals

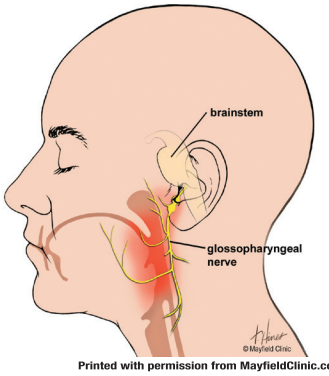
2. **Glycerol rhizolysis**: this technique uses a chemical called glycerol to interrupt the transmission of pain through the nerve.
3. **Balloon compression:** a balloon is inserted alongside a particular nerve to compress it, resulting in injury. This injury prevents the pain transmission
4. **Gamma knife therapy:** Despite its name, Gamma knife therapy does not involve a knife. It is a device that uses focused beams of cobalt radiation into a small space. When used for neuralgia, this therapy uses the beams of radiation therapy to a nerve. The radiation will kill or "lesion" the nerve thus, preventing pain transmission. This type of therapy was invented at the Karolinska Institute in Sweden in 1967.

Glossopharyngeal Neuralgia (GPN) is a far less common cranial neuralgia than transcranial neuralgia but can be confused due to similar characteristics. Like TN, GPN consists of brief episodes of recurrent sharp pains. However, the location of GPN pain is in the distribution of the branches of the glossopharyngeal and vagus nerves (cranial nerves IX and X) as opposed to the trigeminal nerve. Patients describe a severe, stabbing, lancinating (piercing) pain that lasts a fraction of a second up to 2 minutes. The pain may be located in the ear, base of the tongue, tonsils, or beneath the angle of the jaw. Triggers of GPN pain include yawning, talking, coughing, swallowing, or touching the outside of the ear.

Occasionally, GPN and TN may coexist. The incidence of GPN is very rare and estimated to be 0.2 to 0.7 per 100,000 patients. GPN is rarely seen in children, and is most commonly found in females. The majority of patients with GPN are over the age of 50.

FIGURE 2

Location of the glossopharyngeal nerve



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The majority of cases of GPN are thought to be idiopathic (no known cause) as thorough imaging and physical examinations usually do not reveal any abnormalities. Secondary causes may be from compression of the glossopharyngeal nerve by blood vessels or tumors. The majority of secondary cases are believed due to an artery compressing the glossopharyngeal nerve as it exits the brain.

Considering the rarity of this disorder, a comprehensive evaluation should be undertaken. A high resolution MRI with thin views through the brainstem will help evaluate for tumors. Angiography of the spine will also identify any compression by a blood vessel.

First-line treatment is similar to that for TN, with medical management with anti-seizure drugs such as carbamazepine, oxcarbazepine, gabapentin, pregabalin, and phenytoin. Surgical options such as microvascular decompression have been successful with long-term pain-free outcomes in upwards of 80% of patients with a low rate of complications such as dysphagia (difficulty swallowing) or hoarseness.

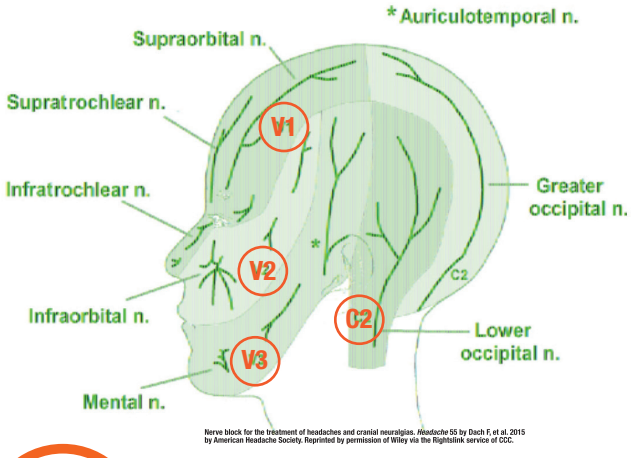
Nervus Intermedius Neuralgia (NIN) also known as geniculate neuralgia is an extremely rare condition affecting an estimated 0.03 per 100,000 people per year. It is usually seen in patients 50 years and older, and women appear to be affected more than men. The pain is a brief, sudden bout of pain felt deep inside the ear, lasting seconds to minutes. During the attack, the patient may complain of a bitter taste in their mouth. The nervus intermedius is a small branch of the facial nerve (cranial nerve VII) that supplies the inner ear, middle ear, mastoid cells, Eustachian tube, and part of the pinna of the ear. Contrast-enhanced imaging (MRA) should be utilized to identify dilation of a vessel or any abnormal vessels. Treatment regimens include carbamazepine and other anti-seizure drugs that are used to treat TN.

COMPARISON OF LOCATIONS OF
Trigeminal Neuralgia (TN), Glossopharyngeal Neuralgia (GN), and ervus Intermedius Neural ia NIN

TN	Along the branches of cranial nerve V, V2 and V3: cheek bone and lower face
GPN	Along cranial nerve IX and X: inner ear, base of tongue, tonsils, or along angle of the jaw
NIN	Along the branch of cranial nerve VII, the nervus intermedius: deep inside the inner ear

Cranial Neuralgias

In order to appropriately diagnose the cranial neuralgias, it is imperative that the physician is aware of the area of the skin that is supplied by a specific cranial nerve. It is especially evident in the case of neuralgias affecting the ear which can overlap with the same areas as trigeminal neuralgia, and the nerve supplies of the inner ear and peri-orbital (around the orbit of the eye) neuralgias. The cranial neuralgias resulting in periorbital pain include supraorbital (above the orbit of the eye) and supratrochlear (above the eye muscle) neuralgia, infraorbital (below the orbit), and lacrimal (relating to tear production) neuralgia. These neuralgias are distinct from TN, but represent branches of the trigeminal nerve.



Nerve block for the treatment of headaches and cranial neuralgias. *Headache* 55 by Dach F, et al. 2015 by American Headache Society. Reprinted by permission of Wiley via the Rightslink service of CCC.

FIGURE 3

Nerves and sensory territory of peripheral cranial nerves.
Legend: V1, V2, V3: first, second, third trigeminal branches respectively
C2: branches of second cervical (neck) root.

The first branch of the trigeminal nerve consists of the supraorbital nerve, which passes through the bone notch of the upper edge of the orbit. The nerve supplies to the forehead and scalp, back to the lambdoid suture (line of union between the parietal and occipital bones) can be manually examined. Due to the superficiality of these nerves, most cases of supraorbital neuralgia are secondary to trauma or conditions such as wearing a tight hat or sunglasses. The disorder has a predominance in females, and is not associated with involuntary features (tearing, eye redness, nasal congestion) that distinguishes it from the trigeminal autonomic cephalagias. While the pain is generally thought to be benign, associated pain has reportedly contributed to suicidal thoughts among some individuals.

