

The Carotid Artery and the Eye

What is the carotid artery?

The two carotid (pronounced ka-rah-tid) arteries are the main arteries in the neck that supply blood to the eyes and the brain. One carotid artery supplies the right side, while the other serves the left. Because the eye and the brain share the same source of blood supply, blockages or conditions of the carotid artery can affect either or both organs.

What happens when the carotid artery is blocked?

When the large or small branches of the carotid artery are blocked, the brain is deprived of blood and a stroke may result. Depending on the part of the brain involved and the size of the area deprived of its blood supply, the effects of a stroke may be slight or devastating. Severe effects can include paralysis of one side of the body and loss of speech. If the part of the brain having to do with vision is involved, a stroke can lead to loss of side vision.

When the ophthalmic artery (the first main branch of the internal carotid artery) or its branch (the central retinal artery) is blocked, a sudden near-total loss of vision usually occurs. The mechanism of damage is the same in the brain and the eye. Cells die if they are deprived of blood for too long.

Is this damage permanent?

Not everyone who suffers a blocked blood supply to the eye or the brain has permanent damage. A temporary blockage of blood supply to the brain, called a transient ischemic attack (TIA), may result in muscle weakness on one side of the body or numbness of an arm or leg that only lasts about an hour, for example.

A temporary blockage of blood supply to the eye, called amaurosis fugax or fleeting blindness, can cause a temporary loss of vision in one eye. This sometimes appears like a curtain descending over all or part of your vision in that eye and may typically last for several minutes.

Both transient ischemic and amaurosis fugax attacks are possible warnings of a stroke. They can indicate a serious problem involving the brain's blood supply and should be reported to an ophthalmologist, who may recommend further tests.

Are there other signs of carotid artery disease?

As part of a routine eye exam, the ophthalmologist may dilate the pupil to examine the retina at the back of the eye. During this procedure, conditions that may indicate an increased risk of stroke are sometimes discovered.

For instance, when the carotid artery becomes gradually blocked, the first signs can appear in the eye, providing critical clues to a life-threatening reduction of circulation to the brain.

If a cholesterol plaque is found in your eye during a routine exam, further evaluation may be indicated. Other plaques from the carotid artery may break off, block the brain's blood supply and cause a stroke.

What further tests or treatments may be needed?

Ultrasound may be helpful to measure the flow of blood through the arteries. When a more accurate view of the arteries is required, a special x-ray test called an angiogram or angiography may be ordered. Angiography involves injecting an iodine-containing dye into the artery and taking pictures of the blood flowing into the brain. If an abnormality is found, surgery may be recommended to correct the blockage. The most common operation is an endarterectomy, in which the blockage on the inner wall of the artery is removed.

Routine, comprehensive medical eye examinations can help ensure healthy vision and can provide important information concerning carotid artery disease. If problems are detected, your ophthalmologist will work with your other medical doctors to coordinate your complete medical care.

Why are regular medical eye examinations important for everyone?

Eye disease can occur at any age. Many eye diseases do not cause symptoms until the disease has done damage. Since most blindness is preventable if diagnosed and treated early, regular medical examinations by an ophthalmologist are very important.

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