

Neural Therapy: An Overlooked Game Changer for Patients Suffering Chronic Pain?

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Abstract

Today the vast majority of medical treatments are for diseases of a chronic nature, in particular chronic pain. The treatment of chronic pain is costly not only in the United States but countries around the world adding up to billions of dollars for treatment costs as well as disability costs. There is an urgent need at this time to explore effective alternative treatments for chronic pain. A relatively unknown technique initially developed in Germany during the early 1900's known as Neural Therapy (NT) is emerging as a simple and effective treatment for chronic pain. NT is now gradually being adopted by medical communities throughout the world with cases being described which report many remarkable results.

Neural Therapy technique primarily involves the injection of local anesthetic into scars, trigger points, tendon and ligament insertions, peripheral nerves, autonomic ganglia, epidural space and tissues. The mechanism of action calls upon the concept whereby each cell within the autonomic nervous system (ANS) is controlled via ubiquitous synapses occurring within the intracellular fluid (also known as the "matrix"). Chronic pain results from long-term disruption/irritation of this complex system. NT generally uses non-anesthetic properties of local anesthetics to re-establish homeostasis throughout the autonomic nervous system.

NT in its simplest form is intradermal injection of those scars, tattoos, or piercings which are believed to be causing an interference field or disruption of the autonomic nervous system. The local anesthetic is injected in such a way as to produce a linear wheal over the interference field of approx. 0.7 cc of solution per cm of scar. The location of the interference field can be in the vicinity of the patient's pain or in an entirely different location and the therapeutic benefits range from gradual improvement after repeated treatments versus immediate complete relief of symptoms. Our center has witnessed numerous cases where this technique has led to dramatic improvement and often complete cure of a patient's long term pain.

Keywords: Chronic pain; Neural therapy; Homeostasis; Local anesthetics; scar therapy

Introduction

Is it possible to completely cure a patient who has been suffering intractable pain for many years with a simple scar injection (see case vignettes section below)? As physicians we are called upon to examine the evidence, use our best judgment and of course, heal if possible while doing no harm. As such, it is understandable that the average physician would look upon such a claim with a healthy degree of skepticism, and it's likely that most physicians practicing neural therapy today responded in kind the first time they had heard of this obscure therapy for pain. However, not only is it possible, it's explainable on the basis of neurophysiology. In addition to being simple to perform, neural therapy often produces dramatic results. The purpose of this article is to help bring to the forefront an often overlooked yet possibly outstanding therapy.

Chronic pain is a significant contributor to morbidity, disability and financial loss throughout the world. In the adult population of western nations 15% of people will complain of pain when surveyed at any given point in time. Similar rates are found for the developing nations in Asia (18.5%) for back pain alone. In the US, 17% of patients seeing their primary care physician report persistent pain. In a national survey of pain specialists, an estimated 2.9 million Americans (1.1% of the population) annually are treated by physicians who specialize only in chronic pain. The numbers of patients seeking care from primary doctors or other types of non-pain specialists must be at least comparable. Most patients with chronic pain do not have overt pathology pointing to a specific disease but rather suffer from non-specific ailments such as low back pain or headaches. The statistics in the United States alone just

for back pain and migraine reveal that 13% of headache patients and 18% of back pain patients reported being unable to maintain full time work due to their pain. Besides being incredibly common, chronic pain is incredibly costly, not just in terms of cost of care but also in terms of disability and lost revenue. For example Frymoyer and Durett projected that the cost of treating chronic back pain will exceed \$33.6 billion for health care alone, however, costs of disability are estimated at \$11 to \$43 billion and costs of lost productivity, \$4.6 billion. These estimates don't get much better with less common causes of chronic pain. For example, rheumatoid arthritis is projected to cost \$14 billion (year 2000 estimates) whereas costs for migraine come in at \$13 billion (estimated 1993 dollars). Clearly safe and affordable treatments for pain mandate our profession and the research community to be in active pursuit of such treatments [1].

