# Vascular dementia

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**Overview**

Vascular dementia is a type of dementia that occurs when there is damage to the blood vessels in the brain. It is the second most common form of dementia after Alzheimer's disease, accounting for around 15-20% of all cases of dementia. Vascular dementia is caused by a variety of conditions that affect the blood vessels in the brain, including strokes, small vessel disease, and chronic hypertension.

**Symptoms**

Symptoms of vascular dementia vary depending on the severity and location of the brain damage. The symptoms of vascular dementia may develop gradually over time or may occur suddenly after a stroke or other vascular event.

The symptoms and signs of vascular dementia can vary widely between individuals, but commonly include:

* Memory loss - Patients with vascular dementia may experience difficulty with short-term memory, including forgetting recent events or conversations.
* Difficulty with concentration and attention - Vascular dementia can cause difficulty with paying attention, processing information, and making decisions.
* Language problems - Patients with vascular dementia may have difficulty finding the right words, understanding language, or following a conversation.
* Disorientation - Vascular dementia can cause confusion, disorientation, and difficulty with spatial awareness.
* Mood changes - Patients with vascular dementia may experience mood changes such as depression, anxiety, or apathy.
* Difficulty with daily activities - Patients with vascular dementia may have difficulty with activities of daily living, such as dressing, grooming, and preparing meals.
* Changes in personality - Vascular dementia can cause changes in personality, including irritability, aggression, or social withdrawal.

In addition to these cognitive symptoms, patients with vascular dementia may also experience physical symptoms such as weakness, numbness, or difficulty with coordination. Vascular dementia may also increase the risk of falls, urinary incontinence, and difficulty with swallowing.

The symptoms of vascular dementia can be similar to those of other types of dementia, including Alzheimer's disease. However, the onset of symptoms in vascular dementia may be more sudden, and may be associated with a history of stroke or other vascular risk factors such as hypertension or diabetes.

**Diagnosis**

Diagnosis of vascular dementia is typically made through a combination of medical history, physical examination, cognitive testing, and brain imaging studies.

Magnetic resonance imaging (MRI) is an important tool in the diagnosis and management of vascular dementia. MRI can detect changes in the brain tissue that are characteristic of vascular dementia, including white matter hyperintensities, infarcts, and microbleeds.

White matter hyperintensities are areas of increased signal intensity on T2-weighted MRI images that are commonly seen in patients with vascular dementia. These hyperintensities are thought to represent areas of ischemia or damage to the small blood vessels in the brain. The severity and extent of white matter hyperintensities on MRI may correlate with the severity of cognitive impairment in patients with vascular dementia.

Infarcts are areas of brain tissue that have been damaged due to lack of blood flow. On MRI, infarcts appear as areas of decreased signal intensity on T1-weighted images and increased signal intensity on T2-weighted images. Multiple infarcts scattered throughout the brain are a characteristic feature of vascular dementia.

Microbleeds are small areas of bleeding in the brain that can be detected on MRI using gradient echo sequences. Microbleeds are thought to be caused by damage to the small blood vessels in the brain and may contribute to the development and progression of vascular dementia.

MRI can also be used to evaluate the structure and function of the brain, including the size of the brain, the volume of gray matter and white matter, and the integrity of the white matter tracts that connect different regions of the brain. Changes in brain structure and function seen on MRI may be useful in predicting the risk of cognitive decline and dementia in patients with vascular disease.

**CADASIL**

Cerebral autosomal dominant arteriopathy with subcortical infarcts and leukoencephalopathy (CADASIL) is a rare inherited condition that affects the small blood vessels in the brain. It is caused by mutations in the NOTCH3 gene, which encodes a protein that is important for maintaining the structure and function of blood vessels.

CADASIL typically presents in mid-adulthood, and the symptoms can vary widely between individuals. The most common symptoms include migraines, recurrent strokes, cognitive impairment, and mood disorders. Other symptoms may include changes in gait, seizures, and visual disturbances.

Diagnosis of CADASIL is typically made through genetic testing, which can identify mutations in the NOTCH3 gene. Brain imaging studies such as magnetic resonance imaging (MRI) may also be used to detect characteristic changes in the brain tissue associated with CADASIL.

Currently, there is no cure for CADASIL, and treatment is primarily focused on managing symptoms and preventing complications such as stroke. Medications such as antiplatelet agents and anticoagulants may be used to prevent blood clots and reduce the risk of stroke. Cognitive and mood disorders may be managed with medications such as antidepressants and antipsychotics. Lifestyle interventions such as regular exercise and a healthy diet may also be helpful in managing symptoms and preventing complications.

In terms of prognosis, the course of CADASIL can be highly variable. Some individuals may experience only mild symptoms, while others may have a more severe disease course with significant disability and cognitive decline. In general, the earlier the onset of symptoms, the more severe the disease course is likely to be.

**Treatment and prevention**

In terms of treatment, there is limited evidence to support the use of specific medications for vascular dementia. However, medications used to treat other vascular conditions such as hypertension and hyperlipidemia may help to slow the progression of the disease. Prevention of vascular dementia is an important area of research, and there is evidence to suggest that controlling risk factors such as high blood pressure, high cholesterol, and diabetes can help to reduce the risk of developing the disease. It is also important to maintain a healthy lifestyle, including regular exercise, a balanced diet, and not smoking.

**Conclusions**

In conclusion, vascular dementia is a common form of dementia that can have a significant impact on quality of life. While there is no cure, medications and lifestyle changes can help to manage symptoms and slow the progression of the disease. Prevention is key, and controlling risk factors can help to reduce the risk of developing vascular dementia. Further research in this area is needed to develop more effective treatments and prevention strategies.