

## Neural-Scan Gets to the (Nerve) Root of Fibromyalgia

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**Summary:** Using the Neural-Scan, LSU Pain Center found the majority of fibromyalgia patients have previously undiagnosed nerve-root pathology. Ten of these treated patients were available for a one-year follow-up. All ten were found free of all fibromyalgia symptoms.

### Abstract:

Fibromyalgia is an obscure entity and a topic of on-going discussion between different medical specialties. It is a soft-tissue disorder characterized by diffuse musculoskeletal pain, and specific tender points on examination. We report a series of ten cases that presented with signs and symptoms consistent with the American College of Rheumatology (ACR) 1990 criteria for diagnosis of fibromyalgia (3). Neural-Scan, a sensory nerve conduction exams measuring the minimum voltage required to cause A-delta fiber firing was done on these patients and showed previously undetected nerve root involvement. Based on these findings, these patients were treated with medications and interventional pain procedures with resolution of symptoms and signs previously categorized as fibromyalgia. We therefore propose a neurological mechanism as the primary etiologic factor of fibromyalgia and emphasize Neural-Scan as an important tool in its diagnosis.

### Methods:

Between May 2000 and September 2001, ten patients diagnosed with fibromyalgia, as defined by the 1990 ACR criteria, were seen on our Pain Service at LSUHSC (Louisiana State University Health Sciences Center), Shreveport, Louisiana. As a part of initial workup, they all underwent V-sNCT tests of lumbar and cervical spine. Neural-Scan provides a reproducible (<0.2 mA) functional assessment of the peripheral sensory nervous system by measuring that voltage intensity which initiates membrane potential changes, to propagate a threshold level nerve impulse.

The Neural-Scan tests in nine of ten fibromyalgia patients showed both cervical and lumbar nerve root involvement. One of the ten only showed lumbar nerve root involvement. These patients were prescribed medications and also underwent interventional pain procedures. They were followed-up for six months to one year. They showed good response to treatment with resolution of symptoms, which were previously characterized as fibromyalgia.

To validate our observation that the cause of fibromyalgia is nerve root pathology in one or more than one body regions, we conducted lumbar and cervical tests in 40 patients, who met the 1990 ACR criteria of fibromyalgia. All of these patients showed either lumbar (10/40) or cervical (6/40) or lumbar and cervical (24/40) nerve roots involvement on Neural-Scan tests.

### Conclusions:

1. The basis of fibromyalgia is nerve root involvement. Long-standing nerve root pathology can give rise to muscle spasms and tightness in the same area as well as tension bands particularly in neck region, which over time become tender points. Eventually abnormal synapses form between the somatic and sympathetic nervous system giving rise to CRPS Type-I symptoms and signs, including burning, swelling, temperature changes etc. HPA-(Hypothalamus-Pituitary-Adrenal) axis changes follow or occur concurrently with chronic pain.
2. Nerve root involvement as the basis of fibromyalgia can explain the correlation of fibromyalgia with trauma (5), whiplash neck injury (6) and in such diverse entities as inhalation of petroleum fumes (giving rise to toxic neuropathies) (7), and Lyme disease (8).
3. The good response of our fibromyalgia patients to interventional procedures, including epidural steroid injections, and/or epidural lyses of adhesions, botox injections, sympathetic blocks etc., further supports our theory that the cause of fibromyalgia is nerve root pathology and hence the associated pain can be decreased by appropriate pain procedures.

4. Fibromyalgia patients have generalized aches and pains and the physical examination may yield inconclusive results, but the Neural-Scan test is a valuable aide to diagnosis. In a study conducted at LSUHSC Pain Center, we have shown Neural-Scan has a 96.4% correlation with nerve root lesions as demonstrated on epidurogram (9). Hence nerve root lesions as detected by V-sNCT in fibromyalgia patients further supports our theory that the cause of fibromyalgia is pathology of peripheral nerve roots.