

What Is Microvascular Cranial Nerve Palsy?

Microvascular cranial nerve palsy (MCNP) is a neurological condition involving the small blood vessels that affects the muscles that move the eyes. With MCNP, there is a blockage of blood flow to the nerves between the brain stem and muscles within the eye socket, as well as other nerves that affect visual function.

With MCNP, you may not be able to move your eyes in one or more directions, depending on the muscles affected, and you may experience double vision. You may also have a droopy eyelid. Double vision and droopy eyelids can also be symptoms of a number of life-threatening conditions, so if you experience either symptom you should see your ophthalmologist (Eye M.D.) as soon as possible.

MCNP is one of the most common causes of acute double vision among older people. It occurs more often in people with diabetes and high blood pressure. MCNP is sometimes called "diabetic" palsy of the eye. Occasionally MCNP can occur in younger people with migraine. This condition almost always resolves on its own without leaving any double vision.

Six muscles move your eyes. Four of these muscles attach to the front part of your eye (just behind the iris, or the colored portion of the eye). Two muscles that attach behind the four forward muscles are responsible for some of the up-and-down (vertical) movement and most of the twisting movement of each eye. These six muscles receive their signals from three cranial nerves that begin in the brain stem.

A nerve cannot function properly when its blood flow is blocked. If the sixth cranial nerve (also called the abducens nerve) is affected, your eye will not be able to move to the outside and you will be aware of horizontal double vision (seeing side-by-side images). If the fourth cranial nerve (also called the trochlear nerve) is affected, you will be aware of vertical double vision (one image on top of another). You may be able to eliminate or decrease the double vision by tilting your head towards the opposite shoulder.

The third cranial nerve (also called the oculomotor nerve) supplies four of the six eye muscles. These are some of the muscles that control the eyelid and the size of the pupil. When the third cranial nerve is affected, your eye may be limited in its up-and-down motion and may turn away from your nose. The eyelid may droop. You usually experience combined vertical and side-by-side double vision.

Microvascular Cranial Nerve Palsy Causes

It is not always clear what causes the blockage in the tiny blood vessels to the cranial nerves, depriving these nerves of oxygen. In some cases, diabetes, high blood pressure or hardening of the arteries may be risk factors. In young patients, migraine may affect these tiny vessels.

Occasionally MCNP may result from a blocked vessel in the covering of the brain, which can be associated with pain around the eye. The nerves are not permanently injured, and over a period of six to 12 weeks, a good portion of normal function should recover.

If double vision from MCNP does not go away, it is very important to tell your Eye M.D. If you experience double vision or a droopy eyelid and have not been diagnosed with MCNP, it is critical to see your Eye M.D. as soon as possible, as these can be symptoms of a number of life-threatening conditions.

Microvascular Cranial Nerve Palsy Symptoms

The signs of MCNP are usually problems with movement of your eyes that lead to blurred or double vision. If severely affected, your eye may not be able to move at all in one or more directions. Sometimes there may only be a slowing of movement.

Symptoms of MCNP may include:

- Weakness in one or more eye muscles
- Blurred vision that improves by closing either eye
- Double vision
- Pain in or around the eye (related to lack of blood flow to the covering of the brain), which commonly occurs at the onset of double vision
- Drooping eyelid (called ptosis)
- Enlarged pupil (rarely)

If you are [diagnosed](#) with MCNP, it is very important to tell your doctor if you have new symptoms of double vision that appear after your diagnosis or if your double vision fails to resolve.

Microvascular Cranial Nerve Palsy Diagnosis

Your Eye M.D. will perform a complete medical eye examination to help determine what pattern your double vision fits and whether or not it is an isolated cranial nerve weakness.

If you have multiple microvascular cranial nerve palsies, involvement of the pupil, or have MCNP at a younger age, a neurologic exam and imaging study (such as CT, MRI scan, or angiogram) may be necessary.

Anyone diagnosed with MCNP should have their blood pressure and blood sugar checked to make sure they do not have diabetes or hypertension — key risk factors for MCNP.

Microvascular Cranial Nerve Palsy Treatment

There is no way to speed the natural recovery time for MCNP. Double vision may be treated by patching either eye. If the double vision persists, it may be possible to use prism glasses or to consider eye muscle surgery if recovery has not been complete. It is very important to tell your doctor if you have new symptoms of double vision after diagnosis or if your double vision fails to resolve.

Anti-inflammatory drugs such as ibuprofen (Advil® or Motrin®) may help if there is associated pain with MCNP.

It is important to make sure that blood pressure and blood sugar are adequately controlled. Risk factors that increase the chance of MCNP (such as diabetes, high blood pressure and smoking) also increase your risk of stroke. It is important that your doctor check to make sure that any risk factors you have be reduced or treated. Strict follow-up with your primary care physician is crucial.