



# Neurology & Neurosurgery Associates, P.A.

*Providing complete neurological and spinal care*

June 2005

Newsletter

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## Pain... A Final Frontier

by Sheryl Bachelder, PA-C

Mr. Jones went to his neurologist complaining of burning pain that went from his buttocks to his feet after hurting his back the previous weekend. After reading his lumbar MRI his neurologist diagnosed him to have a herniated disc and then gave him three dif-

ferent pain medications: an antiepileptic, an antidepressant and an opiate. Mr. Jones hesitated at taking the first two medications. "Why should I take these when I'm not depressed and I don't have seizures?"

Mr. Jones' neurologist gave these medications because he understood the complicated field

of pain. The treatment of pain is changing rapidly as new research brings new information on how pain is perceived and transmitted.

Pain is defined by the International Association of Study of Pain as, "the sensory and emotional experience associated with actual or potential tissue damage." Pain is always an unpleasant experience and is experienced by 10-20% of the world population. As a result of pain, a sense of depression, anxiety, physical dysfunction, social dysfunction, lost productivity on the job and unnecessary health-care costs are sustained. In a study of patients with non-cancer pain, 40% had a depression disorder and 50% had an anxiety disorder. Chronic pain accounts for more than 50 million lost work-days per year, more than 90 million physician visits annually, 14% of all prescriptions, and total annual health care costs in excess of \$100 billion in the U.S. alone.

Pain is perceived when either pain sensors in the skin or organs are triggered, or because signals to an injured or partially destroyed nerve are processed incorrectly. What causes pain →



# Pain . . . A Final Frontier (Continued from page 1)

in the skin, such as a cut, burn, or a crushing injury may not be perceived as pain by another organ. Skeletal muscles only relay pain signals if they become irritated by an injected chemical, the connective sheaths are damaged, or they become oxygen starved. Joints are insensitive to pricking, cutting and burning but if they become inflamed or they are injected with saline, pain occurs. Tissue pain typically responds well to non-steroidal anti-inflammatory drugs (NSAID), such as ibuprofen or naprosyn, or opioids.

Diseased or injured nerves cause neuropathic pain. It is much more varied and causes more ~~extravagant responses than tissue~~ pain. Patients describe their pain as "knife-like, stabbing, crushing, freezing, a constrictive band, a storm, a shock, or indescribable." Neuropathic pain may change with temperature and barometric pressure changes, increase with static electricity and certain musical scores and sounds, in frightful or argumentative situations, or if the painful part of the body is used. This type of pain responds erratically to opiates and often needs an anticonvulsant, antidepressant, calcium or sodium blockers, in combination with an NSAID in order to control the pain. One theory to account for the variability of effectiveness of opiates in neuropathic pain is probably due to the reduction of opiate receptor neurons that

occurs when peripheral nerve damage occurs. After the damage occurs some cells connected to the spinal cord are destroyed, some of them being opiate receptor neurons. Thus less opiate receptors in the spinal cord results in less pain relief.

Neuropathic pain can actually be caused by vitamin deficiencies, vitamin overdoses, toxic exposure to heavy metals, shellfish, ticks, hypothyroidism, alcohol, colchicine, statin cholesterol lowering drugs, thiamine deficiencies and rapid weight loss as seen in patients who have recently undergone bariatric surgery. Often, if one of these conditions are discovered, then treating the cause can eliminate the painful pain associated with the neuropathy. Unfortunately, not all neuropathies can be reversed.

So what do you do if you've been diagnosed with a neuropathy that can't be reversed, either by medicines or surgical intervention? How does your health care provider know which medications will work for your type of pain? The secret is in understanding the mechanism of nerves, their pain receptors, and how each drug works.

Every child and adult has probably wondered how swallowing an aspirin may go to the place it hurts to take the pain away. For example, if you sprain your ankle, how does it make the pain go away? Aspirin and other

NSAID's actually work by decreasing the production of prostaglandin, a chemical that causes swelling and tissue inflammation in the joints, skin and organs. Thus, by stopping the release of prostaglandin, the inflammation is reduced, and the ankle's pain receptors stop signaling pain.

Triptans have been found to be effective in preventing migraines by binding to the active neuron chemical receptor sites that are present during migraines. The triptan drug, Zomig, has been found during research studies to be especially effective in treating scalp and temporal pain that occurs during migraines.

Both capsaicin creme and lidocaine patches are applied topically but their mechanisms differ. Topical capsaicin works by depleting "substance P", which is known to cause nerve cells to become overly excited and increase pain. Lidocaine 5% patches deliver pain relief topically, not by anesthetizing the skin, but by reducing the frequency that the nerve cells actually "fire", thereby "calming" the nerve down and diminishing the pain.

The spinal cord is capable of making its own opiate-like substance, known as enkephalin, which binds to the cord's opiate receptor sites. Thus, the human body makes its own opiate in response to pain. Synthetic opiates bind to these sites as well. →

*"Plates, rods, and screws are often used"*

## Spinal Bracing

by John C. Amann, M.D.