The second branch of the trigeminal nerve consists of the infraorbital nerve, which exits the maxillary bone (upper jaw) through the infraorbital foramen (small opening) and supplies nerves to the side of the nose, the upper jaw, and skin of the upper lip. Cases of pure infraorbital neuralgia are rare and tend to be secondary to trauma. Diagnosis is based on location of the symptoms and response to blockade with a numbing medication.

Lacrimal neuralgia from the medial branch of the lacrimal nerve supplies nerves to the anterior temple and lateral eyelid. Tenderness and continued pain at the outer top edge of the orbit can be observed.

The third branch of the trigeminal nerve consists of the auriculotemporal (ATN). The ATN passes beneath the mandibular (lower jaw) condyle (articulated part of the bone) going toward the temporal region and can be felt in the pre-auricular region in front of the tragus (projection in the ear) and supplies the skin covering the front of the helix (incurved rim of the outer ear) and tragus and skin of the temporal region. Similar to other neuralgias, the pain is piercing and sudden. It may be accompanied by facial sweating and flushing termed "Frey's Syndrome," following the removal of the parotid gland (beside the ear) or trauma to the area. ATN responds well to botulinum toxin type A.

Nerve blockade or blocking or temporarily deadening the nerve is an effective technique that has been successful in the treatment of facial and auricular neuralgias. This technique often uses a combination of a numbing medication, such as lidocaine or bupivacaine, and may be combined with a steroid. A needle is inserted near the particular nerve and the medication is injected. Nerve blockade is often done in the office and is minimally painful. Depending on the case, this technique can provide immediate pain relief that can last weeks to months. However, in some instances it may provide permanent pain relief.

A recent article in *Cephalagia* authored by Gaul and Resch, discussed the application of capsaicin 8% in a cutaneous (skin) patch to the head and face to treat non-responsive nerve pain. Capsaicin, the primary pungent ingredient in hot chili peppers, works with a key receptor in

"Patients need to be aware that there are plenty of medical and surgical options available and not to become discouraged."

the transmission of pain. One patient with non-responsive pain due to surgical injury of the great auricular nerve after parotid tumor resection, reported burning electric shock-like sensations in the region of the scar that could be provoked by wind or light touch. The patient was treated with various drugs such as pregabalin, gabapentin, carbamazepine, oxcarbazepine, amitriptyline, and duloxetine – in singular therapy and in combination. The patient was pre-treated with lidocaine cream 4% for 60 minutes. With the application of the capsaicin 8% patch for 60 minutes in the location of the pain, his pain decreased within 12 hours. The decrease in pain lasted 8 to 12weeks and the treatment was repeated four times with the same effect.

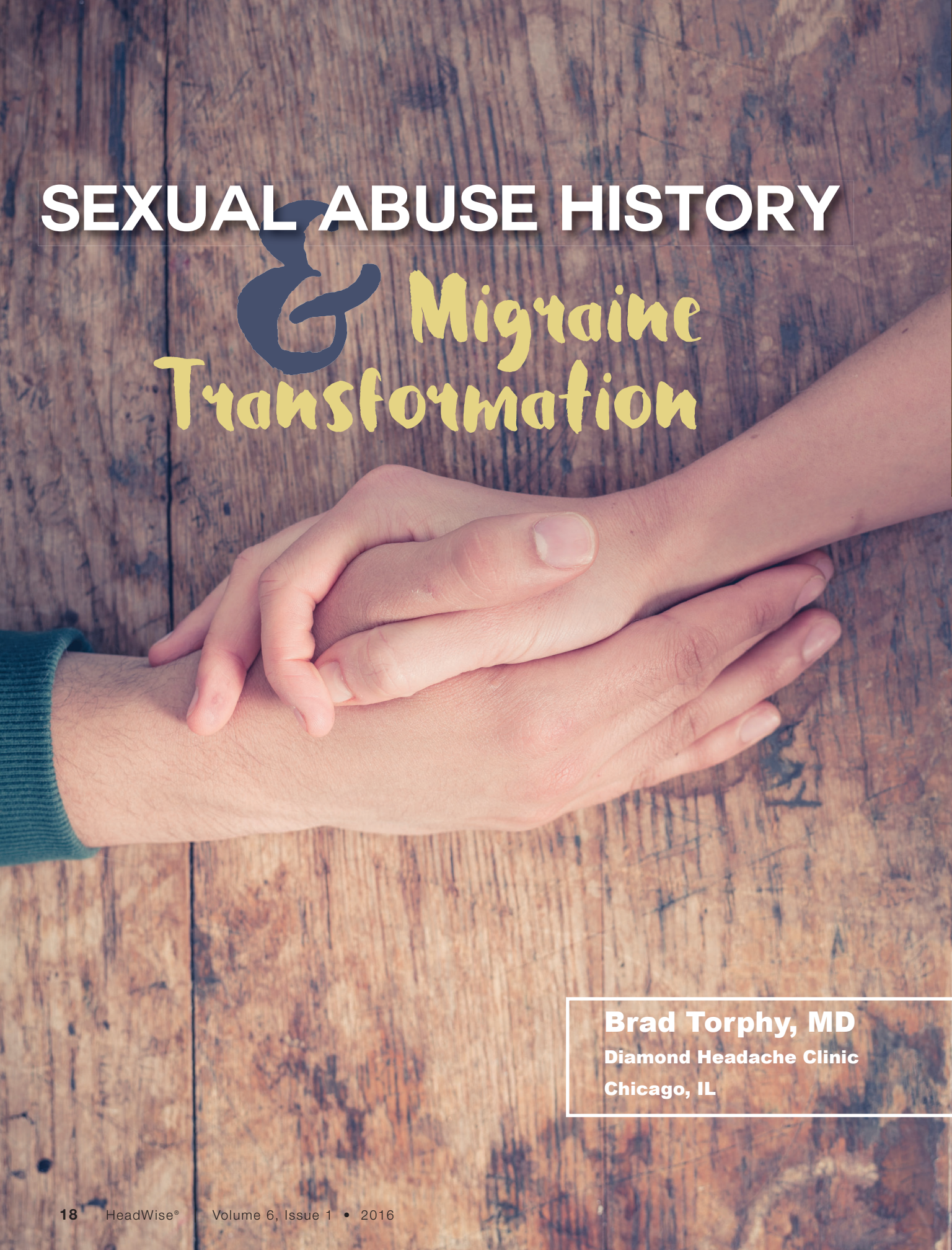
Orofacial pain includes pain within the oral cavity (mouth). Often, patients are referred to specialized headache centers when in reality their pain stems from an intraoral cause. Rare disorders such as pulpitis (inflammation of the pulp of a tooth), cracked tooth syndrome, burning mouth syndrome, and atypical toothache are some of the rare causes of dental pain. Due to the significant nerve convergence in the jaw and face, the pain may be referred, poorly localized, or misdiagnosed. Dental pulp and periodontal ligaments contain nociceptors (pain receptors) which are triggered by pressure in response to inflammatory mediators. Pulpitis is typically due to dental caries (destruction or death of a tooth) and may be reversible in response to specific stimuli such as hot, cold, or sweets. The pain may be described as fleeting, shooting, or stabbing. Cracked tooth syndrome occurs when a crack has occurred in the dental hard tissues and reaches the pulp chamber but the crack is not visible to the naked eye. The pain is intermittent, provoked by biting or releasing biting on a hard object, and notoriously difficult to diagnose. It may be described as sharp or sensitive and is usually related to chewing.

