

Chiropractic Neurology: What It Is and How it Can Help You

By Ron Boesch, D.C., D.A.C.N.B., Dean of Clinics, Palmer Chiropractic Clinics

Chiropractic neurology is a subspecialty of chiropractic practice. There are currently 11 specialties recognized by the American Chiropractic Association.¹

A chiropractic neurologist diagnoses and treats a range of disorders affecting the nervous system. The therapy a chiropractic neurologist prescribes does not include drugs or surgery. Typical dysfunctions treated by a chiropractic neurologist include a variety of disorders affecting the peripheral nervous system, such as radiculopathy or other peripheral nerve entrapment syndromes. They also work with patients who have central nervous system disorders such as multiple sclerosis or post-stroke rehabilitation. In addition to providing therapies and treatments, a chiropractic neurologist can provide counseling about diagnostic dilemmas and offer advice about the care a patient may already be receiving. They use many tools to come to a diagnosis: physical examination, laboratory values, radiographs, MRI, CT, electromyogram (EMG) and many other available tests.

There's a widely held belief that brain development takes place early in childhood and then stops by the time we reach maturity. In fact, recent research has shown that the brain never stops changing in response to input from the environment. This is called brain plasticity or neuroplasticity. What is brain plasticity? Plasticity, or neuroplasticity, describes how experiences reorganize neural pathways in the brain. Long-lasting functional changes in the brain occur when we learn new things or memorize new information. These changes in neural connections are what we call neuroplasticity.

To illustrate the concept of plasticity, imagine the film of a camera. Pretend that the film represents your brain. Now imagine using the camera to take a picture of a tree. When a picture is taken, the film is exposed to new information—the image of a tree. In order for the image to be retained, the film must react to the light and "change" to record the image of the tree. Similarly, in order for new knowledge to be retained in memory, changes in the brain representing the new knowledge must occur.²

During the first years of life, the brain grows rapidly. As each neuron matures, it sends out multiple branches (axons, which send information out, and dendrites, which take in information), increasing the number of synaptic contacts and laying the specific connections from neuron to neuron. At birth, each neuron in the cerebral cortex has approximately 2,500 synapses. By the time an infant is two or three years old, the number of synapses is approximately 15,000 synapses per neuron (Gopnick, et al., 1999). This amount is about twice that of the average adult brain. As we age, old connections are deleted through a

process called synaptic pruning. It is plasticity that enables the process of developing and pruning connections, allowing the brain to adapt itself to its environment.

Sensory information gathered by receptors in the muscles and joints, for example, can alter the function of brain systems, which in turn affect the function of those receptors. The chiropractic neurologist is trained in these therapy modalities, that is, therapies informed by an understanding of the brain's role in joint and muscle dysfunction.

Humans have many kinds of sense receptors, which we use to gather information about the world around us and within our own bodies. An example is the rods and cones in the eye's retina, which we use for detecting color, shape and movement. Another one is mechanoreceptors; these receptor cells are sensitive to mechanical stimulation such as touch, pressure and tension. We have mechanoreceptors in our skin as well as our muscles and joints for a sense called proprioception. Proprioception is the unconscious sense that allows your brain to know where your body parts are and what they're doing at all times. If you close your eyes and touch your finger to your nose, your sense of proprioception is at work.

All of the sense receptors connect to nerves that in turn connect to the spine and brain. As sensory input is routed through the nervous system, it alters the function and structure of the brain on an ongoing basis to maintain normal function. The brain in turn uses sensory input to regulate the body, constantly sending information and instructions back to all body parts. All of those instructions depend ultimately on the position and movement of your joints, which are thus integral to your nervous system. In this integrated system, a change in one part can't help but affect all the others. For example, the biomechanics of a joint can be altered by injury, poor posture or repetitive stress.

Having in-depth knowledge of both the central and peripheral nervous system makes the chiropractic neurologist a valuable resource for helping other clinicians in managing patients who have overlapping symptoms or who aren't responding to care. Together with other health care providers on the team, they can help design a management plan that is specifically tailored to the patient's condition.

Using their knowledge of the nervous system and how it can help reduce pain and improve function is the goal of the chiropractic neurologist. Many components are necessary for chiropractic neurologists to develop the management plan for a patient. First is the determination of the cause of the problem; this will set the tone for how the condition is treated. Treatment basically covers three main areas: chiropractic care, nutrition and exercise.

First is chiropractic care that is appropriate for the individual. Conditions and symptoms evaluated by the chiropractic neurologist are varied. They include but are not limited to the following: low back pain, neck pain, joint pain, nerve pain or numbness, tingling, headaches, irregular movements, muscle spasms, unusual sensations and many other symptoms. Spinal and joint manipulation by chiropractors has been

shown to have many benefits to improve function and reduce pain. There are a number of ways chiropractic adjustments can be performed manually or with instruments.

Nutrition covers not only basic good eating habits, but a nutrition plan may be designed based on conditions such as type 2 diabetes or other dietary-related disorders. There may be need for supplementation or modifying overall eating habits. Exercise recommendations will consist of specific exercises to improve function by starting with flexibility then moving to strengthening of the affected muscles. Rehabilitation will be part of this area to help retrain the proprioception of the joints so that they function better. Then of course there is general exercise for overall fitness that will be advised.

1. <http://www.acatoday.org/UserFiles/AppChiroSpec.pdf>
2. <http://faculty.washington.edu/chudler/plast.html>