Key Points

1. Neuropathic pain is a common, lasting problem for Chiari and syringomyelia patients
2. Neuropathic pain is complex and most people usually have several types of pain
3. Pain can be from an exaggerated response to a stimulus, or spontaneous in nature
4. A careful and thorough exam is necessary to classify the types of pain a patient has
5. Most treatments for neuropathic pain are based on using drugs designed for other purposes
6. There are limited studies showing which of these drugs are effective for which types of pain
7. There is a growing awareness of the issue of chronic pain and drug companies are actively researching new neuropathic pain treatments

Definitions

acute - lasting a short, or brief, period of time

allodynia - pain due to a stimulus that does not normally cause pain

antiarrhythmic - medications used to treat irregularities in the rhythm of the heart

anticonvulsants - medications used to prevent seizures

antidepressants - medications used to treat depression

causalgia - a constant, burning type pain

chronic - occurring for a long period of time

diabetic neuropathy - nerve damage as a result of diabetes

dysesthesia - an unpleasant, abnormal sensation

hyperalgesia - an exaggerated response to a painful stimulus

hyperesthesia - abnormal sensitivity to stimulation

Neuropathic Pain

"Patients who have chronic neuropathic pain [often] have more than one type of pain. For example, a man who has post-herpetic neuralgia at high and mid thorax may have constant ongoing pain that keeps him awake all night; mechanical allodynia and hyperalgesia that prevent him from wearing any clothing so he cannot be active and socialize; secondary myofascial pain in the shoulder so that use of that arm is limited; and after a few short weeks of his pain, the patient is by now sleep deprived, depressed, anxious, and very irritable." (Backonja and Galer, Neurol Clin 1998;16).

One could easily substitute Chiari or syringomyelia for post-herpetic neuralgia in the above quote and still have an accurate description. Pain, most often neuropathic pain - meaning due to nerve damage - is a common, serious, and difficult to treat problem for the Chiari and syringomyelia community. It is likely that many readers can relate to issues such as burning pain for no reason, abnormal response to touch or temperature, and lasting muscle pain, all of which at times seem immune to any treatment.

While the phrase misery loves company may or may not apply here, the fact is that C&S patients are far from alone in enduring the unrelenting, unwanted presence of neuropathic pain. People can develop neuropathic pain for numerous reasons (see Table 1) from surgical complications to immune system diseases to infection. Because of their prevalence, the most studied causes of neuropathic pain are diabetic neuropathy and post-herpetic neuralgia.

As the opening quote from a pain study indicates, understanding, diagnosing, and treating neuropathic pain is not easy. There are many different types of neuropathic pain, each with different features, and different responses to treatment. In addition, identifying the underlying cause of the pain is often not enough, as two people with pain from the same syndrome, such as syringomyelia, often have different pain symptoms and will require different treatments.

Table 1
Possible Causes of Neuropathic Pain

Trauma	Infection
Connective Tissue Disorders	Toxins
Nutritional Deficiency	Immune System Problems
Nerve Entrapment	Cancer
Metabolic Disorders	Genetics
Syringomyelia	

Types of Neuropathic Pain

As is often the case when a medical subject is not completely understood, terminology becomes a problem. However, to understand neuropathic pain, it can be broken down into different types. At the highest level, neuropathic pain is a result of damage to either the central nervous system (meaning the spinal cord and brain) or peripheral nerves (the actual nerve fibers which run throughout the body). In addition, the pain can be in response to a stimulus (such as touch or temperature) or arise on its own (spontaneous pain).

Stimulus driven pain is often referred to as hyperalgesia, which is an exaggerated response to a painful stimulus; or allodynia, which is pain from something which normally does not cause pain. An example of hyperalgesia is when a small pinprick results in a sharp, stabbing pain, or when the touch of a cold object causes a painful burning. An example of allodynia is when something as innocuous as the light touch of clothing is painful and unbearable.

Spontaneous pain, which can be either constant or intermittent, is often described as shooting or burning pain, which happens for no apparent reason. Of course, in the world of neuropathic pain, nothing is simple and many people suffer from a mix of both stimulus driven and spontaneous pain. Paresthesia, which is an abnormal sensation such as a tingle, and dysesthesia, which is an unpleasant, abnormal sensation are good examples of this complexity, as they can arise either spontaneously, or from stimulus.