Burning mouth syndrome is a collection of symptoms affecting the oral cavity described as a "burning" pain in the mouth associated with an alteration in taste and altered perception in the quality and quantity of saliva. The symptoms are most commonly localized to the tongue, and is most commonly seen in peri-menopausal or post-menopausal females. It is strongly associated with psychological conditions, such as anxiety and depression, and the symptoms are typically worsened during periods of psychological stress.

Cranial neuralgias and other facial pains can wear many different disguises, making them very difficult to diagnose and treat. Even when the appropriate diagnosis is established, there is often a mismatch between patient's expectations of a "cure" for their pain and the reality that many of these neuralgic pains may become chronic. Many of these sufferers have been passed along from physician to physician without answers, leaving them to feel abandoned or neglected. Many of the symptoms are difficult for patients to describe. Shephard et al suggests that health care practitioners should not be "taking" a history but "receiving" it. In other words, a physician's concern is to translate the subjective experience of illness into the recognizable discourse of medicine. Patients need to be aware that there are plenty of medical and surgical options available and not to become discouraged. It is imperative that physicians are sensitive, especially to patients suffering from painful cranial neuralgias and other facial pains. **HW**

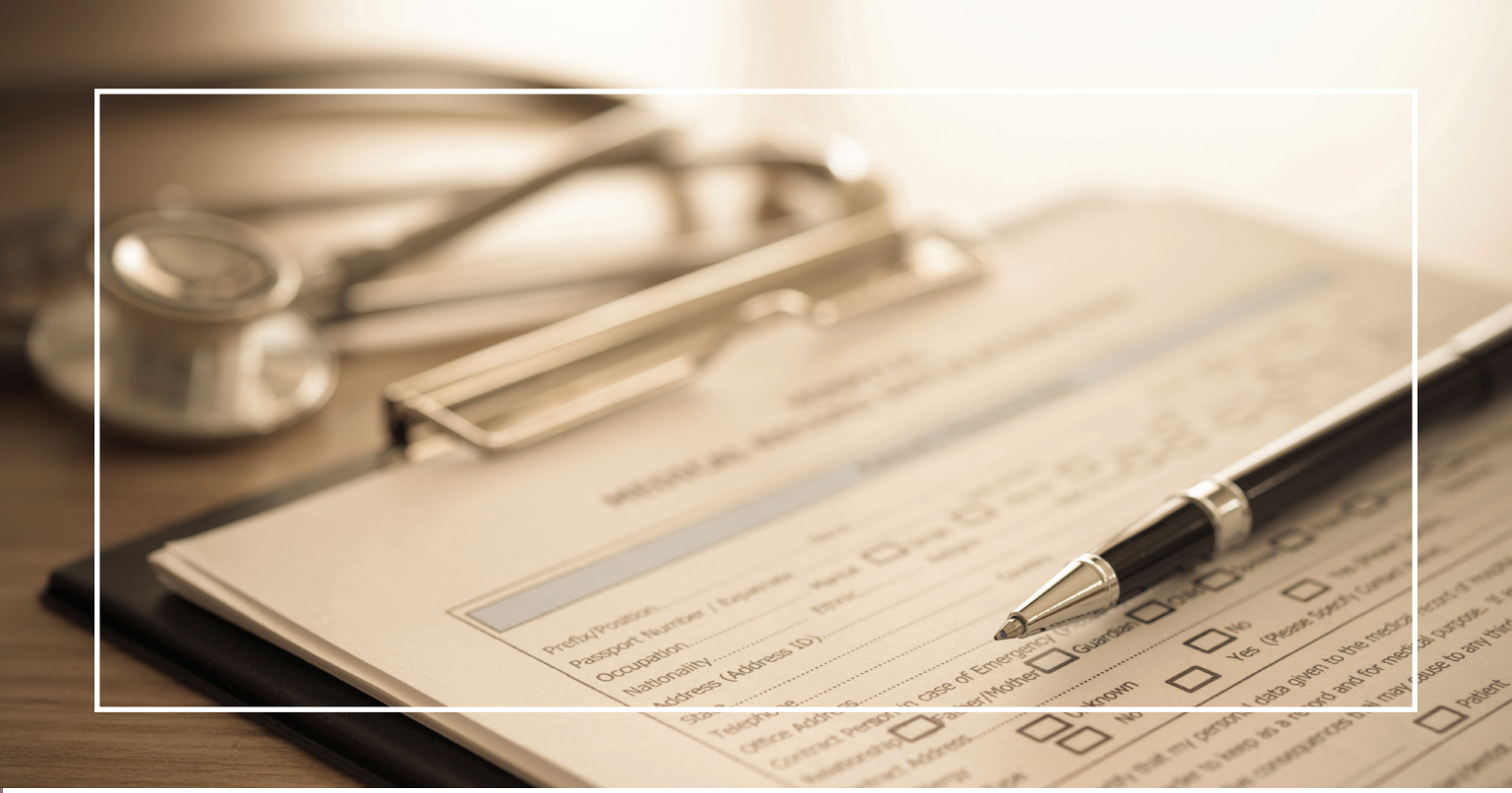
Recommended Reading

1. Gaul C, Resch S. Application of the capsaicin 8% cutaneous patch in neuropathic pain of the head and face: A case series. *Cephalalgia* 2015; 35:545-550. **doi:**10.1177/0333102414550107 **http://www.ncbi.nlm.nih.gov/pubmed/25217483?dopt=Abstract**
2. Shephard MK, MacGregor EA, Zakrzewska JM. Orofacial pain: A guide for the headache physician. *Headache* 2014; 54:22–39. **doi:** 10.1111/head.12272 **http://onlinelibrary.wiley.com/doi/10.1111/head.12272/full**



SEXUAL ABUSE HISTORY & Migraine Transformation

Brad Torphy, MD
Diamond Headache Clinic
Chicago, IL



There are many factors which may contribute to the transformation of episodic migraine (which is defined as fewer than 15 headache days per month) to chronic migraine (15 or more headache days per month, for more than 3 months). One factor that has recently been studied is a history of sexual abuse.

