



Chronic Pain Management and Headaches

Neurology

Headaches are an almost universal experience with most people having them at some point in their lives. However, for some people, the fear of suffering from a headache or the actual disability of the headache itself becomes an overwhelming concern. Chronic disabling headaches adversely affect the quality of life of approximately 30 million people in the United States. There are multiple common headache types, including:

- **Tension-type headaches** - The most common headaches which can be episodic and easily treated or frequent and persistent.
- **Migraine headaches** - Moderate to severe headaches, often with nausea, vomiting, sensitivity to light, sound, and smell and occur in one in four households. A migraine headache can be more complicated than "just a headache" as some types increase the risk of suffering from a stroke.
- **Medication overuse headache (previously known as "rebound headache")** – Chronic headaches caused by frequent use of taken-as-needed medication to treat pain.

Rarely the pain of a headache is a symptom of an underlying neurological condition that needs a specific medical or surgical treatment. A headache can be the symptom of a brain tumor or infection, although other neurological complaints generally indicate the specific diagnosis. In overweight young women, chronic headaches may be a symptom of idiopathic intracranial hypertension, a condition that can cause vision loss if untreated. Testing, including MRI scan of the brain or brain vessels or a spinal tap, may be suggested as part of the evaluation; although, the diagnosis of headache type is generally made after examination of the patient.

Prevention should be the first goal for patients with headaches without an underlying neurological condition that needs specific treatment. Treatment starts with the appropriate diagnosis and the collaboration between the patient and physician to assess (with the help of a headache diary) and control headaches. Treatment to avoid headache occurrence and to decrease the headache pain include:

- **Lifestyle adjustment** - Triggers avoidance, regular sleep and meals, decreased stress and increased exercise.
- **Treatment of an individual headache**
 - Over-the-counter medications – must be taken only intermittently to avoid medication overuse headache.
 - Triptans - treat the acute pain and accompanying symptoms from an individual attack.
- **Treatment to prevent headaches**
 - Medication taken daily to prevent headaches. The choice of the appropriate preventative medication is dictated by other conditions that could also be treated, such as insomnia, depression or weight gain, or by potential side effects of the daily medications. Menstrual migraines may be prevented by specific medications given only around the time of the menstrual period.
 - Nutritional supplements, botulinum injections, acupuncture and stress management techniques.

With specific suggestions and continuing encouragement from their physicians, most headache sufferers can manage their headaches effectively.

Neurosurgery

Chronic pain can be one of the most difficult and frustrating problems for physicians to manage. While acute pain is meant to warn of some abnormality that must be addressed, chronic pain is usually the result of abnormal neurological responses to problems that cannot readily be reversed. Pain can generally be divided into two categories: neuropathic and nociceptive pain. Neuropathic pain usually results from a neuronal injury, leading to symptoms of radiating burning, shooting, electrical and/or knife-like pain which usually responds to anti-epileptic or anti-depressant medications. Nociceptive pain is a more aching or cramping type of pain which is usually more difficult to localize and responds to opiates.

When medical therapy fails and there is no option to correct an underlying cause of pain, a variety of neurosurgical procedures can reduce pain and improve quality of life. Spinal cord stimulation is an approved therapy for neuropathic pain in the arms and legs. An electrode is placed either percutaneously or through a small laminotomy, with a trial of an externalized lead performed prior to completing the permanent implant. Roughly 65-70% of patients have a successful trial and go on to permanent implantation. This is particularly effective for reflex sympathetic dystrophy, and can not only improve pain but can also reduce the somatic symptoms, such as local swelling, color and temperature changes, associated with this disorder. Patients with resistant back pain can also be treated with spinal stimulation, but sometimes it can be more difficult to localize stimulation to the back. Another option for back pain, as well as other pains which do not respond to spinal stimulation, is placement of an intrathecal pump. This will pump drugs (usually opiates, but sometimes mixed with local anesthetics or channel blockers) directly onto the spinal cord and/or cauda equina nerve roots at high local concentration without substantial spread to the brain. This is also very effective for patients with severe cancer-related pain, and can even help late-stage patients achieve a greater level of comfort and often return home to their families without intravenous medication.



