CONDITION

Vertebrobasilar circulatory disorders

A group of conditions that reduce or block blood flow to the back of the brain.

WHAT IT IS
Reduced or blocked blood flow through the brain's posterior arteries

BODY SYSTEM
Brain, nervous system, heart and circulation

MAIN SYMPTOMS
Sudden vertigo, double vision, imbalance, slurred speech

WHAT CAUSES IT
Artery narrowing, clots, dissection, or compression

HOW IT IS DIAGNOSED
Brain MRI plus CT or MR angiography

MAIN TREATMENT
Emergency stroke care and prevention of further clots

CAN IT BE CURED?
Sometimes - a treatable cause can be corrected

IS IT AN EMERGENCY?
Sometimes - sudden symptoms may mean stroke

LONG-TERM OUTLOOK
Many remain stable; stroke effects can persist

Overview

Vertebrobasilar circulatory disorders are conditions that affect blood flow through the vertebral and basilar arteries. These arteries supply the brainstem, cerebellum, and parts of the back of the brain. These areas help control balance, coordination, vision, swallowing, speech, breathing, and alertness.

Two vertebral arteries travel up the back of the neck and join to form the basilar artery. Together, they are called the posterior circulation.

Blood flow may be reduced by a narrowed artery, a blood clot, damage to an artery wall, or, more rarely, pressure on an artery. A brief blockage can cause a transient ischemic attack, or TIA. A TIA causes stroke-like symptoms that clear, but it is still an urgent warning. A blockage that injures brain tissue causes an ischemic stroke.

"Vertebrobasilar insufficiency" is an older term often used for temporary symptoms caused by reduced posterior circulation blood flow. However, dizziness or imbalance alone does not prove that blood flow is the cause. Inner-ear disorders, migraine, medication effects, and other conditions can produce similar symptoms.

Symptoms

Symptoms usually begin suddenly when they are caused by a TIA or stroke. They may occur together, improve and return, or last only a few minutes.

Possible symptoms include:

Severe basilar artery blockage can cause major weakness, loss of consciousness, breathing problems, or an inability to move or speak.

Vertigo is common and is usually caused by an inner-ear problem rather than poor brain circulation. Posterior circulation ischemia becomes more concerning when vertigo starts abruptly and occurs with double vision, slurred speech, weakness, numbness, severe imbalance, or an inability to walk.

Symptoms triggered repeatedly by turning the head are sometimes linked to mechanical compression of a vertebral artery. This is rare and needs specialist assessment rather than self-testing.

- Vertigo, meaning a spinning or moving sensation
- New trouble walking, standing, or coordinating movements
- Double vision or loss of part of the visual field
- Slurred speech or difficulty finding or understanding words
- Trouble swallowing
- Numbness or weakness, sometimes affecting one or both sides
- Sudden clumsiness or loss of coordination
- Nausea or vomiting with other neurological symptoms
- A sudden fall without losing consciousness
- Unusual sleepiness, confusion, or reduced alertness

Causes and risk factors

Atherosclerosis is a common cause. This is a gradual buildup of fatty material inside an artery wall, which narrows the space available for blood flow. A clot may form at the narrowed area or travel farther into the brain.

A clot can also travel from the heart. This is more likely with atrial fibrillation, an irregular heartbeat that can allow blood to pool and clot.

Other causes include:

Dissection may happen without a clear trigger. It can also follow a neck injury and is an important cause of stroke in younger adults. It may cause new pain at the back of the head or neck before neurological symptoms begin.

Factors linked to atherosclerosis and stroke include high blood pressure, smoking, diabetes, high cholesterol, increasing age, physical inactivity, and previous TIA or stroke. Atrial fibrillation and other heart conditions can raise the risk of a travelling clot.

Having one risk factor does not mean that you have a vertebrobasilar disorder. Diagnosis requires assessment of the symptoms and, when appropriate, imaging of the brain and blood vessels.

- Vertebral artery dissection, a tear within an artery wall
- Small-vessel disease affecting tiny arteries inside the brain
- External compression of a vertebral artery, sometimes during head rotation
- Inflammation of blood vessels, called vasculitis
- Unusual blood-clotting conditions
- Structural blood-vessel differences present from birth

Diagnosis

Assessment begins with when the symptoms started, how quickly they developed, how long they lasted, and whether they occurred together. A neurological examination checks eye movements, speech, strength, sensation, balance, coordination, and alertness.