Braces have been used in medicine for thousands of years. Materials and techniques have improved but the concept remains the same: immobilize an area to control pain and prevent further injury. Due to advances in internal fixation (plates, rods, and screws), braces are used less commonly today. However, for certain problems they offer a quick, no-risk, relatively low-cost option.

Soft braces are often made from foam rubber or elastic. These provide some psychological comfort or confidence, but really do not immobilize the underlying structure. They are often used in acute injury to give the soft tissues a chance to heal. In the lumbar area they are sometimes used to remind the patient to use good posture and proper body mechanics.

External orthoses or hard braces can be used in cervical, thoracic, or lumbar spine. These are essential in treatment of some fractures. Compression fractures due to osteoporosis occur in the thoracic and lumbar area and a brace can provide some relief from pain. If fractured fragments are well aligned, immobilization may allow time for the area to heal. Tumors and infections sometimes weaken the spine. Braces can be used to treat pain while other measures (radiation, chemotherapy, or antibiotics) are begun.

Plates, rods, and screws are often placed in the spine to provide internal support. In most cases this internal fixation is sufficient to immobi-

lize the area. For those repairs that are tenuous, the brace can provide additional support until the bone heals.

Braces are not inexpensive, but the main disadvantage is that they allow the muscles to weaken over time. The deconditioning that results from two to three months in a brace can take many months to reverse.

Some patients become physically or psychologically dependent on the brace. It may be impossible to wean these patients out of the brace even after the underlying problem has healed.

In summary, braces are a good short-term adjunct to other treatments, but should not be used long term.

## Pain . . . A Final Frontier (Continued from page 2)

Unfortunately, long-term use of opiates has been shown to result in other problems such as breast milk production in males as well as non-lactating females, besides having addictive properties.

Serotonin re-uptake inhibitors (SSRI) antidepressants, and tricyclic antidepressants like imipramine, elavil and doxepin have all been shown to inhibit the pain receptor cells in the spinal cord as well. They have been used effectively for a long time in the treatment of post-herpetic neuralgia (PHN), which is pain that may occur after having "shingles", and other neuralgias. Besides their pain properties, they are also effective sleep aids in pain patients. Unfortunately, care has to be taken in using them in elderly patients, or those with a history of a heart arrhythmia.

The antidepressant, Cymbalta, was recently approved for treating diabetic neuropathic pain as well. The dosage of the medication is usually much higher in treating the neuropathy than in treating depression.

Antiseizure medications, such as

Topamax and Neurontin (gabapentin) have also been used effectively in neuropathic pain. Neurontin has been shown to be especially effective in diabetics and in PHN by blocking the release of substance P in the brain as well as the spinal cord. It is used frequently in controlling pain that results from a "pinched nerve" that results from a herniated disc. It is often used in combination with lidocaine patches for pain relief.

Because neuropathic pain responds so variably, it is obvious that a simple solution may not be found immediately because of the multitude of medication combinations that may exist for controlling each individual's pain. However, for most patients, an effective combination can be found so that they are relatively pain free. Regrettably, the medicines don't heal the damaged nerve, but control it. So, the next time your health care provider hands you a prescription for a medication, rather than reject it, ask about its use and you might just learn something new about your condition and the medicines being used to treat it.

**Neurology and Neurosurgery Associates, PA.**

50 - 2nd Street S.E.

Winter Haven, FL 33880

**Offices available to patients of  
Neurology and Neurosurgery Associates P.A.:**

**Lakeland Office** - 1325 Lakeland Hills Blvd. • Lakeland, FL 33805

**Sebring Office** - Rehabilitation Center - 6325 US Hwy 27 North Suite 201 • Sebring, FL 33870

**Lake Wales Office** - 1137 Druid Circle • Lake Wales, FL 33853

**Haines City Office** - 38251 Hwy 27 Suite 8 • Davenport, Florida 33837\* (*New Office*)

**Visit our Web site:** • [www.neurohaven.com](http://www.neurohaven.com) • [www.neurolakeland.com](http://www.neurolakeland.com)

## ***Pain Management Specialist***

# **Dr. Fernando Miranda to join Staff**

Dr. Fernando Miranda will be joining the practice of Neurology and Neurosurgery Associates, P.A., starting June 13, 2005. Dr. Miranda is a Board Certified Anesthesiologist with a subspecialty certification in Pain Management.

Dr. Miranda completed a general surgery internship at Mount Sinai Medical Center (Miami Beach) and his Anesthesiology Residency at Jackson Memorial in Miami. He also completed a Pain Medicine Fellowship at the University of

Iowa Hospitals and Clinics in Iowa City, Iowa.

Dr. Miranda has been a staff Anesthesiologist at Holy Cross for the past six years. During which time He established the pain management program for the Anesthesiology group at Holy Cross Hospital.

Dr. Miranda specializes in the diagnosis and treatment of painful spinal disorders.

Dr. Miranda is looking forward to becoming a part of the Winter Haven community and serving Polk County.



**Dr. Fernando L. Miranda**