Spinal cord stimulating electrode after surgical placement in the cervical spine.

Neurosurgery can also offer several options for patients with craniofacial pain and headaches. Trigeminal neuralgia is a local neuropathic pain syndrome, most commonly in the jaw and/or cheek, usually due to compression of the trigeminal nerve by an artery near the entry to the brainstem. Surgery to separate the artery from the nerve and place an intervening cushion (microvascular decompression) is invasive but curative for most patients. For older patients or those who are not good candidates for open surgery, a radiofrequency lesion of the trigeminal ganglion through a percutaneous needle procedure can yield complete or near complete pain relief in 60-70% of patients almost immediately. This is performed in the fluoroscopy suite and patients go home the same day. Radiosurgery (so-called "gamma knife") is another less invasive alternative which focuses radiation on the trigeminal root entry zone. Efficacy is often delayed by several weeks, but this can also improve pain in roughly 50% of patients. For those with more atypical facial pains, electrical stimulation is being explored with encouraging results. The electrodes are placed just under the skin, so this is minimally invasive and low risk, and patients are again tested with an external lead so that only those with real pain relief go on to permanent implant. These devices are similarly being used for occipital nerve stimulation to treat not only occipital neuralgia, but also as a potential therapy for migraine headaches. There have also been reports of dramatic improvements for medically-refractory cluster headaches with deep brain stimulation in the hypothalamus. Although some patients will unfortunately not respond to any surgical intervention, the degree of success in these otherwise treatment resistant patients should make pain surgery a serious consideration in these challenging cases.



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Upcoming CME Activities and Other Events

MONTHLY COMPLIMENTARY CME LECTURE SERIES ON MULTIPLE SCLEROSIS HOSTED BY THE JUDITH JAFFE MULTIPLE SCLEROSIS CENTER

6:00pm – 8:30pm

November 17, 2010: Estrogen Receptor Ligands: A novel treatment for MS

December 15, 2010: Hippocampal Atrophy in MS

For more information and to register, visit our website at www.cornellneurology.org

INDICATIONS AND CONTROVERSIES OF MINIMALLY INVASIVE SPINE SURGERY AND NAVIGATION: *HANDS-ON SYMPOSIUM*

Dec. 2, 2010; 12:00pm – 5:30pm

Dec. 3, 2010; 7:30am – 5:30pm

Dec. 4, 2010; 7:30am – 12:00pm

This symposium will provide a comprehensive overview on new and less invasive techniques with and without stereotactic navigation for the operative treatment of spinal disorders. *CME pending.* For more information, please contact Jessica Grajales at jeg9059@nyp.org

RECOGNITION AND MANAGEMENT OF COMMON NEUROSURGICAL CONDITIONS IN THE PEDIATRIC PRACTICE

Wednesday, December 8, 2010, 9:00am - 3:30pm - Caspary Auditorium at Rockefeller University, New York, NY

A one day CME course designed to educate physicians and nurse practitioners about the common signs and symptoms of disorders that may need further evaluation by a pediatric neurosurgeon.

[A ground-up level educational seminar on how to first recognize these infrequent occurrences in the midst of a busy pediatric practice, how best to triage, when to image and when to send the child to an emergency room.] For more information, please contact Nicole Savage at njs2004@med.cornell.edu

For more information, contact:

Amy Sabek
Physician Liaison
Neuroscience Service Line
TEL: 212.746.9819
E: ams2008@nyp.org

Erina Kim
Project Manager
Neurological Surgery
E: erk2008@med.cornell.edu

ACTIVE CLINICAL TRIALS:
• A PROSPECTIVE MULTICENTER PILOT STUDY OF THE SPR SYSTEM FOR THE TREATMENT OF POST-STROKE SHOULDER PAIN.
This study examines "electrical stimulation" for the treatment of post-stroke shoulder pain.

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Weill Cornell Medical College
Department of Neurosurgery
525 E. 68th St., Box 99
New York, NY 10065