Although not every migraine patient has been the victim of any form of abuse, recent research suggests that if a patient has a history of sexual abuse, this may increase the likelihood that the episodic migraine could transform to chronic migraine. In this study, chronic migraine patients were 3.5 times more likely than episodic migraine patients to report a history of sexual abuse.

Sexual abuse has been associated with the development of a variety of psychological and physical conditions. Migraine patients often report a history of physical, emotional, or sexual abuse. Psychosocial factors – including traumatic stress such as physical, emotional, and sexual abuse – have been shown to be associated with higher rates of headache and higher than expected rates of migraine.

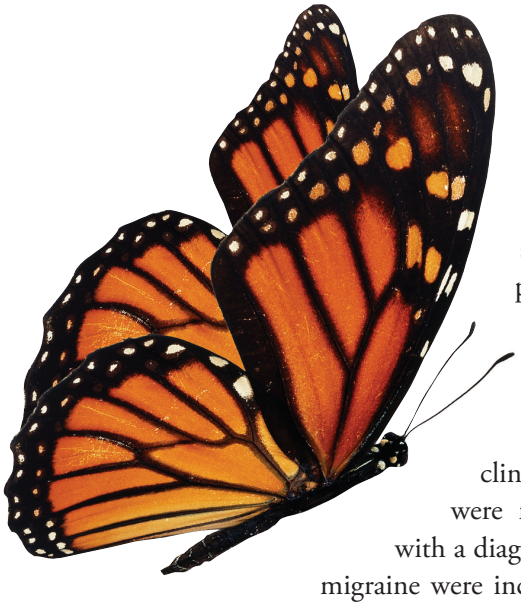
CHRONIC MIGRAINE PATIENTS WERE 3 TIMES MORE LIKELY THAN EPISODIC MIGRAINE PATIENTS TO REPORT A HISTORY OF SEXUAL ABUSE

Often, patients with migraine also suffer from anxiety and/or depression. A history of sexual abuse is a known risk factor for these mental health conditions. Many researchers have correlated a history of sexual abuse and chronic pain syndromes, which have often included migraine. Little research is available in this population that limits the focus to migraine, however. Research in migraine patients has generally combined all forms of abuse, without limiting the focus solely to victims of sexual abuse.

Because chronic pain often accompanies anxiety and depression, a biological link has been proposed. Stress hormones are thought to be dysregulated to some degree in patients with anxiety and depression, and this could be a factor in the increased incidence of chronic pain conditions in such individuals.

The purpose of this research, which was presented at the International Headache Society Congress in Valencia, Spain in 2015, was to assess the association of a self-reported history of sexual abuse in migraine patients – both chronic migraine and episodic migraine. Furthermore, the goal was to determine if a greater association of a history of sexual

SEXUAL ABUSE HISTORY & Migraine Transformation



abuse in chronic migraine patients exists as compared to such a history in episodic migraine patients.

Medical records for new patients at a headache clinic during a 4-month period were reviewed. All new patients with a diagnosis of migraine or chronic migraine were included in the study. A total of 194 patients with a diagnosis of chronic migraine (defined by International Headache Society criteria as having ≥ 15 headache days per month for > 3 months) were included, while 135 patients with a diagnosis of episodic migraine were included.

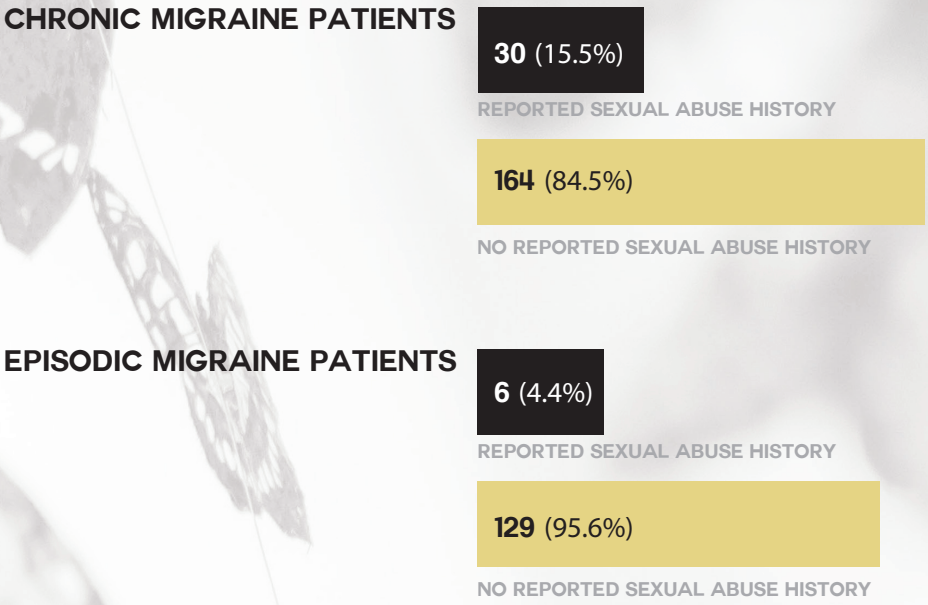
> 1 in 4 girls and 1 in 6 boys are sexually abused before the age of 18, and that 18% of women in the United States have been victims of rape.

Of the 329 patients included in this study, 10.9% reported a history of sexual abuse across both chronic and episodic migraine. Six episodic migraineurs (4.4%) endorsed a history of sexual abuse, whereas 30 patients with chronic migraine (15.5%) indicated a previous history of sexual abuse. Patients with chronic migraine were 3 ½ times more likely than episodic migraine patients to report a history of sexual abuse.

As this study was conducted at a headache clinic, it would be expected to include more chronic migraine patients; in fact, there were 44% more patients with chronic migraine than episodic migraine. It is likely that under-reporting of a sexual abuse history occurred in both patient groups, especially since the history was obtained during the initial office visit. Under-reporting is also considered to be very likely when these results are compared with national statistics regarding sexual abuse. The Centers for Disease Control estimated in 2014, that 1 in 4 girls and 1 in 6 boys are sexually abused before the age of 18, and that 18% of women in the United States have been victims of rape.

These findings suggest that a history of sexual abuse may be an important factor in the transformation of episodic migraine to chronic migraine. Anxiety and depression, which are common in victims of abuse, are factors which are also associated with increased transformation to chronic migraine. Whether a history of sexual abuse has a direct causal relationship in this transformation is unclear; perhaps such a history worsens anxiety or depression which may, in turn, impact transformation to chronic migraine.

Table 1



Physicians should consider a patient's history of sexual abuse when assessing the various factors which may have led to transformation to chronic migraine. Although it may be difficult for patients to share this history with their physician – particularly at an initial visit – it is important that they do so. A patient's history of sexual abuse can be extremely relevant when formulating a treatment regimen for a patient with episodic migraine or chronic migraine. A migraine patient with such a history, for example, may benefit more from an antidepressant medication than from the use of a blood pressure agent, such as a beta blocker or calcium channel blocker. In addition, preventive medication may need to be considered even earlier in patients with abuse histories. These patients should participate in adjunctive treatment, including biofeedback and psychotherapy to help manage the anxiety and depression which often accompany a history of sexual abuse. Although psychotherapy is generally recommended for most migraine patients, abused patients may find a particular benefit from such intervention.

