Key Points

1. Many people with Chiari and syringomyelia suffer from neuropathic pain even after decompression surgery
2. Neuropathic pain is very difficult to treat and has a profound effect on overall health and quality of life
3. Pulsed radiofrequency is a minimally invasive procedure which has been used to treat mechanical spine pain
4. This study examined whether PRF was effective in treating neuropathic pain
5. 28 patients with chronic, neuropathic pain resistant to other treatments underwent PRF
6. 1 month after the procedure, 86% reported some pain relief, at 12 months 68% still felt an improvement
7. Two patients ended up being pain free
8. The average pain score dropped from 8.8 to 4.1, at the one month mark

Definitions

allodynia - feeling pain in response to something which is not normally considered painful, such as a light touch

chronic - long lasting

dorsal root ganglion - a nodule on the nerve root which acts to send sensory information to the brain

fluoroscopy - imaging technology which is like a real-time X-ray and allows doctors to guide the placement of needles and probes in the body

neuropathic pain - pain which is due to nerve damage

NSAID's - non-steroidal anti-inflammatories; class of drugs such as ibuprofen and naproxen which are used as painkillers

Pulsed Radiofrequency Used To Treat Neuropathic Pain

September 20, 2006 -- How many people reading this article are in pain? While there are no precise numbers, it is believed that pain is one of the most common residual symptoms associated with Chiari and syringomyelia, meaning that people suffer from it even after decompression surgery.

Pain associated with CM/SM can take a variety of forms, but perhaps the most damaging and difficult to treat is neuropathic pain. Neuropathic pain is pain due to nerve damage, such as when a syrinx expands into sensitive nerve fibers and roots. People with neuropathic pain often feel pain for no reason (this is known as spontaneous pain), or feel pain in response to something that shouldn't be painful (this is known as allodynia), such as the light touch of clothing on their skin.

The effects of living with chronic pain extend far beyond just dealing with the pain directly. Research has linked chronic pain to a host of health problems, including high blood pressure, increased risk of chronic disease, and perhaps most troubling, physical alterations to the brain itself. In addition, depression and social isolation are common among chronic pain patients. If fact, one study of people with chronic spinal pain found that more than 50% suffered from clinical depression and/or personality disorders.

Because of its profound impact, chronic pain reaches beyond patients themselves and negatively impacts families, and even the nation as a whole. With patients disabled by pain, family finances can be disrupted, and even destroyed, with houses lost, lifesavings wiped out, and dreams shattered. With millions of Americans suffering from chronic pain, the impact on the economy as a whole is staggering, with estimates as high as $100 billion lost annually.

Given the stakes involved, naturally there are significant research dollars spent, both public and private, on pain medications. While many types of pain will respond to over-the-counter analgesics or stronger, prescription opioids, neuropathic pain has proven stubborn to treat. Despite millions spent by pharmaceutical companies, neuropathic pain drugs, such as Neurontin, have only limited effectiveness, and conservative treatments, such as massage, heat, etc., usually provide only short-term relief at best.

Confusing the pain management landscape is a host of so-called alternative treatments. While some have proven effective in treating some types of pain (acupuncture, for example), most have no evidence that they work and trap patients in a cycle of hope and disappointment.

The bottom line is that scientists are only beginning to understand, at the molecular level, how pain is perceived and processed, and why some types of nerve damage result in crippling pain.

Despite our lack of fundamental knowledge, a group of doctors from Israel (Shabat et al.) recently reported success in treating neuropathic pain with a technique known as pulsed radiofrequency (PRF). PRF is considered a minimally invasive surgery which uses electric pulses, delivered through a probe, to essentially stun nerves. Interestingly, exactly why PRF works is not understood, but it has been used effectively to treat mechanical type spinal pain. For whatever reason, PRF - at least in some cases - is able to get nerves to stop sending pain signals to the brain.

PRF uses fluoroscopy, which is like a real-time X-ray, to help the doctor guide a small probe next to a nerve root. Small bursts of electric charge are then sent though the probe. Because it is minimally invasive, PRF is generally an outpatient procedure and patients can remain conscious while it is performed, but are given medicine to relax them.