Historical perspectives

Neural Therapy is a simple and effective treatment for chronic pain as well as other pathological processes. Although it has been

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practiced for decades in central Europe, it remains a relatively unknown modality throughout the rest of the world. Neural therapy has its roots in Germany as far back as 1892 when Schleich reported to a surgical congress that using a 0.1% to 0.2% cocaine solution could produce an infiltrative anesthesia. His theories were entirely rebuked until 10 years later when Mikulicz was finally able to convince the medical community of the utility of local anesthetics for local anesthesia. By 1903 Cathelin reported on the usage of cocaine in epidural anesthesia and shortly thereafter in 1905, Einhorn discovered Novocaine (i.e. procaine). From 1906 to 1925 several researchers reported on the utility of locally applied Novocaine outside of the realm of pure anesthesia. Speiss in 1906 reported on improved wound healing with regional infiltration of Novocaine. In 1906 Vichnevski reported on the anti-inflammatory effects of Novocain and in 1925 Leriche performed the first stellate ganglion block calling it the "surgeon's bloodless knife". It was not until 1926 however that Ferdinand Huneke, the father of modern neural therapy, first reported using IV procaine in the treatment of chronic migraine headaches. Then in 1928 Huneke and his brother Walter published "Unfamiliar Remote Effects of Local Anesthetics" thereby ushering in the now classic understanding of NT [2,3]. Over the next 40 years numerous other case reports were published regarding the effectiveness of this modality and then in 1965 Pischinger succeeded in providing objective evidence of the Huenke "lightening reaction" (discussed later in this article) through hematology and iodometry. This critical work states that the autonomic nervous system relies on a system of "ubiquitous synapses" whereby the extracellular fluid or "matrix" acts as a transmission medium for both capillaries and nerves as opposed to a classic synapse. The matrix provides the cells with information and keeps them healthy and in balance. A disruption in the environmental milieu will lead to inflammation, instability and, of course, chronic disease. The fact that there is a proven continuous and ongoing exchange of information between each and every cell of the human body through the neurovegetative network, is the single most important concept in neural therapy and in our ability to find success in the treatment of chronic disease. In 1964 Peter Dosch published the first manual on neural therapy based on Huenke's work and this was translated into English in 1984. In 1991, German cellular physiologists Neher and Sakmann won the nobel prize in medicine for their achievement in making the interstitial fluid (matrix) visible in addition to their measurement of its ion flow, a messaging relay between cells in regulating impulses thereby further enhancing our understanding of the neurovegetative state [3]. In the 1980's, German MD/PHD Dietrich Klinghardt emigrated to the United States and set up training for the first generation of North American physicians in neural therapy. With him he brought much needed German knowledge and experience. Later Klinghardt along with chiropractor Louisa Williams, DC developed a form of applied kinesiology which can be used to identify those areas of dysautonomia most in need of treatment with neural therapy. In 2005, Canadian physician Robert Kidd published the first original English textbook on Neural Therapy designed for the busy clinician who requires a quick and relatively painless means of integrating the material into their practice [3].

Actions of local anesthetics

Neural Therapy technique primarily involves the injection of local anesthetic into scars, trigger points, tendon and ligament insertions, peripheral nerves, autonomic ganglia, epidural space and tissues. Local anesthetics have historically been used as a means of producing anesthesia through sodium channel blockade. Nevertheless, there remains a myriad of other properties of these drugs that may be responsible for the benefits observed in neural therapy up to and

including neuroprotection of the CNS, reduction in intracranial hypertension and protection against sympathetic sprouting in neuropathic pain [4]. Local anesthetics also appear to have a profound anti-inflammatory effect through polymorphonuclear neutrophil mediators and free radical release [5]. Although neural therapy is mostly a pain relieving modality there have been studies to support its use for other pathology such as secondary prevention of cancer, Alzheimer's disease and wound healing [4].

