CONDITION

Horner syndrome

Horner syndrome is a pattern of eye and facial changes caused by disruption of a sympathetic nerve pathway.

WHAT IT IS
Disruption of sympathetic nerves supplying one eye and face

BODY SYSTEM
Nervous system and eyes

MAIN SYMPTOMS
Small pupil, drooping eyelid, reduced facial sweating

WHAT CAUSES IT
Nerve injury from another condition, procedure, or trauma

HOW IT IS DIAGNOSED
Eye examination and medicated pupil-drop testing

MAIN TREATMENT
Treatment of the underlying cause

CAN IT BE CURED?
Sometimes - when the underlying cause is treatable

IS IT AN EMERGENCY?
Sometimes - sudden painful onset may signal an artery tear

LONG-TERM OUTLOOK
Usually stable; outlook follows the underlying cause

Overview

Horner syndrome is a group of signs caused by a problem in the sympathetic nerve pathway leading to one side of your face and eye. These nerves help control pupil size, eyelid position, and sweating.

The pathway is long. It begins in the brain, travels down the spinal cord, passes through the upper chest and neck, and then follows blood vessels into the face. A problem anywhere along this route can cause Horner syndrome.

The affected eye usually has a smaller pupil and a mildly drooping upper eyelid. Sweating may also be reduced on that side of the face. The syndrome itself often causes little or no loss of sight.

Horner syndrome matters because it can be the first visible sign of another condition. Some causes are longstanding or harmless. Others, such as a tear in a neck artery or a stroke, need urgent assessment. The timing, associated symptoms, and your medical history help determine how quickly it should be investigated.

Horner syndrome is a condition rather than a single disease. It describes the effects of interrupted nerve signals but does not identify why that interruption occurred.

Symptoms

Horner syndrome usually affects only one side. Its main features are:

Both pupils normally widen in dim light. In Horner syndrome, the affected pupil widens more slowly. This can make the difference between the pupils clearer at night or in a dark room.

The eyelid droop is often slight. It may make the eye look smaller, but it does not usually close the eye completely. The eye may appear sunken, although it generally has not moved backward in the eye socket.

Reduced sweating depends on where the nerve pathway is affected. It may involve the whole side of the face or only a smaller area. In some people, especially those with a problem closer to the eye, sweating remains normal.

Children born with Horner syndrome may have different eye colours. The iris, which is the coloured part of the eye, may be lighter on the affected side because sympathetic nerves help pigment develop during early life. This is called iris heterochromia .

Horner syndrome does not usually cause double vision, major eye pain, or severe sight loss by itself. These symptoms may point to the underlying cause or to a different eye or nerve problem.

- A smaller pupil, called miosis
- Mild drooping of the upper eyelid, called ptosis
- A slightly raised lower eyelid
- Reduced sweating, called anhidrosis , on part of the face
- A difference in pupil size that is more noticeable in darkness

Causes and risk factors

Horner syndrome occurs when sympathetic nerve signals cannot complete their route from

the brain to the eye. Clinicians sometimes divide this pathway into three sections.

The first section runs from the brain through the brainstem and spinal cord. It can be affected by a stroke, spinal cord injury, inflammation, or a growth pressing on nervous tissue.

The second section leaves the spinal cord, crosses the upper chest, and travels into the neck. Problems in this area can include chest or neck surgery, traumatic injury, or a growth near the top of a lung or along the nerve pathway.

The third section travels beside the carotid artery in the neck and continues into the skull and eye. It can be affected by injury or a tear in the wall of the carotid artery, known as carotid artery dissection . Certain severe headache disorders can also cause temporary Horner signs during attacks.

Some people develop Horner syndrome after medical procedures involving the neck, chest, spine, or nearby nerves. It may also follow difficult childbirth if nerves around a baby's shoulder and neck are injured.

In children, Horner syndrome may be present from birth or develop later. Possible causes include birth injury, surgery, trauma, or, less commonly, a tumour involving sympathetic nerves. New signs in a child need a medical assessment even if the child otherwise seems well.

Sometimes no cause is found after appropriate testing. This is called idiopathic Horner syndrome.

Horner syndrome is not contagious. It is not usually inherited, although rare inherited forms have been described.

Diagnosis

Diagnosis begins with an eye and nerve examination. The clinician compares your pupils in bright and dim light and looks at how quickly each pupil changes size. Eyelid position, eye movements, sweating, facial sensation, and other nerve functions may also be checked.

Old photographs can be helpful. They may show whether unequal pupils or a drooping eyelid has been present for years rather than appearing recently.

Medicated eye drops may be used to support the diagnosis. Apraclonidine drops can produce a characteristic response in an affected eye because its pupil becomes unusually sensitive after loss of sympathetic nerve input. The result must be interpreted with the examination and medical history. Testing can be less reliable very soon after symptoms begin, and special care is needed when evaluating infants and young children.

Confirming Horner syndrome is only one part of the assessment. The next step is finding

where the nerve pathway is affected and why.

Imaging may include MRI or CT scans of the brain, neck, chest, or blood vessels. The choice and urgency depend on factors such as sudden or gradual onset, pain, trauma, age, and other nerve symptoms. A suspected carotid artery dissection requires urgent imaging of the blood vessels in the head and neck.