Underlying Mechanisms

Although the exact mechanisms behind neuropathic pain are not completely understood, there are several theories on how different types of pain can develop. In looking at the peripheral nervous system, tissue damage to a certain part of the body results in a complicated series of actions centered around the inflammation

myofascial pain - broad group of muscle disorders which involve pain - in various muscles of the body - caused by super sensitive trigger points

narcotic - class of drugs derived from the opium plant - or created synthetically for the same effect; used as pain-killers

neuropathic pain - pain due to nerve damage

nociceptive - pain in response to an unpleasant or damaging stimulus

NSAID - non-steroidal anti-inflammatory; class of pain relieving drugs which includes ibuprofen, naproxen (Alleve), and others

opioid - narcotic

PND - painful neuropathic disorder; any painful disorder where the pain is caused by nerve damage; such as diabetic neuropathy or post-herpetic neuralgia

paresthesia - abnormal sensation

post-herpetic neuralgia - painful nerve damage as a result of "shingles" (herpes zoster)

Sources

Harden RN.Chronic neuropathic pain. Mechanisms, diagnosis, and treatment. Neurologist. 2005 Mar;11(2):111-22

process. As the body releases different chemicals to deal with the damage, the presence of these chemicals can make the nerves which carry pain signals back to the spine and brain extra sensitive. Once sensitized in this fashion, the nerves do not go back to their natural state. This type of sensitization often results in hyperalgesia, or the exaggerated response to a painful stimulus.

The spinal cord itself can also be the source of pain problems. It is thought that certain cells in the spinal cord (the pain receptors) are fundamentally altered when exposed for too long to a true, painful stimulus. Thus, once the nerves in the spinal cord are altered, even if the original source of the pain is alleviated, problems can occur. This can lead to allodynia, or the painful response to something that shouldn't be painful. When a person with allodynia "feels" the touch of a shirt, for example, the signal is carried properly from the nerve endings to the spine, but then it is misinterpreted as pain. How the nervous system changes over time in response to pain is extremely complicated and is just beginning to be understood.

Spontaneous pain, often described as burning in nature, is thought to occur when nerve fibers send extraneous signals. This can be from nerves losing their protective covering, or from chemical-electrical imbalances that develop, causing improper firing of the nerve cells.

Diagnosis and Treatment

Identifying and diagnosing the specifics of someone's neuropathic pain requires a thorough examination, including a history, physical, and neurological evaluation. By taking a complete medical and surgical history, a doctor can identify potential sources of the pain, be it from an acute injury, diabetes, or syringomyelia. A physical exam allows the physician to begin to pinpoint which parts of the body are affected and what parts of the nervous system may be involved. Finally, a neurological exam is used to see how someone responds to different stimulus, such as light touch, cold, heat, pressure, and pin pricks. At the end of a thorough evaluation, the treating physician should have a pretty good idea of the source and type of pain that is being dealt with.

Unfortunately, treatments for neuropathic pain are not easy to come by. Most drugs used to treat neuropathic pain were developed for other conditions and are prescribed for pain "off-label". Anticonvulsants (seizure medicines), antidepressants, and antiarrhythmics are categories of drugs commonly used to combat neuropathic pain. For example, the popular drug Neurontin was originally developed as an epilepsy drug, has since been approved by the FDA to treat post-herpetic neuralgia, but is commonly prescribed for many different types of neuropathic pain.

Because the drugs are prescribed off-label, large studies evaluating their effectiveness are few and far between. There is some research however, demonstrating that certain drugs may be effective for certain types of pain. Gabapentin, for example, has been shown to have some effectiveness in treating hyperalgesia and allodynia.

A completely different class of drugs, namely opioids (or narcotics), are sometimes prescribed for pain. Because of addiction issues however, their use is still somewhat controversial. In addition, many people find the benefits of narcotics are not worth the many side effects they can incur.

Whether it's antidepressants, narcotics, or non-drug treatments such as physical therapy and acupuncture, the current state of treating neuropathic pain is largely comprised of trying things and seeing what works. Unfortunately, the results are often less than stellar and neuropathic pain remains stubbornly difficult to treat.

The Future

For the time being, the burden remains on the neuropathic pain patient (in conjunction with their doctors) to evaluate the different treatment options and see what works best for themselves. The good news is that there is a growing recognition of the magnitude of the chronic pain problem. According to Congress, we are living in the Decade of Pain Control and Research, and pain is now widely viewed as the fifth vital sign in the medical community. In addition, because of the millions of people who suffer from chronic pain, there is a tremendous economic incentive to develop new treatments, and drug companies all over the world are actively working on identifying and developing new pain drugs.

--Rick Labuda