

## **What Every Chiropractor Should Know About Fibromyalgia**

Current research on fibromyalgia and chronic fatigue syndrome suggests the cause may be the result of a dysfunctioning central nervous system.

The first major stumbling block that needs to be overcome when dealing with fibromyalgia is to understand that it is a misnamed syndrome.

The word "fibromyalgia" represents a fibrotic invasion of the muscle tissue and for years it was thought the cause resided in the skeletal muscles of the affected individual.

But histological studies have largely discounted this theory. Current scientific research strongly suggests that fibromyalgia (FM) is actually caused by a dysfunctioning central nervous system (CNS).

### **CNS INVOLVEMENT**

The theory that best ties together all of the symptoms of FMS is not muscular in nature, but neurological.

Dr. Staudinger, speaking on neurologic dysfunction and FMS stated, "It is crucial that physicians realize that patients with FMS have a nervous system that is not working properly and that it affects the entire body, including the immune system and endocrine system as well as the muscular system."

Dr. Case at the University of Michigan summed up current thinking when he said a precipitating injury can profoundly alter pain perception and the FMS is related to abnormalities of central pain processing, or more specifically an impaired processing of nociceptive information in the CNS.

At the core of this development is the term "allodynia". Allodynia is an exaggerated nociception from fairly normal stimuli. In other words, it is pain sensitivity to stimuli that would not generally cause pain in a normal individual and is considered to be a disturbance of pain modulation in the CNS, especially at the spinal level.

Dr. Duller at the University of Maryland adds that damage to the nervous system results in a plasticity of the CNS and that this hyperactivity can play a significant role in the amplification and increased duration of pain due to a hyper excitability in the nociceptive system in FMS patients. Researchers conclude that the current evidence clearly indicates the basic neurophysiological mechanisms even at the spinal level, including proprioceptive afferent pathways of sensitized spinal neurons, very likely underlie the major pain and fatigue-related symptoms of FMS.

Neuroendocrine symptoms are also commonly found in FMS patients. The mechanism behind this relationship is thought that FMS involves a loss of pain regulation in the CNS. This results in pain amplification, which in turn produces abnormal levels of CNS neurotransmitters like serotonin, nor epinephrine and Substance P that enables nerves to

transmit signals in the brain. These neurotransmitters in turn disrupt the body's hormonal response to stress (inappropriate levels of cortisol, catecholamines, growth hormone, and thyroid hormones). This causes abnormalities in the autonomic nervous system, which regulates these major systems.

FMS patients have been found to have a dysregulation of their neuroendocrine systems with a reduction in HPA (hypothalamic-pituitary-adrenal) axis activity due in part to this impaired CNS.

Dr. Berg at the University of Pittsburgh School of Medicine says that any condition, behavior, or reaction that activates the HPA axis has the potential to disrupt the reproductive system. The hormonal effect on pain sensitivity and the striking differences that exist between the sexes with respect to brain chemistry for pain inhibition may provide a physiological explanation for the sex differences in chronic pain conditions and the fact that females make up approximately 80 percent of all FMS patients.

Substance P, which is found in elevated levels in chronic fatigue syndrome (CFS) and FMS patients, is normally released in the spinal cord by afferent neurons in response to painful peripheral stimuli and is involved in the early stages of nociceptive signaling and pain amplification.

### **CRANIOVERTEBRAL STENOSIS**

The field of neurophysiological mechanisms and their involvement in FMS and CFS is being carried out by two American neurosurgeons, Drs. Rosner and Heffez.

Their work focuses on the area of craniovertebral stenosis as a primary cause for both FMS and CFS. They say many cases of FMS are due to a narrowing of the spinal canal and a compression of the hindbrain. Any inflammation and/or compression of the spinal cord by cervical stenosis can result in neurally mediated FMS. This stenosis and compression is said to interfere with neural transmission and disrupts normal cerebrospinal fluid (CSF) flow.

Much of their work also deals with the presence of a chiari malformation as the contributing factor of the stenosis with the hindbrain compression being the root cause of FMS, not the herniation. This condition is presently referred to as brainstem deregulation by the Mayo clinic research team. Rosner states that even small degrees of herniation can cause problems through nerve tissue compression and disruption of CSF flow. The neural connection is that the brain stem is located where the brain and spinal column meet and is responsible for regulating blood pressure, blood volume and many other autonomic functions.