"A PATIENT'S HISTORY OF SEXUAL ABUSE CAN BE EXTREMELY RELEVANT"

Future research is necessary to further establish a link between a history of sexual abuse and migraine transformation. Directions for future work include assessing the impact of childhood sexual abuse on migraine, studying the impact of sexual abuse or assault during adulthood on migraine, and analyzing the effectiveness of psychotherapy in migraine patients who have been victims of sexual abuse.

A history of sexual abuse is more commonly reported in chronic migraine patients as compared to episodic migraine patients. A history of sexual abuse may be a contributing factor in the transformation of episodic migraine to chronic migraine. These findings underscore the importance of intervention, such as psychological counseling, in patients who have a history of sexual abuse. Episodic migraine may warrant more aggressive treatment in patients with a history of sexual abuse in order to help prevent transformation to chronic migraine. HW

Certification of Added Qualification in Headache Medicine—Why Now?

Erick Ward
National Headache Foundation
Chicago, IL

Headache disorders are the most common neurological disorders, affecting more than 90 percent of Americans. Despite the disease's prevalence, only 416 physicians had received sub-specialty certification in headache medicine by the United Council of Neurologic Subspecialties, as late as 2014. The vast difference between the number of patients and the number of certified providers makes it difficult for patients to find and be seen by a headache specialist. The National Headache Foundation (NHF) recognized the inadequate number of qualified headache care providers, and the NHF believes many health care professionals are not being properly recognized for their competency in headache medicine.

The NHF has developed a program intended to better serve headache and migraine sufferers across the country. The Certificate of Added Qualification (CAQ) in Headache Medicine was reinstated to establish the standards for headache practice and assist those with headache in locating clinicians who could provide optimal headache-related care.

The requirements to obtain a subspecialty in headache medicine have become more restrictive, preventing many headache specialists from obtaining certification or receiving acknowledgement for their work, experience, and abilities in headache medicine. It also limited the pool of providers for patients seeking help from a headache specialist. The NHF also recognized that, in addition to physicians, other health care providers should be acknowledged for their expertise and experience in headache care. Eligibility for CAQ includes physicians (MD and DO), advanced nurse practitioners, physician assistants, dentists, and clinical psychologists.

In October, 2015, the NHF executed the first CAQ exam since its reinstatement. Fourteen headache specialists are now added to the list of those certified in headache medicine–seven who would not have been eligible for other available certifications.

One recipient of CAQ, Christina Treppendahl, FNP-BC has been involved in headache medicine for 6 years and started her own practice, The Headache Center in Ridgeland, MS, in 2013. Treppendahl, like all nurse practitioners, was not eligible for UCNS headache medicine certification. Treppendahl said, as an NP, she is accustomed to having to go further than physicians to prove her qualifications. With CAQ, Treppendahl and other NPs now have that opportunity. "It (CAQ) reassures the patient that I have experience and a found knowledge in headache medicine," Treppendahl said.

Heather McCoy, DNP, another CAQ recipient, said she has been looking for a program such as CAQ from the day she graduated as an NP. "This certification is very important to me," McCoy said. "It legitimizes my expertise in headache medicine in a way that is recognized and accepted in both the medical and lay community via a very well-respected organization—the National Headache Foundation."

Doctor McCoy spent 16 years working in neurosurgery and neurology, but has focused exclusively on headache medicine for the last 2 years. She is the owner and clinical director at the Integrative Headache Care, LLC, in Scottsdale, Arizona.

"The CAQ is also important to me because it offers the non-neurologist a route to clinical expertise and recognition among medical and nursing colleagues." McCoy said.

Certification of Added Qualification in Headache Medicine – Why Now?

While not excluding neurologists, it was the goal of the NHF to look beyond this specialty for more headache specialists. The NHF's steering committee, which developed the exam, consisted of neurologists, other physicians, physician assistants, nurse practitioners, and clinical psychologists–all with many years of experience in headache medicine.

By including headache specialists from various specialties of medicine and disciplines of healthcare, patients will have more specialists available to them. Treppendahl said headache patients are used to seeing their family doctor and that some patients may see a neurologist who specializes in something other than headache. CAQ acknowledges all who are qualified in headache medicine, neurologists and non-neurologists. Some health care practitioners, like Treppendahl, only focus on headache.

"All I do, all day long, is headache. When I go home, I read about headache." Treppendahl said.

To help headache patients locate headache specialists, CAQ recipients are all eligible to be added to "Healthcare Provider Finder," on the NHF's website, www.headaches.org. Before CAQ was reinstated, the NHF's online database was limited to physicians.

> . . . If we could ever get insurance companies to recognize that there are individuals who have more training and expertise in headache medicine . . .

J. Michael Jones, MPAS-C also focuses on headache. He has 34 years of experience in medical practice, most of which was spent in headache medicine. For 5 years, he was the owner, along with James Moren, MD, of Pacific Rim Headache Center, PLLC. The Center closed on December 31, 2015, because, according to the website, "Health insurance companies, posturing for their participation in ACA, have slashed reimbursements for small practices (especially headache practices)."

Beyond recognizing physician assistants qualified in headache medicine, Jones is hopeful CAQ will help the process of insurance companies in recognizing the need of headache sufferers and those who manage for their headaches.

"If we could ever get insurance companies to recognize that there are individuals who have more training and expertise in headache medicine, I hope they will eventually recognize us," Jones said. "The ones that we

talked to based their view on the CMS (Center for Medicare and Medicaid Services) taxonomy of specialties, of which headache medicine is not listed."

Jones, who along with Moren, is currently a provider at Cascade Neurologic in Mount Vernon, WA, said the number of headache clinics in the Pacific Northwest has fallen from six to one. He said this decrease is mostly due to reimbursement issues and that he hopes CAQ is one of many steps that changes the thinking of insurance companies.

He hopes CAQ helps him and other non-neurologist headache specialists with pharmaceutical companies as well. Some company policies stated they could only call on neurologists. Jones said pharmaceutical companies and their legal representatives had difficulty determining who was a qualified headache specialist. "Their lawyers picked 'neurologist' as the same as headache specialist." Jones said. He is hopeful that CAQ becomes a way for decision-makers in insurance and pharmaceutical companies to recognize headache specialists.