The concept of interference fields

NT can be used to heal through local injections over the area of symptomatology as in the case of trigger points. Alternatively injections can be given directly into a ganglion (the neurologic control center) of the limb or organ manifesting symptoms (known as Regional therapy). Segmental therapy utilizes the concept of referred pain to achieve pain resolution. Examples might include occipital nerve injections in a patient with frontal headache, myofascial trigger point injection into the neck for shoulder pain [4,6] or local procaine injections in the form of subcutaneous blebs over the dermatome of a patient affected by post-herpetic neuralgia [4,7]. Nevertheless, NT's most common and powerful application is in the treatment of so called "interference fields" (Storfeld in German). Interference fields are blockages to healing that act either independently or as part of a constellation of insults. One can think of an interference field as a focus of erratic or dysfunctional (so called "dysautonomic") excitation within a given location of the autonomic nervous system, leading to nervous irritation [8]. Interference fields can include scars of any kind whether secondary to trauma or surgery, dental foci, intestinal dysbiosis and any form of skin alteration including piercings [9], tattoos [10] and burns. Signs that a patient may be suffering as a result of an interference field include symptoms that all present in an ipsilateral fashion, illness/pain recently following a trauma or surgery that cannot be logically attributed to that event, or symptom exacerbation/unresponsiveness following an accepted form of treatment for a given illness (known as a "reaction phenomenon"). The interference field may be close in proximity to the location of symptoms or a great distance away [2].

The idea that the location of pathology may not be in the same location as the location of symptoms is not a new concept. Traditional Chinese medicine along with movement of Qi within acupuncture meridians clearly gives credence to the idea that symptoms can have their origin at any number of different points along an affected meridian, a highway of sorts facilitating the movement of Qi throughout the body. Osteopathy with its concept of a holistic fascial network controlling autonomic response embraces a similar philosophy. In the case of acute pain like one would find with trauma, generally the location of the pain correlates with the pathologic location very much akin to X marks the spot. In contrast, chronic disease will rarely present with symptomatology in the same location as its cause [8]. Several mechanisms found in the autonomic nervous system illustrate this phenomenon such as the previously mentioned referred pain (for example visceral pathology leading to back pain) or mechanical compensation (such as hip pain in someone with a limb length discrepancy). It is with these in mind that one can understand the mechanism of action in Neural Therapy and why it is such a powerful means of treating chronic pain.

The following pathophysiologic models have been proposed over the years to explain the remarkable effectiveness of NT:

- 1) Nervous System theory: Illness leads to changes in membrane potential of nerve cells and their conductivity leading to disorganized/chaotic signaling of the afferent and efferent nerves. Loss of polarization of the membrane leads to abnormal cell metabolism and subsequent

accumulation of metabolic waste and acidosis further disrupting the membrane potential. Local anesthetic restores resting cell membrane potential and ion pump function leading to normal cellular function [2].

2) Fascial Continuity System: The fascial system has long been accepted as a layer of tissue surrounding organs, muscles, joints ligaments and tendons in a continuous fashion. A scar could cause a defect in the fascia in addition to the electrical conductivity. This in turn produces a disruption further along the fascial plane. By re-establishing cell membrane potentials with local anesthetic, traction on the fascia is reduced.

3) Ground System (Matrix) Theory: Based on Pischinger's work in which a complex system of proteoglycans and glycosaminoglycans exist within the matrix or extracellular space. This complex network of connectivity is responsible for regulation throughout the entire system. Changes in the chemical, physical, or ionic milieu due to an interference in the system such as a scar will lead to immediate disruption throughout the system. Local anesthetic can electrically neutralize an interference within a small part of the matrix leading to an immediate regulation of the entire matrix thus healing chronic pain or illness [11,12]. This particular model is emerging as the most popular explanation among experts in the field.

4) Lymphatic System Theory: In the 1970's, Fleckenstein's work revealed a lymphatic dilatory effect secondary to Novocaine. Chronic illness leading to chronic lymphatic spasm could be treated by dilating the lymphatics through local anesthetics. The subsequent increase in flow restores the entire lymphatic system.

