



WESTERN NEUROPATHY ASSOCIATION

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NEGATIVE EMG/NCV SO I DON'T HAVE NEUROPATHY? NOT SO FAST!!

Realief Centers.com, <https://realiefcenters.com/negative-emgncv-so-i-dont-have-neuropathy-not-so-fast/> retrieved July 16, 2022.

A very common method of testing for peripheral nerve damage are electromyograms (EMG) and nerve conduction velocity (NCV) tests, which are called electrodiagnostic tests as well. A good way to think about how they work is that they shoot electrical impulses into one end of your nerves and measure how fast and how "big" the impulses come out of the other end. Based on this testing, the clinician might be able to get a sense of whether the damage is to the ENDS of the nerves (like the hands/feet) or if the problem is at the BEGINNING of the nerves (like a herniated disc by the spine). And the testing may show that you have multiple issues.

What if you have a "negative" EMG/NCV?

Does that mean that you don't have neuropathy? Not necessarily. You see, these two tests are only good for nerves that have a **myelin** sheath. Think of myelin as the insulation around an electrical wire. Its purpose is to speed up nerve impulses for things that have to go FAST like all of the quick corrections we do to stand and walk upright, feel touch, vibration, etc. In general, these types of nerves are called large diameter nerve fibers. Large fiber damage will mostly give symptoms of numbness, tingling, weakness, and loss of coordination (the body loses track of its feet/parts).

Problems with small nerve fibers are not picked up by the EMG/NCV tests

John Hopkins School of Medicine website lists the symptoms of small fiber neuropathy as:

The symptoms of small fiber sensory neuropathy (SFSN) are primarily sensory in nature and include unusual sensations such as pins-and-needles, pricks, tingling and numbness. Some patients may experience burning pain or coldness and electric shock-like brief painful sensations. Since SFSN usually does not involve large sensory fibers that convey balance information to the brain or the motor nerve fibers that control muscles, these patients do not have balance problems or muscle weakness. In most patients, these symptoms start in the feet and progress upwards. In advanced cases, it may involve the hands.¹

That covers a lot of symptoms, right? Confusingly enough there is overlap between the symptoms caused by small fiber damage and large fiber damage. This overlap is not normally a major issue, as many times there is both large and small fiber damage. Here; however, we are addressing someone that might have only small fiber damage. Since the EMG/NCV only picks up large fiber dysfunction, one can certainly have a negative EMG/NCV and still have peripheral neuropathy. Just small fiber peripheral neuropathy – not large fiber peripheral neuropathy.

If someone has the signs and symptoms of peripheral neuropathy and they get a normal EMG/NCV, there is testing that can be done for small fiber neuropathy. It's a skin punch biopsy where a small plug of tissue is taken and sent off to a lab. In the lab the tissue is stained and the small fibers are literally counted under a microscope. The diagnosis of small fiber sensor neuropathy will be made if the small nerve fiber density is reduced (fewer nerve fibers) as compared to a normal person.

Reference

¹ John Hopkins Medicine, retrieved July 16, 2022 from http://www.hopkinsmedicine.org/neurology_neurosurgery/centers_clinics/peripheral_nerve/conditions/small_fiber_sensory_neuropathy.html