It's further postulated that although cervical stenosis may sometimes be associated with a chiari malformation, there is a subset of FMS patients with congenital spinal and cranial abnormalities such as cervical stenosis and hindbrain case compression which appear relatively normal unless more highly quantified analysis of the spinal canal and posterior fossa are carried out. This stenosis interferes with neural transmission and disrupts

normal CSF flow thereby blunting sympathetic outflow, which is the vital regulatory communication between brain and body.

It is now believed by a number of top chiari surgeons that it is very possible to have an undersized posterior cranial fossa and an abnormally compressed brain stem without any herniation of the cerebellar tonsils into the spinal canal. But as these doctors suggest, most doctors are unaware of the connection between spinal compression and FMS. In other words, cervical stenosis may be present when the spinal canal appears normal but is actually too narrow for the spinal cord.

### **INSTIGATION FACTORS**

Symptoms of FMS don't usually develop until adulthood. Many doctors believe this is when compression may grow severe or may be triggered by injuries. Rosner postulates the triggering mechanism is when the cervical spine is hyperextended backwards in cases such as whiplash, extended dental work, painting a ceiling and even coughing for extended periods of time. As the spinal canal is narrowed it puts direct pressure on the brain stem resulting in neurological damage, which then degrades the autonomic nervous system's main regulatory functions and in turn produces the myriad of symptoms often associated with FMS.

An interesting finding is that women who undergo breast implant surgery have a higher rate of FMS. Initially it was thought they picked up some type of infection during their surgery. However, further observation found that during this type of surgery the neck is often hyperextended backwards while the patient is under anesthetic.

While most people recover quite well from such surgery, some don't. Women who have a slightly undersized fossa and/or abnormally narrow cervical spinal canal may be prone to such injuries even if they have no chiari malformation.

Rosner has performed laminectomies, primarily of C1 and C2, as well as craniectomies, in order to bring about decompression of the cervical spine and brain stem and has reported several positive outcomes.

### **POST-TRAUMATIC FMS**

The term post-traumatic fibromyalgia is commonly found in literature. Various studies have suggested that up to 65 percent of FMS patients had their problems develop following an injury. Of these, whiplash is the most prevalent and studies have indicated that a neck injury is 13 times more likely to bring on FMS than an injury to another part of the body.

According to a McGill University study, patients with post-traumatic FMS report higher degrees of pain, disability, life interference and affective distress as well as lower levels of activity than non post-traumatic FMS patients. Seventy percent of post-traumatic FMS patients lost their jobs. They were also more likely to have been treated with opioids and experienced less successful results from traditional care.

## **TYING IT ALL TOGETHER**

From the current research it is evident that an injury (especially of the cervical spine) to an otherwise asymptomatic individual can be the precipitating cause of FMS.

The first question arising out of this is, "What is the mechanism by which an injury to the neck produces spinal cord and brain stem compression in a previously asymptomatic person?"

The answer that appears most obvious is that there must be some kind of mechanism restriction or narrowing of the canal. Since the circumference of the spinal canal is dictated by the size of the foramen magnum and the inner circumference of the cervical spine and related soft tissue, the logical conclusion is that the injury caused a misalignment of one of those factors.

Although there may have been a predisposing factor of congenital cervical stenosis or a chiari malformation, in light of the fact that the individual was asymptomatic prior to the injury, these may be considered as incidental findings and cervical misalignment is the true culprit. If the subluxation (misalignment) is the true culprit, then it could be corrected to its pre-injury state. Thus the patient could be returned to their pre-accident condition.

This is where I believe chiropractic has a great role to play in serving FMS patients and where research more should be done. We should be developing methods by which we are able to accurately detect and measure slight misalignments of the cervical spine and any resultant craniovertebral stenosis. We should also develop methods and techniques with to correct them with a high degree of accuracy, precision and reproducibility.

This goes beyond mere manipulation and mechanoreceptor stimulation, but it lies at what I believe is the heart of chiropractic – the restoration of subluxed vertebrae to their proper alignment with the reduction of the associated neurological insult.

## **FINAL THOUGHTS**

This article is intended to spur others on to study FMS and the role cervical misalignments may have in its etiology. We need to be able to better serve these patients by improving our knowledge of the mechanics of the cervical spine and the proficiency of our cervical adjusting techniques to be restorative in nature and not merely manipulative. It can, after all, make all the difference in the world.

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**Other Resources:**

The Neuroscience and Endocrinology of Fibromyalgia  
National Institute of Arthritis and Musculoskeletal and Skin Diseases  
[www.nuh.gov/niams/reports/fibrosbo:htm](http://www.nuh.gov/niams/reports/fibrosbo:htm)