Identification of interference fields

In attempting to decide which interference fields are responsible for a given symptom, several different fields of study within the genre of energy medicine can help elucidate the association. Acupuncture physiology dictates that anatomic highways of energy or Qi flow within channels known as meridians. Therefore if an interference field lies within a given acupuncture meridian, it would be logical to expect the patient to be symptomatic in an organ or location within the sphere of influence of that meridian even if that might be much further away than where the interference field is located [13]. Any scar that is inflamed, tender, burns, itches, or tingles is likely to be abnormal and is stressing the body in some way [14]. Scars that are in the same spinal segmental region where there is pain should be suspected.

A form of muscle testing called applied kinesiology can be used to identify an interference field. Although several forms of applied kinesiology are in use today, almost all methods make use of muscle contractility. Those interference fields which solicit a sympathetic nervous response from the patient will in turn affect contractility when the muscle is tested thereby identifying a blockage [2]. In our center we use autonomic response testing (ART) to determine whether a scar is causing the problem. This method was developed by Dietrich Klinghardt, the first German physician to champion the use of Neural Therapy in North America. In brief, ART is a refinement of other forms of applied kinesiology which uses changes in muscle strength to determine an area of abnormality. In skilled hands it can be a tremendously useful tool. With this technique one can often determine whether a scar is abnormal and whether it is the cause of the problem or merely contributes to it [8]. Naturally, no medical assessment technique is accurate 100% of the time. All medical tests have different sensitivities and specificities along with different predictive positive and predictive negative values.

Finally, there are empiric associations that are well recognized within the neural therapy community whereby the location of a

given interference field has been clinically associated with a certain anatomic location. For instance tonsils are often associated with knee joints, abdominal scars with low back pain and large joints, leg scars with sciatica, tonsils and teeth with migraines, cholecystectomy with shoulder or hip or ankle pain, pelvic scars with premenstrual syndrome and depression [2]. In our practice we have noted an association between hernia scars and groin pain in addition to low back pain that refers to the groin.

Several different responses to treatment have been documented:

1) Huneke Phenomenon: lightening reaction where there is immediate complete relief of symptoms for over 20 hours.

2) "Knallkipf" or "Exploding Head" whereby there is a self-limited sensation of heat exploding in the head of several minute duration following injection.

3) Emotional Euphoria whereby an emotional catharsis follows injection. Response may be weeping, sobbing, anger or fear. It is generally associated with a scar that has an emotional attachment for the patient.

4) Delayed reaction whereby symptoms resolved after 16-20 hours. Especially common in reactions involving asthma.

5) Reversal phenomenon whereby symptoms worsen for about 24-48 hours and then resolve.

6) Reaction Phenomenon whereby the patient's symptoms are aggravated for several hours or days followed by return of original symptoms which indicates that there are other active interference fields that need to be identified and treated.

Technique

In our practice we use simple preservative free ½% procaine without epinephrine which can be obtained through a compounding pharmacy. We have seen frequent side effects with procaine that contains preservative and therefore do not recommend it. Lidocaine ½ to 1% can be a substitute for Procaine. Some have claimed lidocaine has carcinogenic potential so we prefer not to use it although it is considerably cheaper. Long acting local anesthetics are discouraged as they tend to be neurotoxic. Scars should be infiltrated intradermally at the junction of the dermis and the subcutaneous tissue. A bleb or wheal should form. Deeper subcutaneous injections are less painful but usually work less well. In order to maintain the needle in the intradermal space, it may be necessary to bend the needle to a 30 to 45 degree angle with the needle cap prior to the injection. This depends on where the scar is located and in what direction the practitioner approaches the patient. Approximately .7cc of procaine per cm of scar is injected. It should be noted that scars may need to be injected up to 5-6 different occasions before the interference field is permanently lifted.

Segmental therapy involves the creation of subcutaneous blebs (also known as quaddels) in the skin several inches apart over a specific area in order to remove an interference over a given organ. Usually this is directly over the organ however it can on occasion be quite a distance away for example right upper shoulder for the liver and the left upper shoulder for the stomach [4].

Ganglion injection technique will likely require formal training and falls outside the scope of this article. However, any physician who has infiltrated the skin with a local anesthetic can safely try injecting most scars on the skin depending on location.