The NHF had all of these benefits in mind when the process to reinstate CAQ began and the NHF is hopeful this program will only grow. More applicants will take the exam in September and the NHF will continue to offer the exam twice a year. Each exam is an opportunity for healthcare providers qualified in headache medicine to be recognized for their abilities. With you, the headache sufferer in mind, the NHF is hopeful that the number of healthcare providers certified in headache medicine will continue to increase. HW

Your Contributions to the National Headache Foundation Help Fund Projects

What's being done to help your headache problem? There is an unprecedented amount of research being undertaken regarding migraine and other headache pain. The National Headache Foundation is involved in this effort with the help of funding from you. Contributions are a key part of the financial support of important headache research. Your gift provides funds for (a) NHF-financed research projects, (b) advocacy with health policy decision makers, and (c) patient-education initiatives. You can help! The National Headache Foundation, the #1 source for headache help, provides these services and many others through the generosity of people like you.

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Are Neck Flexor Muscles Involved in Chronic Tension-Type Headache?

Denise Schneider, PT, MPT, FAAOMPT, COMT, ATC
Doctors of Physical Therapy
Lisle, IL

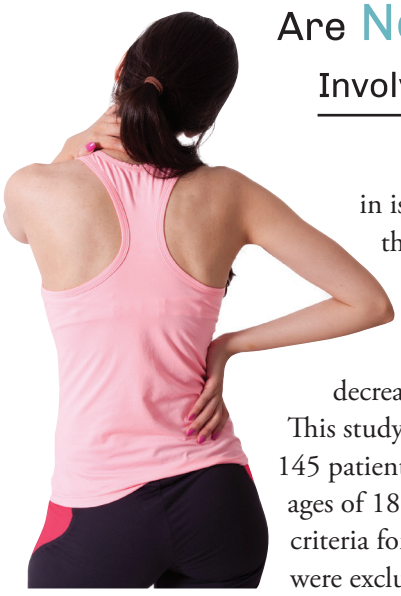
Tension-type headache, the most common form of headache, is classified as either episodic or chronic. Chronic tension-type headaches are defined as daily or almost daily episodes of headache. These episodes involve a headache occurring on both sides of the head, and the pain is described as pressing or tightening, of mild to moderate intensity. It is not aggravated by routine physical activity, such as walking or climbing stairs. The headache is not accompanied by associated symptoms commonly linked to migraine, such as moderate to severe nausea or vomiting, or heightened sensitivity to light or sound. Individuals who suffer from chronic tension-type headache (CTTH) may experience substantial disability and decreased quality of life. To confirm the diagnosis of CTTH, the headaches must occur approximately 15 days a month for at least 3 months. This type of headache lasts hours to days or is constant.

The exact cause of tension-type headache is not known. Previously, this type of headache was consider "psychogenic" in nature, due to either anxiety or depression. Recent studies have attributed it to a neurobiological cause. Pain mechanisms, both peripheral (incidental) and central, play a role. Peripheral sensitization occurs due to local tissue injury or damage in which pain producing substances are released; the result is local pain. Prolonged peripheral sensitization can lead to central sensitization as in chronic tension-type headache. In this case, pain is widespread and radiates beyond the original injury or tissue damage. Key indicators of central sensitization are pain that is caused by non-painful stimuli and/or an exaggerated response to pain.

The main findings of tension-type headache are abnormal tenderness of the pericranium, that is the membrane covering the skull. This tenderness can be assessed by manual manipulation of the membrane over the various muscles, including the frontal, masseter, and trapezius. Other findings include decreased neck flexor (muscle contraction) strength and endurance, postural abnormalities, and motor control impairments.

In a study by Castien, Blankenstein, and DeHertogh, the authors reported on the possible relationship of pressure pain and isometric (equivalent) strength of neck flexor muscles in chronic tension-type headache (CTTH). They noted that in patients with CTTH, changes in pressure pain in the neck area are associated with peripheral or central sensitization. They hypothesized that an increase

Are Neck Flexor Muscles Involved in Chronic Tension-Type Headache?



in isometric strength of the neck flexor muscles would result in a decrease in pressure pain (indicating a decrease in sensitization). This study utilized data from 145 patients, between the ages of 18 and 65, meeting the criteria for CTTH. Patients were excluded if they presented with a coexisting diagnosis of: rheumatoid arthritis; malignancy or brain tumor; pregnancy; inability to read or write Dutch (the study site was in the Netherlands); or, having undergone manual therapy treatment within 2 months prior to the study.

During the study, the patients received manual therapy treatment for 8 weeks, with a maximum of nine 30-minute sessions. The sessions consisted of a combination of mobilization of the cervical spine (neck) and the thoracic (the upper part of the trunk between the neck and the abdomen) spine; postural correction; and, isometric strengthening of the neck flexor muscles. Patients were given a booklet on self-management exercises with instructions to perform the exercises during the 8-week period of treatment and to continue beyond the treatment period.

Measurements were taken at the start of treatment, 8 weeks post-treatment, and 26 weeks post-treatment. Measurements included: isometric strength of the neck flexor muscles, pressure pain, and Headache Impact Test. The Headache Impact Test was only completed at the initial (baseline) visit. First, isometric strength of the deep neck flexor muscles was tested (Figure 1). This test assesses the integrity of the muscle group that maintains stability of the neck. It is a timed test in which the patient is instructed to lift his/her head from the table while lying in the supine (face upward) position.

Neck flexor muscle endurance test: The patient is instructed to lie on the treatment table with his/her knees bent. The patient is instructed to perform a chin retraction – lift the head up about 1 inch and maintain this position. The physical therapist times this test. The test ends when the patient can no longer hold his/her head up, or the patient is unable to maintain the correct position.

The second test assessed pressure pain scores (PPS) of the upper trapezius and suboccipital muscles. A pressure algometer (measures pain) was used with 3.0kg/cm pressure at 4 different points; 2 points on the upper trapezius muscle and 2 points on the suboccipital muscles. Patients were instructed to rate their pain on a scale of 0 to 10, whereby 0 equals no pain and 10 equals the most severe pain.

Lastly, the Headache Impact Test (HIT-6) was administered at baseline only. This 6-item questionnaire quantifies an individual's degree of pain intensity, and measures the negative effect headache has on social functioning, role functioning, vitality, cognitive functioning and psychosocial distress. The results of this study are as follows:

- At the 8 week visit, 142 of 145 patients demonstrated a significant increase in isometric strength of the neck flexor muscles and a significant decrease in PPS which is the degree of peripheral and central sensitization.

- After the 8 week mark, manual therapy treatment was discontinued. However, patients were instructed to perform self-management exercises.
- At the 26 week evaluation, 125 patients demonstrated an increase in isometric strength of the neck flexor muscles and a decrease in PPS.

The authors confirmed that an increase in strength of the neck flexor muscles significantly correlated with a decrease in PPS in the upper trapezius and suboccitpal muscles. The authors, therefore, concluded that a decrease in PPS correlates with a decrease in frequency and duration of chronic tension-type headache.

