Nerve conduction velocity

Nerve conduction velocity (NCV) is a test to see how fast electrical signals move through a nerve.

How the Test is Performed

Patches called surface electrodes are placed on the skin over nerves at different spots. Each patch gives off a very mild electrical impulse. This stimulates the nerve.

The nerve's resulting electrical activity is recorded by the other electrodes. The distance between electrodes and the time it takes for electrical impulses to travel between electrodes are used to measure the speed of the nerve signals.

Electromyography (recording from needles placed into the muscles) is often done at the same time as this test.

How to Prepare for the Test

You must stay at a normal body temperature. Being too cold slows nerve conduction.

Tell your doctor if you have a cardiac defibrillator or pacemaker. Special steps will need to be taken before the test if you have one of these devices.

How the Test will Feel

The impulse may feel like an electric shock. You may feel some discomfort depending on how strong the impulse is. You should feel no pain once the test is finished.

Often, the nerve conduction test is followed by electromyography (EMG). In this test, needles are placed into a muscle and you are told to contract that muscle. This process can be uncomfortable during the test. You may have muscle soreness after the test at the site of the needles.

Why the Test is Performed

This test is used to diagnose nerve damage or destruction. The test may sometimes be used to evaluate diseases of nerve or muscle, including:

- Myopathy
- Lambert-Eaton syndrome
- Myasthenia gravis

Normal Results

NCV is related to the diameter of the nerve and the degree of myelination (the presence of a myelin sheath on the axon) of the nerve. Newborn infants have values that are approximately half that of adults. Adult values are normally reached by age 3 or 4.

Note: Normal value ranges may vary slightly among different laboratories. Talk to your health care provider about the meaning of your specific test results.

What Abnormal Results Mean

Most often, abnormal results are due to nerve damage or destruction, including:

- Axonopathy (damage to the long portion of the nerve cell)
- Conduction block (the impulse is blocked somewhere along the nerve pathway)
- Demyelination (damage and loss of the fatty insulation surrounding the nerve cell)

The nerve damage or destruction may be due to many different conditions, including:

- Alcoholic neuropathy
- Diabetic neuropathy
- Nerve effects of uremia (from kidney failure)
- Traumatic injury to a nerve
- Guillain-Barré syndrome
- Diphtheria
- Carpal tunnel syndrome
- Brachial plexopathy
- Charcot-Marie-Tooth disease (hereditary)
- Chronic inflammatory polyneuropathy
- Common peroneal nerve dysfunction
- Distal median nerve dysfunction

- Femoral nerve dysfunction
- Friedreich ataxia
- General paresis
- Mononeuritis multiplex
- Primary amyloidosis
- Radial nerve dysfunction
- Sciatic nerve dysfunction
- Secondary systemic amyloidosis
- Sensorimotor polyneuropathy
- Tibial nerve dysfunction
- Ulnar nerve dysfunction

Any peripheral neuropathy can cause abnormal results. Damage to the spinal cord and disk herniation (herniated nucleus pulposus) with nerve root compression can also cause abnormal results.

Considerations

An NCV test shows the condition of the best surviving nerve fibers. Therefore, in some cases the results may be normal even if there is nerve damage.

Alternative Names

NCV

References

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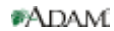

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