Children may need imaging along the nerve pathway and urine or blood tests for substances produced by certain nerve-related tumours. The exact investigation is based on the child's history, examination, and age.

Treatment and management

There is no single treatment that restores the sympathetic nerve pathway in every case. Management focuses on the underlying cause.

For example, treatment may address a blood vessel problem, inflammation, a stroke, an injury, or a growth pressing on a nerve. Care may involve neurology, eye, vascular, cancer, chest, or paediatric specialists.

When no treatable cause is found and the signs are stable, Horner syndrome itself may not need treatment. The smaller pupil usually continues to react to light, and many people retain normal or near-normal vision.

A mild drooping eyelid may not require any intervention. If it interferes with sight or remains bothersome after the condition has stabilised, an eye specialist can discuss eyelid surgery. This is usually considered separately from treatment of the underlying nerve problem.

Children need attention to visual development. A drooping eyelid that blocks the pupil, or a focusing difference between the eyes, can contribute to amblyopia , sometimes called lazy eye. This means the brain does not develop normal vision from one eye. Early eye follow-up can identify and treat this risk.

Complications

Horner syndrome itself rarely causes major vision loss. The more important complications usually come from the condition that damaged the nerve pathway.

Possible effects of the syndrome include:

Reduced facial sweating may affect comfort in hot conditions, especially if a large area is involved. However, many people have little difficulty with temperature control.

A sudden Horner syndrome caused by carotid artery dissection can occur before or with a stroke. This is why new signs accompanied by head, eye, face, or neck pain are treated as urgent.

- Persistent difference in pupil size
- Ongoing mild eyelid droop
- Reduced sweating on one side of the face
- Unequal iris colour when it begins early in childhood
- Amblyopia in a child if vision is obstructed or develops unevenly

Prevention

Horner syndrome usually cannot be prevented because it results from another condition, an injury, or a medical procedure. Congenital cases are not caused by anything a parent did during pregnancy.

General safety measures, such as using seat belts and appropriate protective equipment, may reduce the chance of serious neck or chest injuries. They cannot prevent every case.

If you already have diagnosed Horner syndrome, follow-up cannot necessarily reverse the nerve damage. Its purpose is to monitor the underlying cause, identify changes, and protect vision where needed.

Living with it and what to expect

What happens over time depends mainly on the cause and the degree of nerve injury.

If pressure, inflammation, or another treatable problem is removed, the eyelid and pupil changes may improve over weeks or months. Recovery can be partial rather than complete. When the nerve has been permanently damaged, the smaller pupil and mild eyelid droop may remain stable for years.

Some cases linked to headache disorders appear only during attacks. Horner syndrome present from birth may remain visible throughout life, including a lasting difference in iris colour.

Most people can read, work, drive if otherwise medically fit, and continue usual activities. The difference in pupil size may be more noticeable in dim light, and some people are more aware of the eyelid's appearance than of any functional problem.

Routine follow-up may include checking that the signs remain stable and reviewing the condition that caused them. Children may need repeated vision checks as their eyes develop.

A change in a previously stable pattern deserves reassessment. New pain, a larger eyelid droop, double vision, weakness, or other nerve symptoms should not be assumed to be part of longstanding Horner syndrome.

When to get medical help

Seek emergency medical care for newly developed unequal pupils or eyelid drooping with:

These combinations can occur with a carotid artery dissection, stroke, or another condition needing rapid assessment. Do not drive yourself if you have possible stroke symptoms.

Arrange urgent medical assessment for a new small pupil and drooping eyelid even if there is no pain, especially when the time of onset is clear. A child with newly noticed Horner signs should also be assessed promptly.

Routine follow-up is appropriate for diagnosed, stable Horner syndrome when no new symptoms have appeared. Bring forward the appointment if the eyelid droop changes, sight becomes affected, or other neurological symptoms develop.

- Sudden neck, head, eye, or facial pain
- Weakness or numbness on one side
- Trouble speaking, swallowing, walking, or staying balanced
- A sudden severe headache
- New double vision or loss of vision
- Recent significant head or neck injury

Common questions

Is Horner syndrome dangerous?

The eye signs themselves are often not dangerous. The cause can range from an old nerve injury to an urgent blood vessel or brain problem. New or painful symptoms need prompt assessment.

Can Horner syndrome go away?

Sometimes. Improvement is more likely when the underlying cause can be treated and the nerve is not permanently damaged. In other cases, the pupil difference or eyelid droop remains

stable.

Does Horner syndrome affect eyesight?

It usually does not cause major sight loss. A drooping eyelid can occasionally block vision, particularly in a young child. Any sudden loss of vision or double vision needs urgent assessment because it is not a typical isolated feature.

Why is the pupil difference greater in the dark?

The affected pupil cannot widen normally because it has lost sympathetic nerve input. In bright light, both pupils become smaller, so the difference may be less obvious.

Is Horner syndrome inherited?

Most cases are not inherited. They are caused by a problem somewhere along the nerve pathway. Rare familial cases have been reported, but they are not the usual pattern.

Can Horner syndrome be present from birth?

Yes. It may follow injury to nerves during birth or have another congenital cause. A baby or child with suspected Horner syndrome needs assessment of the nerve pathway and ongoing checks of visual development.

Sources

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