The Role of Physical Therapy

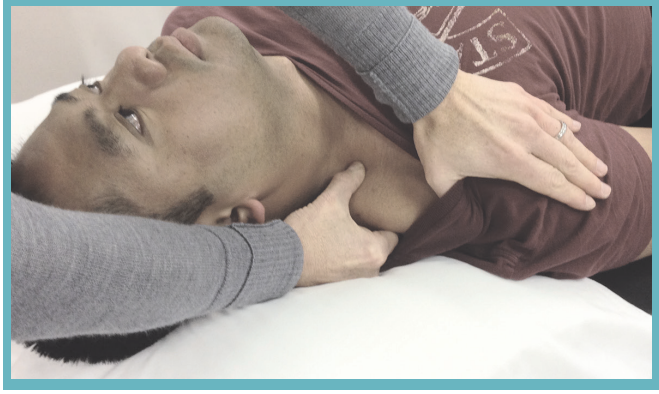
For certain types of headache, physical therapy is often part of a comprehensive treatment plan. Specific to tension-type headache, physical therapy has been shown to decrease headache frequency, decrease headache intensity, decrease headache duration, and decrease use of medications. This improvement results in an increased ability to function and increased quality of life.

The physical therapist will perform a comprehensive musculoskeletal exam including: assessment of postural abnormalities; assessment of soft tissue such as myofascial trigger points in the head and neck muscles; assessment of joint mobility; and, assessment of strength of the neck flexor muscles.

The physical therapist will use the exam findings to formulate an individualized treatment plan and determine the frequency and duration of visits. The patient will receive education on the exam findings, the individualized treatment plan, and additional items specific to the patient that will allow for optimal care. Physical therapy interventions may include postural correction, manual therapy, neck and thoracic mobilizations, and isometric strengthening of neck flexor muscles.

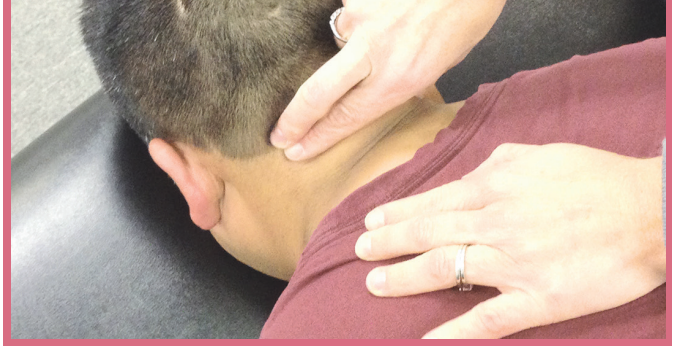
Postural correction is of importance to decrease stress on the head and neck. The patient is instructed on how to achieve an upright neutral spine position (Figure 2). In this position, the most prominent part of the back of the head should be in line with the most prominent part of the thoracic spine.

Posture. The patient is instructed to sit in an upright position, with the shoulders gently down and back, the chin is gently retracted, and the eyes remain level.



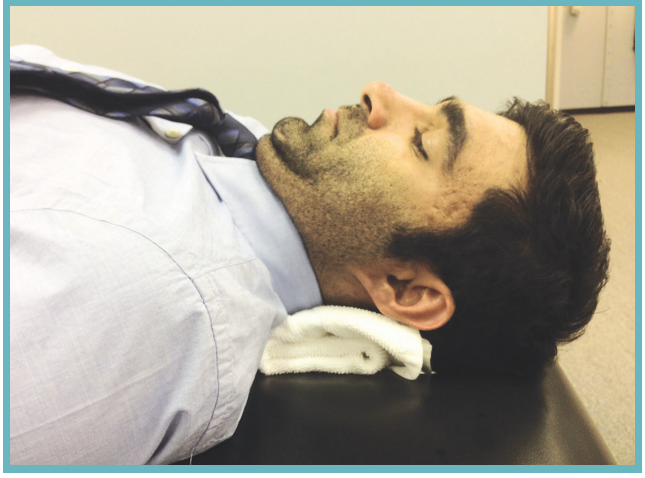
Manual therapy interventions, such as joint mobilization techniques and soft tissue techniques, have been demonstrated to benefit individuals with CTTH. For example, the physical therapist may elect to use a transverse stretch to address trigger points in the upper trapezius muscle (Figure 3). The goals of this technique are to increase blood flow, decrease muscle tension, and decrease pain.

Transverse stretch of the upper trapezius muscle. The patient lies on the treatment table. The physical therapist locates trigger points in the upper trapezius muscle, stabilizes the shoulder, and applies a stretch to the muscle by pulling it towards the patient's head. This can be performed until relief is produced and the muscle relaxes.



Upper cervical mobilization. The physical therapist uses the bottom hand to stabilize the segment while the top hand moves the segment gently. The therapist may hold this position as a stretch or perform gentle oscillatory (to and fro) movements.

Neck flexor strength and endurance exercise. A towel is place under the neck. The patient is instructed to gently nod his head by bringing his chin towards his throat. This position may be held for 10 to 20 seconds, and repeated based on the ability to perform correctly.



Another component of physical therapy treatment Another component of physical therapy treatment includes deep neck flexor muscle strength and endurance training. Strengthening the deep neck flexor muscles will assist in the maintenance of upright posture; therefore, decreasing muscle tension and stress in the head and neck. Initially, training begins in the supine position (Figure 5), and eventually is progressed to other positions such as sitting or standing.

The physical therapy interventions described above are commonly implemented with individuals who suffer from CTTH. This is not an exhaustive list, however. The physical therapist may elect to utilize additional interventions that are patient specific to ensure an individualized treatment plan is executed. Since physical therapy has proven to be effective for individuals who suffer from CTTH, it should be considered as a part of the comprehensive treatment plan. It is essential that the physical therapist works together with other members of the individual's healthcare team to provide optimum care. HW

Recommended Reading

1. Castien R et al. The working mechanism of manual therapy in participants with chronic tension type headache. *JOSTP* 2013; 43:693-699.
2. Fernandez de las Penas C. Clinical reasoning for manual therapy management of tension type and cervicogenic headache. *JMMT* 2014; 22: 45-51.
3. Jull G et al. Clinical assessment of the deep cervical flexor muscles: The Craniocervical Flexion Test. *J Manipul Physiol Ther* 2008: 31:525-533.
4. Winkel D. Differential diagnosis of the spine. *Nonoperative Orthopeadic Medicine and Manual Therapy.* Austin, TX: PRO-ED, Inc; 1996.

THE HEADACHE CLINICS

featuring:

The Headache Center
Ridgeland, Mississippi

The Headache Center was established in 2013 in Ridgeland, MS by Christina Treppendahl, FNP-BC, AQH. The following is based on an interview with Ms. Treppendahl.