In the Israeli study, 28 patients with chronic neuropathic pain were given a PRF treatment and their pain was evaluated before and at several points after the procedure. The patients were treated between 2000 - 2002 and were followed for at least one year.

Each person suffered from neuropathic type pain for at least six months which had not responded to standard, conservative treatments. In addition, none of the group were candidates for any type of surgical intervention.

There were 11 men and 17 women in the group, ranging in age from 24 to 72 years. Twenty patients were treated for lumbar pain, and 8 for cervical pain. The PRF was targeted at what is known as the dorsal root ganglion, which sends sensory information to the brain. After the PRF procedure, each patient was given NSAID's for 4-6 weeks and participated in physical therapy for a month.

Pain was assessed using a simple Visual Analog Scale from 0 - 10 and was recorded before the procedure and 1, 3, 6, and 12 months after. In order to categorize the level of improvement, a reduction of 50% or more in pain

pulsed radio frequency (PRF) - a minimally invasive procedure where a probe is inserted and placed next to a nerve root and electric energy is used to shock the nerve

visual analog scale (VAS) - a simple technique to assess pain levels, where a person points to the spot on a number scale (1-10 for example) which represents their pain

cerebellar tonsils - portion of the cerebellum located at the bottom, so named because of their shape

cerebellum - part of the brain located at the bottom of the skull, near the opening to the spinal area; important for muscle control, movement, and balance

cerebrospinal fluid (CSF) - clear liquid in the brain and spinal cord, acts as a shock absorber

Chiari malformation I - condition where the cerebellar tonsils are displaced out of the skull area into the spinal area, causing compression of brain tissue and disruption of CSF flow

decompression surgery - general term used for any of several surgical techniques employed to create more space around a Chiari malformation and to relieve compression

Source

Shabat S, Pevsner Y, Folman Y, Gepstein R. Pulsed radiofrequency in the treatment of patients with chronic neuropathic spinal pain. Minim Invasive Neurosurg. 2006 Jun;49(3):147-9.

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was considered good; an improvement of 30%-50% was considered moderate; and less than 30% was considered to have no effect.

One month following the procedure, 86% of the patients reported at least a moderate improvement in pain, with two patients becoming pain free, and 12 reporting at least a 50% reduction in their pain (see Table 1). While the pain returned for some as time went on, one year after the surgery, 68% were still enjoying at least some level of pain relief.

Before the procedure, the average pain score for the group was a very high 8.8 (out of 10). The PRF caused this to drop by more than half, to 4.1, at the one month follow-up. The average pain for the group increased slightly as time wore on, but was still significantly better with a score of 4.9 at the one year follow-up. Perhaps just as important as the pain scores was the fact that there were no complications with any of the procedures.

This is important because until recently it was thought that PRF should not be used for neuropathic pain. Hopefully, the results of this small study will encourage more pain specialists to take a look at this procedure and determine if it should be widely used to treat neuropathic pain.

***[Ed. Note:** If you are in pain, don't suffer in silence. The experts advise those in pain to seek treatment at a multi-disciplinary pain clinic where they can be evaluated by pain specialists and will have access to a variety of treatments. Oftentimes, treating chronic pain is a matter of trial and error and what works for one person may not work for someone else.*

Table 1
Results of PRF (28 Patients)

	Pain Free	Good	Moderate	No Effect
1 Month	2	12	10	4
3 Months	2	12	9	5
6 Months	2	7	11	8
12 Months	2	6	11	9

Note: Pain was evaluated at 4 intervals after the PRF procedure; Good was defined as at least a 50% reduction in pain; Moderate between 30%-50% improvement; No Effect <30%

Table 2
Average Pain Level Before And After PRF Treatment

	Before	After
1 Month	8.8	4.1
3 Months	8.8	4.2
6 Months	8.8	4.8
12 Months	8.8	4.9

Note: Pain was reported on a scale from 0-10

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