Risks and contraindications

Risks of NT are the same as those that would be present for any procedure involving the use of local anesthetic such as bleeding or infection. The risk of a vasovagal reaction to the anesthetic is a possibility and depending on the location of the scar, other risks may exist. For example, possible perforation of a breast implant for a breast surgery scar, possible pneumothorax in the case of a scar or quaddels performed over the surface of the chest wall, or device interference in a scar located over a pacemaker. Scar or segmental infiltration can also be quite painful especially in areas that are particularly active with regard to dysautonomic interference.

Attention should be paid to possible or existing allergies. There is some concern in patients with active cancer that lymphatic flow may be enhanced as a result of neural therapy and therefore could increase risk for metastasis. Some physicians feel that there may be some increase in glucose lability in diabetics treated with neural therapy. Klinghardt considers active tuberculosis, psychiatric illness other than depression and genetic illnesses as contraindications to neural therapy [2]. Neural Therapy may be ineffective in patients with severe nutritional deficits and end stage illnesses. There have been rare reports of serious adverse reactions with injections into the deep ganglia so it is recommended that physicians undergo formal training if they intend to perform deep injections in higher risk anatomical locations [15].

Case vignettes

Although case studies continue to be published detailing the extraordinary benefits attributed to NT, more are needed [11-12,16,17]. The following vignettes describe some additional cases from our institute.

Case 1: Vasectomy Scar 40 year old male with longstanding severe neuropathic pain of his left lower extremity. He had failed most conventional therapy. His left lower leg had a dusky, somewhat mottled appearance. His ankle was stiff, and the entire foot was hypersensitive to the touch. We had been treating him for about a year with acupuncture which gave him partial temporary relief. One day upon re-inquiring about past scars, he mentioned that he had had a vasectomy 10 years prior. He was found to have a 1 cm scar on his scrotum from a vasectomy. This scar was injected superficially with 1 cc of 1/2% procaine. On his follow up visit one week later, we were astonished to see that he not only had 80% pain reduction, his ankle was more supple and his skin color appeared more normal without the mottled appearance. After several weekly scar injections, he retained long term improvement without needing continued maintenance acupuncture. He was able to even ski wearing heavy ski boots without pain something he would not have even dared to try.

Case 2: Tonsillectomy scar

A middle aged woman with chronic knee pain and stiffness. Upon injecting her old tonsillectomy scar, 1/3 cc of ½% procaine to each tonsil scar. 1-3mm in depth, she noticed marked improvement in range of motion and complete reduction in pain within two minutes of the injection. After several weekly injections, her knee problem resolved. We have since seen over five cases where injecting the tonsillectomy scar was the key to the successful resolution of chronic knee pain.

Case 3: Body piercings

21-year-old African-American female who presented with a six-month history of severe abdominal pains, nausea, and vomiting resulting in 70 or more pounds of weight loss and repeated hospitalizations. She also complained of alternating constipation and diarrhea, which appeared to be unrelated to specific foods. We removed

her tongue ring and injected the side of her tongue piercing scar with 2 cc of 0.5% preservative-free procaine. We also injected about 1 cc of 0.5% preservative-free procaine to her right tonsil scar. Remarkably within five minutes of injecting her tongue ring scar, she stated that her constant nausea feeling had markedly reduced. After four treatments, she had marked resolution of her entire symptom complex. This case and a similar one that also involved a tattoo scar have been published [9,10].

The above vignettes are some of the more astonishing cases that we have seen. Two of the cases also demonstrate that treatment of scars illustrate profound autonomic nervous system changes (i.e. reduction of nausea, changes in tissue turgor and vascular changes). They demonstrate the "lightening reaction" (dramatic improvement within minutes of the treatment) described by Dr. Huneke.

With the apparent therapeutic benefits afforded by neural therapy and the staggering burden imposed by chronic pain, it is time to consider and research NT for our armamentarium in the fight against illness. Its ease of use, low cost and ability to ease suffering appears to be remarkable in our group practice experience.

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