Prior to founding the Center, Ms. Treppendahl began her nursing career at Vanderbilt University School of Nursing. She was a member of the Sigma Theta Tau International Honor Society and received a Master of Science in Neonatal nursing. She practiced for 10 years as a board certified Neonatal Nurse Practitioner. Ms. Treppendahl later returned to school to earn a Post-Master of Science degree from the Mississippi University for Women in Family Practice Nursing. She was originally board certified as a Family Nurse Practitioner in 2009 and has been specializing in headache medicine since 2010.

The Headache Center is the only headache specialty clinic in the state of Mississippi. When asked the significance of this headache clinic, National Headache Foundation Board member, Timothy Smith, M.D., R.Ph., noted that "There are many communities that lack accessibility to headache specialty centers. The headache populations are under–served, and centers run by nurse practitioners/physician assistants can fill the need for this group of patients."

Ms. Treppendahl received the Certificate of Added Qualification in Headache Medicine from the National Headache Foundation. In addition to several nursing societies, she is a member of the American Headache Society, the International Headache Society, the Headache Cooperative of the Pacific, Southern Headache Society, and the Headache Cooperative of New England.

The health care team includes two additional full-time Board Certified Family Nurse Practitioners. Rebecca Smith Adams, FNP-BC received her Bachelor of Science in Nursing from Mississippi College in Clinton, MS, and a Master of Science in Nursing from Mississippi University for Women in Columbus, MS, where she was the recipient of the Clinical Excellence in Nursing Award for Nurse Practitioners. Ms. Adams is a member of Sigma Theta Tau Honor Society for Nurse Practitioners. In addition, she is a member of the Mississippi Nurse's Association, the American Academy of Nurse Practitioners, and the American Headache Society. Her nursing experience includes pediatric home health, general pediatrics, pediatric cardiology, and adult medical/surgical.

Jenna Gaddy, FNP-BC received her Bachelor of Science in Nursing from University of Southern Mississippi, in Hattiesburg, MS. She received her Master of Science in Nursing from University of Mississippi Medical Center. Her nursing experience includes pediatric nursing, post-cardiovascular nursing, and post-surgical nursing.

The Headache Center recently formed a clinical research department. Anne Britt was hired as a Clinical Research Coordinator. Anne received her Bachelor of Science degree in Healthcare Administration from Jackson State University, Jackson, MS, from which she graduated *Summa Cum Laude*. She is currently a candidate for a Master of Science in Healthcare Administration at Louisiana State University.

Other staff members include: Amanda Morgan, Office Manager; Kimberly Cyprian, Patient Educator; Heather Callon, Reception; Megan Lewis, Scheduling; and, Christa Joy Kin, Nursing Assistant. Ms. Treppendahl hopes to add two additional nurse practitioners to the staff in order to increase the number of patients seen per day.

The Headache Center specializes in all primary headache disorders as well as several secondary headache disorders, including Idiopathic Intracranial Hypertension, post-traumatic headache, and other secondary headache disorders. Although referrals are not required, patients have been referred by several hundred health care providers throughout the state of Mississippi.

The typical patient at the Center is an individual suffering with severe, disabling, or frequent headaches. Children may be seen at the Center, and the youngest patient is 3-years-old. Many of their patients have certain common comorbidities associated with their headaches, including (but not limited to) obesity, anxiety and/or depression, allergies, or asthma.

At the first appointment, the patients will be put at ease by the Center's calming, elegant aesthetics. New patients will undergo a comprehensive history and physical examination. Once a diagnosis is established, the patient will receive an intensive education program in the diagnosis and individualized medical treatment plan. The discussion will include medications to be prescribed, when and how to take the medications, potential side effects, adjunctive therapies and referrals (such as ophthalmology, physical therapy, cognitive behavioral therapy, biofeedback), and lifestyle modifications.

A typical day at the Center begins at 7:30am, which allows patients to avoid missing work. The center has the capacity to see up to 45 to 60 patients per day. The Center offers urgent treatment to established patients including: peripheral nerve blocks with a local anesthetic; sphenopalatine ganglion blocks; outpatient intravenous therapy; intramuscular (IM) and subcutaneous (SC) injections; and, Botox treatments. Allergy testing is offered at the Center since airborne allergies are often a comorbid condition.

In regards to a particular treatment philosophy, Ms. Treppendahl stated that she and the staff believe that "patients want to be free of migraine and other headache disorders in order to live to their fullest potential and a common barrier is lack of education and access to the best treatment therapies currently available." By filling that gap, patients are able to return to work and social life without experiencing anxiety about when the next attack will occur. She noted that:

> "All patients are treated with dignity and respect, and we truly understand that their condition is not 'just in their head'. Headache research and awareness is sorely underfunded. Migraine is invisible and therefore, many friends, family members, and even providers, are very dismissive of the impact that primary headaches often have on the patient, and on society (with the indirect costs). The Headache Center is adamant about keeping a narcotic-free clinic and providing the highest quality of evidence-based medicine."

Amanda Morgan

Becca Adams

Christina Treppendahl with Megan Lewis

Kimberly Cyprian and Megan Lewis

At the Center, each patient is provided with a headache diary and pamphlets from either the National Headache Foundation and/or the American Headache Society regarding diagnosis, treatment options, medications prescribed for them, lifestyle modifications, adjunctive therapies, and a headache diary. During their visit, patients can view several videos on primary headaches. After receiving the educational material, many patients describe the first visit as Headache 101.

When asked if any growth or changes are anticipated during the next few years, Ms. Treppendahl noted they are focusing on research and plan to hire more nurse practitioners so that patients do not have to wait several months to schedule an appointment. To raise awareness about headache problems, the Center plans to sponsor a Miles for Migraine event in 2017. The Center also participates annually in Headache on the Hill – a federal lobbying effort to promote NIH funding of headache research and better care for veterans with TBI. Ms. Treppendahl offered the following general advice for the patient experiencing headache:

"Don't just 'deal' with your frequent headaches. They aren't normal. More than likely, if your headaches are interfering with your life, they probably are NOT tension-type headaches or sinus headaches…even if this is the diagnosis you received in the past…A good initial goal of a headache specialist would be to reduce the frequency, severity, and duration of the headaches to a point where the patient's quality of life and productivity (work, home, and social) is significantly improved. Knowledge is power. The more a patient learns about their particular diagnosis, the better the outcome will be. A successful specialist partners with the patient and empowers the patient to regain control of his or her life and improve overall quality of life."

When asked why she enjoys treating headache patients, Ms. Treppendahl said, "I like winning. We win every time a patient returns to the clinic to tell us that their number of headache days has dropped in half, or that their abortive medication allowed them to resume normal activity quickly, or that we have completely given them back their lives. Nothing can explain how great that feels. We are simply providing evidence-based treatment plans and emerging treatment technologies. We also win when the patient tells us how much they appreciate the care that they have received in our clinic, especially when their friends and family do not understand how badly chronic headaches affect them." HW

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