A blood glucose test may be done promptly because very low blood sugar can resemble a stroke. Other blood tests may look for anemia, abnormal clotting, diabetes, cholesterol problems, or another contributing condition.

Brain and blood-vessel imaging may include:

MRI is better than a routine CT scan at finding many small posterior circulation strokes. Even MRI can occasionally miss a small stroke very early, so the examination and symptom history

remain important.

Catheter angiography involves guiding a thin tube into an artery and injecting contrast dye. It gives detailed vessel images but is invasive, so it is generally reserved for selected cases. If symptoms appear only during head turning, imaging in different head positions may sometimes be considered under specialist supervision.

Heart rhythm monitoring, an electrocardiogram, or an ultrasound scan of the heart may be used to look for a source of clots.

- A CT scan to look quickly for bleeding or other brain problems
- CT angiography to show the vertebral and basilar arteries
- MRI to look for areas of brain injury
- MR angiography to examine blood vessels using magnetic imaging
- Ultrasound to assess accessible neck arteries or blood flow within the skull

Treatment and management

Treatment is based on whether you are having an acute stroke, what caused the circulation problem, and whether brain tissue has been injured.

A suspected stroke needs immediate hospital assessment. Some people with an ischemic stroke may be eligible for medicine that dissolves a clot. Selected people with a blocked basilar artery may have mechanical thrombectomy, in which a specialist removes the clot through a catheter. Eligibility is based on timing, imaging, symptoms, bleeding risk, and other clinical factors.

After a TIA or ischemic stroke, treatment aims to prevent another clot. This may include an antiplatelet medicine, which makes platelets less likely to stick together. If atrial fibrillation or another heart source caused the clot, an anticoagulant may be used instead. Anticoagulants like warfarin or apixaban slow the blood's clotting process.

These medicines are not interchangeable and can cause bleeding. Do not start, stop, or combine them without medical guidance.

Management may also include cholesterol-lowering treatment, blood pressure control, diabetes care, support to stop smoking, and safe physical activity. These measures treat the wider blood-vessel risk rather than only one artery.

Many people with artery narrowing are managed with medicines and risk-factor control. Angioplasty, stenting, or surgery may be considered in selected cases, but procedures are not

routine for every narrowed vertebral or basilar artery. Rare mechanical compression may improve with surgery or another procedure that removes the pressure.

Rehabilitation may include physiotherapy for movement and balance, occupational therapy for daily activities, and speech and language therapy for communication or swallowing.

Complications

The main complication is a posterior circulation stroke. Its effects depend on the location and size of the injured area.

Possible complications include persistent balance problems, weakness, visual loss, speech difficulty, swallowing problems, falls, and reduced independence. Swallowing difficulty can allow food, drink, or saliva into the lungs, leading to aspiration pneumonia.

A major basilar artery stroke can affect consciousness or breathing and may be life-threatening. Rarely, severe injury to the brainstem causes locked-in syndrome. In this condition, a person is conscious but has profound paralysis and can communicate only through limited eye movements.

A TIA does not leave permanent brain injury by definition, but it signals a risk of stroke. The risk is especially important soon after the event, which is why symptoms that disappear still need emergency assessment.

Prevention

Not every vertebrobasilar circulatory disorder can be prevented. A spontaneous artery dissection, an inherited vessel structure, or unusual artery compression may occur without modifiable risk factors.

The risk of atherosclerosis and some strokes can often be reduced. Helpful measures include not smoking, keeping blood pressure and diabetes controlled, managing cholesterol, being physically active when medically safe, and taking prescribed preventive medicines consistently.

If you have atrial fibrillation, treatment to reduce clot formation may lower stroke risk. The right treatment depends on your overall risk and medical history.

After a TIA or stroke, routine follow-up is important even when you feel well. Follow-up may cover medication effects, blood pressure, cholesterol, heart rhythm, rehabilitation, and any new symptoms.

Living with it and what to expect

The course depends on the cause and whether a stroke occurred. A TIA resolves without lasting symptoms, but the underlying reason for it may still require long-term treatment. Artery narrowing may remain stable for years, progress, or cause further events.

