



Vascular cognitive impairment and vascular dementia

Overview

Vascular cognitive impairment is a term used to describe the changes in thinking and memory that occur when there isn't enough blood flow to part of the brain, as can happen with a stroke. "Vascular" refers to blood flow and blood vessels. "Cognitive impairment" refers to changes in the way that you think. Vascular cognitive impairment can cause issues with language, decision-making, planning and judgment.

Previously, only the term "vascular dementia" was used to describe memory and thinking changes caused by problems with blood flow. But experts started using the term "vascular cognitive impairment" because it better represents the wide range of types and the severity of cognitive changes caused by vascular problems. Both terms still are used, but now they are used to describe different points on the spectrum of dementia:

- **Vascular cognitive impairment (vascular mild cognitive impairment, mild VCI, VaMCI).** This term indicates milder symptoms that don't affect daily living. These changes mostly affect thinking skills, memory, focus and language.
- **Vascular dementia (vascular major cognitive impairment, major VCI, VaD).** This term describes significant symptoms of dementia that affect daily living. Symptoms may be similar to vascular mild cognitive impairment but are more severe and may be more like symptoms of Alzheimer's disease. Vascular dementia sometimes is called major vascular cognitive impairment.

Vascular cognitive impairment and vascular dementia can happen after a stroke. A stroke may occur when a blood clot blocks an artery or a blood vessel bursts and causes bleeding inside the brain. Both of these events cut off the oxygen and nutrients brain cells need. Not every stroke leads to vascular cognitive impairment. Whether thinking and memory are affected depends on how severe the stroke is and where in the brain it happens.

Vascular cognitive impairment and vascular dementia also can result from other conditions that damage blood vessels and reduce circulation. Factors that increase your risk of heart disease and stroke also raise your risk of vascular cognitive impairment. Those factors include diabetes, high blood pressure, high cholesterol and smoking. Managing these factors may help lower your chances of developing vascular cognitive impairment.

Types of vascular cognitive impairment:

- **Multi-infarct dementia.** This type of vascular cognitive impairment is caused by several strokes, often affecting different parts of the brain. Over time, the damage from these strokes can affect memory and thinking.
- **Post-stroke dementia.** This type of major vascular cognitive impairment occurs in someone who has dementia symptoms within six months after having a stroke. The dementia does not go away. The person may or may not have had any dementia symptoms before the stroke.
- **Mixed dementia.** This term usually means that a person has both Alzheimer's disease and a type of vascular dementia. It sometimes is used to describe any combination of dementias. It's more common in older adults.
- **Subcortical ischemic vascular dementia.** This happens when there is damage to the small blood vessels and nerve fibers found in the white matter of the brain. This is most common in people with blood vessel disease or high blood pressure or those who have had an earlier stroke. Early symptoms often include trouble with attention, planning and movement rather than memory.

Symptoms

Vascular cognitive impairment symptoms vary depending on which area of the brain isn't getting enough blood flow. Symptoms often overlap with those of other types of dementia, especially Alzheimer's disease. In contrast to Alzheimer's, early symptoms of vascular cognitive impairment tend to affect the speed of thinking and problem-solving rather than memory loss.

There aren't specific stages of vascular cognitive impairment or vascular dementia, but the condition does tend to progress and get worse over time. Symptoms usually appear right afterward if vascular cognitive impairment is caused by a stroke. Symptoms may appear slowly over time if vascular cognitive impairment is caused by small blood vessel disease.

Vascular cognitive impairment symptoms include:

Thinking and communication changes

- Confusion.
- Trouble finding the right words.
- Difficulty paying attention.
- Trouble organizing thoughts or actions.
- Difficulty planning and following through with plans.
- Slowed thinking.
- Uncertainty about what to do next.
- Memory issues.

Behavior and mood changes

- Restlessness or agitation.
- Depression or lack of interest (apathy).

Physical changes

- Unsteady walk or poor balance.
- Sudden or frequent need to urinate or trouble controlling urine.

Vascular cognitive impairment symptoms may be most obvious when they occur suddenly following a stroke. When changes in thinking and reasoning seem clearly linked to a stroke, this condition sometimes is called post-stroke dementia.

Sometimes a pattern of vascular cognitive impairment symptoms follows a series of strokes or ministrokes, known as transient ischemic attacks. Changes in thought processes occur in noticeable steps downward from the earlier level of function. This is unlike the gradual, steady decline that typically occurs in Alzheimer's disease.

But vascular cognitive impairment can develop gradually as in Alzheimer's disease dementia. And vascular cognitive impairment and Alzheimer's disease often occur together.

