Electromyography and Nerve Conduction Study

Electromyography (EMG) and Nerve conduction study (NCS) is a diagnostic procedure to assess the health of the muscles, the nerve cells (motor neuron), the pathway of the nerves and the junction between the nerves and the muscles. While the nerve cells (motor neurons) transmit electrical signals that cause the muscles to contract, the EMG and NCS translate these signals into graphs, sounds and numerical values that a specialist can interpret. EMG and NCS result can reveal nerve or muscle dysfunction or problems with nerve-to-muscle signal transmission.

What is Electromyography (EMG)?

During a needle EMG, a needle electrode is inserted directly into a muscle to record the electrical activity in that muscle.

What is a Nerve Conduction Study (NCS)?

A nerve conduction study uses electrodes taped to the skin (surface electrodes) to measure the speed and strength of signals traveling between two or more points along the nerve path.

When does it need to be done?

Your doctor may order the EMG & NCS if your child has the following signs or symptoms :

- Tingling
- Numbness
- Muscle weakness
- Muscle pain or cramping
- Limb pain

Are there any risks?

EMG is a low-risk procedure, and complications are rare. There is a very small risk of bleeding, infection and nerve injury where a needle electrode is inserted.

Do you need any preparation?

- Don't apply lotions or creams before the exam.
- Wear or bring along short pants and a short sleeved T-shirt to be changed before the exam.
- Let the neurologist know if you are having a pacemaker or other electrical medical device, or taking blood-thinning medication, or have a blood disorder that causes easy or prolonged bleeding

What do you need to know?

- What time do you and your child need to arrive?
- Where is the Electrophysiological diagnostic lab?
- Does your child need to stop taking any prescription before the exam?

Can I stay with my child during the exam?

Yes, you can stay with your child throughout the test. We would prefer to have at most two of your family members to join your child as the room will be too crowded for too many people.

What should you expect during the EMG & NCV study?

Your child will go through the following procedures:

- The neurologist or a technician will place surface electrodes at various locations on your child's skin depending on where your child is experiencing symptoms. Or the neurologist may insert needle electrode at different sites again depending on the presenting symptoms.
- The electrodes will at times transmit a tiny electrical current that your child may feel as a twinge or spasm. The needle electrode may cause discomfort or pain that usually ends shortly after the needle is removed.
- If you concern about discomfort or pain for your child, you may want to talk to the neurologist about taking a short break during the exam.
- During the needle EMG, the neurologist will assess whether there is any spontaneous electrical activity when the muscle is at rest, i.e. the activity that isn't present in healthy muscle tissues , and the degree of activity when you slightly contract the muscle. For older children, he or she will be given the instructions on resting and contracting a muscle at appropriate times. Depending on what muscles and nerves the neurologist is examining, he or she may need to change positions during the exam.

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Results:

The neurologist will interpret the results of your exam and prepare a report. The referring doctor or team who ordered the study will discuss the report with you at a follow-up appointment.