Recovery after a stroke is different for each person. The fastest improvement often occurs during the first weeks and months, but gains can continue later. Balance, vision, fatigue, concentration, and coordination problems may affect daily life even when weakness is mild.

Rehabilitation focuses on practical goals such as walking safely, preparing food, returning to work, or communicating clearly. Walking aids, home adjustments, visual strategies, or swallowing changes may be useful.

Some people become anxious about another episode, especially when ordinary dizziness feels similar to their first symptoms. A rehabilitation or primary care team can help you identify your known warning signs and manage ongoing risk without assuming that every dizzy spell is another stroke.

Driving, flying, work, and exercise may be restricted for a period after a TIA or stroke. The safe timing depends on remaining symptoms, the cause, and local driving rules. If head rotation reliably brought on symptoms, avoid deliberately reproducing them while waiting for specialist advice.

Long-term care often becomes routine: taking preventive medicine, attending follow-up, managing vascular risk factors, and continuing exercises learned in rehabilitation.

When to get medical help

Call emergency services immediately for any sudden sign of stroke, including:

Do not drive yourself. Note when the person was last known to be well. Call even if the symptoms improve, because a TIA also needs emergency assessment.

New head or neck pain after an injury, followed by dizziness, double vision, weakness, numbness, or speech difficulty, also requires emergency help.

Arrange routine follow-up for stable recovery concerns, medication side effects, ongoing fatigue, or help managing blood pressure, cholesterol, diabetes, smoking, mood, or rehabilitation. New or suddenly worsening neurological symptoms are not routine follow-up issues.

- New weakness or numbness

- Double vision or sudden visual loss
- Slurred speech or trouble understanding speech
- Severe imbalance, inability to walk, or loss of coordination
- Vertigo together with other neurological symptoms
- Trouble swallowing, reduced alertness, or collapse

Common questions

Is vertebrobasilar insufficiency the same as a stroke?

Not always. It may describe temporary reduced blood flow causing a TIA, or circulation problems that lead to a posterior circulation stroke. Both sudden TIA and stroke symptoms need emergency assessment.

Does vertigo mean that blood flow to my brain is blocked?

Usually not. Inner-ear conditions are much more common causes of vertigo. Concern is higher when sudden vertigo occurs with double vision, slurred speech, weakness, numbness, severe imbalance, or difficulty walking.

Can neck arthritis cause vertebrobasilar symptoms?

Ordinary neck arthritis does not automatically reduce brain blood flow. Rarely, a bone or other structure can compress a vertebral artery during head movement. This requires blood-vessel imaging and specialist assessment.

Can an MRI rule it out?

MRI can detect many posterior circulation strokes, but a small or very early stroke may not appear immediately. Blood-vessel imaging and the neurological examination are also important.

Can vertebrobasilar circulatory disorders be cured?

Some causes can be corrected, such as a removable clot or rare mechanical compression. Atherosclerosis usually needs long-term management rather than a one-time cure. Stroke injury may improve with rehabilitation but can leave lasting effects.

Can I exercise after a TIA or posterior circulation stroke?

Physical activity is often part of recovery and long-term prevention, but timing and intensity should reflect your balance, heart health, neurological symptoms, and rehabilitation plan. Sudden symptoms during activity require emergency assessment.

Sources

- Kleindorfer DO, Towfighi A, Chaturvedi S, et al. 2021 Guideline for the Prevention of Stroke in Patients With Stroke and Transient Ischemic Attack. Stroke . 2021;52:e364-e467
- Powers WJ, Rabinstein AA, Ackerson T, et al. Guidelines for the Early Management of Patients With Acute Ischemic Stroke: 2019 Update. Stroke . 2019;50:e344-e418
- Yaghi S, Engelter S, Del Brutto VJ, et al. Treatment and Outcomes of Cervical Artery Dissection in Adults: A Scientific Statement From the American Heart Association. Stroke . 2024;55:e91-e106
- European Stroke Organisation and European Society for Minimally Invasive Neurological Therapy. Guideline on acute management of basilar artery occlusion. European Stroke Journal . 2024
- Merwick Á, Werring D. Posterior circulation ischaemic stroke. BMJ . 2014;348:g3175
- American College of Radiology. ACR Appropriateness Criteria: Cerebrovascular Diseases