Movement Disorders



Movement disorders are neurological (nervous system) conditions that cause spasms, jerking, or shaking. These conditions may also reduce or slow movement. Disease, genetic conditions, and medications are some of the causes.

Your doctor will do a physical exam with a neurological assessment. The doctor will also check your muscle control and reflexes to help diagnose your condition. Head MRI, Head CT, PET, CT angiography, MR angiography, and other tests may rule out other conditions and confirm your diagnosis. Treatment depends on the underlying cause of your disorder. These treatments may include watchful waiting, Deep Brain Stimulation (DBS), or medication.

What are movement disorders?

Movement disorders are conditions that cause spasms, jerking or shaking. They may reduce or slow movement, and they can affect activities such as writing or playing the piano.

There are generally three types of movement disorders: excessive movement (hyperkinetic), abnormally reduced intentional movement (hypokinetic), and abnormal involuntary movement (dyskinesia).

Genetic conditions, traumatic injury, nervous system disease, infections, medication side effects, and other factors may cause a movement disorder. A history of stroke (http://www.radiologyinfo.org) , high blood pressure, and diabetes (http://www.radiologyinfo.org) may increase your risk, which increases with age.

Symptoms may include:

- tremor, or a rhythmic, involuntary muscle movement that causes shaking in one or more parts of the body. Shaking may occur in the hands, arms, legs, trunk, head, face, and voice.
- jerks/twitches, often in response to loud noises, certain kinds of lighting, or bursts of pain.
- spasms/contractions that may be intermittent or unchanging over time, such as a clenched hand or a twisted foot.
- problems walking, which you can see when someone with functional weakness in one leg "drags" that leg.

Parkinson's disease is a very common movement disorder. Symptoms include tremor, stiffness, slow movement, and difficulty walking. Other types of movement disorders include:

- Essential tremor — uncontrollable shaking in different parts of the body, such as the hands, head, or voice.
- Tourette syndrome — involuntary movements and sounds referred to as tics.
- Dystonia — abnormal twisting or fixed muscle contractions.
- Restless legs syndrome – uncomfortable sensations in the legs or elsewhere cause you to move to relieve them.
- Spasticity — continuous muscle contractions that can interfere with movement.

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How are movement disorders diagnosed and evaluated?

Your doctor will take your medical history and perform a physical exam with a neurological assessment. This will include checking your motor skills and reflexes. You may need to walk a short distance so your doctor can look for any problems with the way you walk.

Your doctor may order more tests, including:

- blood tests.
- lumbar puncture (http://www.radiologyinfo.org) to analyze the cerebrospinal fluid (http://www.radiologyinfo.org) .
- electromyography to measure the electrical impulses along nerves, nerve roots and muscle tissue.
- electroencephalogram (EEG) to check the electrical activity of the brain.
- electrocardiogram (http://www.radiologyinfo.org) (ECG or EKG) to check the heart's electrical activity and determine if heart problems are causing your disorder.
- muscle biopsy (http://www.radiologyinfo.org) to distinguish between nerve and muscle disorders.

Doctors often use imaging tests to help diagnose movement disorders. Imaging alone may not be enough for a definitive diagnosis, but it is often useful in clarifying clinical findings. These tests may include:

- Magnetic Resonance Imaging (MRI) - Head: (https://www.radiologyinfo.org/en/info/mri-brain) MRI can sometimes find problems in the brain that may be related to or cause a movement disorder, such as atrophy in certain parts of the brain.
- Positron Emission Tomography (PET): (https://www.radiologyinfo.org/en/info/pet) Functional and neurochemical brain imaging with PET helps supply information on brain metabolism and chemistry.

Movement disorder symptoms can look like those of stroke and vascular disease. Therefore, your doctor may look at the vessels supplying blood to the brain. Tests include:

- Computed tomography (CT) - Head (https://www.radiologyinfo.org/en/info/headct) to see if your disorder is from a blood clot or brain bleed.
- CT Angiography (CTA) (https://www.radiologyinfo.org/en/info/angioct) to look for any problems in the blood vessels supplying the brain.
- MR Angiography (MRA) (https://www.radiologyinfo.org/en/info/angiomr) to look for problems in the blood vessels supplying the brain. This is similar to CTA, but your doctor can sometimes perform it without intravenous contrast. A more advanced exam, MR perfusion, can provide more information by showing blood flow in the brain.
- Carotid Ultrasound (https://www.radiologyinfo.org/en/info/us-carotid) to check for narrowing and blockages in the carotid arteries using Doppler ultrasound. These issues could lead to a stroke and cause a movement disorder.
- Cerebral Angiography (https://www.radiologyinfo.org/en/info/angiocerebral) to provide a more detailed study of brain vessels. In this procedure, the doctor introduces a catheter in the groin vessels and injects contrast to look at major blood vessels in the brain. Your doctor may use this test if CT or MR arteriography finds something that requires more study.

How are movement disorders treated?

Watchful waiting may be best for some cases. Other cases may require more aggressive treatment. Your doctor may prescribe injections or medications such as:

- beta blockers (http://www.radiologyinfo.org) to reduce shaking and other physical symptoms.
- anti-seizure medications to reduce tremors, especially in the hands.
- anti-cholinergic agents to treat dystonia by reducing the effects of a brain chemical called acetylcholine. This may decrease tremors or muscle stiffness.

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- anti-anxiety medications to work on the central nervous system and relax the muscles to supply short-term relief from spasms.
- botulinum toxin (Botox®) to block certain chemicals in the brain (neurotransmitters) that can cause muscle spasms.

If you have a movement disorder, Deep Brain Stimulation (DBS) may reduce your involuntary movements. A two-part procedure first implants a small electrode in the brain using general anesthesia. The second surgery connects a wire from the electrode to a small battery pack that sends electrical impulses by pushing a button. Once the electrode is in place, you can adjust the device on your own. You will work with a neurologist to determine the combination of settings that best control your symptoms.

Doctors are studying MR-guided Focused Ultrasound (MRgFUS) as a treatment for some movement disorders. The procedure uses focused beams of sound energy to heat and destroy a small volume of brain tissue without harming adjacent tissue.

Which test, procedure, or treatment is best for me?

- *Ataxia (https://www.radiologyinfo.org/en/info/acs-ataxia)*
- *Ataxia-Child (https://www.radiologyinfo.org/en/info/acs-ataxia-child)*

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