Studies show that many people with dementia and evidence of brain vascular disease also have Alzheimer's disease.

Causes

Vascular cognitive impairment and vascular dementia result from conditions that damage the brain's blood vessels. When blood vessels in the brain are damaged, they're not able to supply the brain with enough nutrition and oxygen. This affects a person's thought processes.

Common conditions that may lead to vascular cognitive impairment include:

- **Stroke that blocks a brain artery.** Strokes that block a brain artery usually cause a range of symptoms that may include vascular cognitive impairment. But some strokes don't cause any noticeable symptoms. These silent strokes still increase dementia risk.

The risk of vascular cognitive impairment increases with the number of strokes that occur over time. This is true for both silent and apparent strokes.

- **Brain hemorrhage.** A brain hemorrhage often is caused by high blood pressure weakening a blood vessel. This leads to bleeding into the brain. A brain hemorrhage also may happen when there's a buildup of protein in small blood vessels, which occurs with aging. The buildup weakens the blood vessels over time and causes bleeding, known as cerebral amyloid angiopathy. Bleeding into the brain causes damage that can lead to vascular cognitive impairment.
- **Narrowed or damaged brain blood vessels.** Any condition that narrows or damages brain blood vessels can lead to vascular cognitive impairment. These conditions include the wear and tear associated with aging, high blood pressure, diabetes, and the buildup of cholesterol and other substances in the arteries, known as atherosclerosis.

Risk factors

In general, the risk factors for vascular cognitive impairment are the same as those for heart disease and stroke. Risk factors for vascular cognitive impairment include:

Risk factors you can't change

- **Increasing age.** The risk of vascular cognitive impairment increases with age. The condition is rare before age 65.
- **Family history.** While vascular cognitive impairment isn't inherited, many of the risk factors for it are. This includes conditions such as high blood pressure and diabetes.

Medical conditions

- **History of heart attacks, strokes or ministrokes.** If you've had a heart attack, you may be at increased risk of blood vessel problems in your brain. The damage that occurs with a stroke or a ministroke also may increase your risk of developing vascular cognitive impairment.
- **Atherosclerosis.** This condition occurs when cholesterol and other substances known as plaques build up in your arteries and narrow your blood vessels. Atherosclerosis can increase your risk of vascular cognitive impairment by reducing the flow of blood that nourishes your brain.
- **High cholesterol.** Higher levels of low-density lipoprotein (LDL), the "bad" cholesterol, are associated with an increased risk of vascular cognitive impairment.
- **High blood pressure.** High blood pressure puts extra stress on blood vessels everywhere in your body, including in your brain. This increases the risk of vascular problems in the brain.
- **Diabetes.** High blood sugar levels damage blood vessels throughout your body. Damage in brain blood vessels can increase your risk of stroke and vascular cognitive impairment.
- **Atrial fibrillation.** In this condition, the upper chambers of the heart begin to beat rapidly and irregularly, out of coordination with the heart's lower chambers. Atrial fibrillation increases your risk of stroke. It causes blood clots to form in the heart. Blood clots can break off and travel to blood vessels in the brain causing stroke.

Risk factors you can change

- **Smoking.** Smoking damages your blood vessels. Smoking increases the risk of atherosclerosis and other circulatory diseases, including vascular cognitive impairment.
- **Obesity.** Being overweight is a well-known risk factor for vascular diseases. Obesity also is thought to increase the risk of vascular cognitive impairment.

Prevention

The health of your brain's blood vessels is closely linked to your overall heart health. Taking these steps to keep your heart healthy also may help lower your risk of vascular cognitive impairment:

- **Maintain a healthy blood pressure.** Keeping your blood pressure in the healthy range may help prevent vascular cognitive impairment. High blood pressure strains the blood vessels in your brain and increases your risk of strokes and cognitive decline.
- **Prevent or manage diabetes.** Lowering your risk of type 2 diabetes with diet and exercise is another possible way to decrease your risk of dementia. If you already have diabetes, managing your blood sugar levels may help protect the small blood vessels in your brain from damage.
- **Quit smoking.** Smoking tobacco damages blood vessels everywhere in the body, including the brain.
- **Get physical exercise.** Regular physical activity should be a key part of everyone's wellness plan. Exercise improves heart health, blood flow and brain function. It also may help prevent vascular cognitive impairment later in life.
- **Keep your cholesterol in check.** Eating a healthy, low-fat diet and taking cholesterol-lowering medicines if you need them may reduce your risk of strokes and heart attacks. That could lower your risk of vascular cognitive impairment by reducing the amount of plaques building up inside your brain's arteries.

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