TEST

Cerebral angiography

Cerebral angiography uses a catheter, contrast dye, and X-rays to examine blood vessels in the brain and neck.

WHAT IT MEASURES
Blood flow and structure in brain and neck arteries

SAMPLE
None; X-ray imaging with injected contrast dye

FASTING NEEDED?
Sometimes, especially if sedation is planned

HOW LONG IT TAKES
Usually one to three hours

RESULTS IN
Initial findings immediately; formal report timing varies by imaging center

USED FOR
Diagnosis, treatment planning, and sometimes monitoring

MAIN LIMITATION
Overlapping vessels can hide abnormalities in two-dimensional views

Overview

Cerebral angiography is an imaging test that shows blood vessels in the brain and neck. A thin, flexible tube called a catheter is inserted into an artery, usually through the groin or wrist. Iodine-containing contrast dye is injected while X-ray images are taken.

The test can show narrowed or blocked arteries, unusual blood vessel connections, bleeding, or an aneurysm, which is a bulge in an artery. The medical team views the images as they are produced.

Catheter angiography is more invasive than CT angiography or MR angiography. It is generally used when more detailed images are needed, another scan is unclear, or treatment may be performed during the same procedure.

Why the test is ordered

Cerebral angiography may be used to:

The catheter may also deliver devices or materials to treat an aneurysm or abnormal blood vessel. A procedure that includes treatment may take longer and have additional risks.

- Look for an aneurysm or a narrowed or blocked artery
- Examine an arteriovenous malformation (AVM), where arteries and veins connect abnormally
- Find the source of bleeding in or around the brain
- Assess blood vessels before surgery or another procedure
- Check a treated aneurysm, AVM, stent, or other vascular condition
- Map a tumor's blood supply in selected cases

Who should have the test

This test is generally used when detailed information about brain or neck blood vessels is needed. It is not a routine screening test for people without a specific clinical reason.

A less invasive CT or MR angiogram may be performed first. Catheter angiography may be preferred if those scans are inconclusive, their results conflict, or treatment is being considered.

Tell the imaging team if you are or could be pregnant. Also report kidney disease, previous reactions to contrast dye, bleeding problems, and medicines that affect blood clotting. These factors may change how the test is planned.

How to prepare

Follow your hospital or imaging center's instructions. Preparation depends on whether you will receive sedation, your medicines, and whether treatment is planned.

You may need to stop eating for several hours. Rules for water and other clear liquids vary, so follow the times in your appointment information.

Provide a current list of medicines and supplements. Mention anticoagulants like warfarin or apixaban , antiplatelet medicines, and diabetes medicines. Do not stop any prescribed medicine unless the procedure team tells you to.

Blood tests may be needed to assess kidney function and blood clotting. Tell the team about any previous reaction to iodinated contrast. This is not the same as a seafood allergy; your own contrast reaction history is more relevant.

Arrange transport home if you will receive sedation. You may also need someone to stay with you after discharge.

What happens during the test

You will lie on an X-ray table while monitors check your heart rate, blood pressure, breathing, and oxygen level. An intravenous line is usually placed in your arm.

The groin or wrist access site is cleaned and numbed with local anesthetic. You may receive medicine to help you relax, although many people remain awake.

A clinician inserts a short tube into the artery and guides a catheter toward the neck. You should not feel it moving inside the arteries, but you may notice pressure at the entry site.

As contrast is injected, you may briefly feel warm, taste metal, or feel as though you have passed urine. You may be asked to keep still or hold your breath. Tell the team immediately if you develop itching, hives, throat tightness, breathing difficulty, or suddenly feel unwell.

After imaging, the catheter is removed and pressure or a closure device seals the artery. You will be monitored afterward. Groin access may require lying flat for several hours; wrist access may allow earlier movement.

Understanding your results

A specialist can usually review the images during the procedure, with a formal report provided later.

The report may describe whether vessels are open, narrowed, blocked, enlarged, displaced, or connected abnormally. It may also give the size and position of an aneurysm or AVM and describe blood flow through it.

A normal result means no important vascular abnormality was seen in the images obtained, but it does not exclude every possible cause of symptoms. There is no universal normal range; interpretation depends on the vessels examined, image quality, anatomy, previous treatment, and reason for testing.

What affects the results

Movement can blur images, and overlapping vessels may hide a small abnormality. Images from several angles help reduce this problem.

A catheter can occasionally irritate an artery and cause temporary tightening called vasospasm, which may resemble narrowing. Severe narrowing or partial blockage can also limit how well contrast reaches downstream vessels.

Previous surgery, stents, coils, or other implants can alter or obscure nearby detail. Poor kidney function does not usually change the images but may limit the amount of contrast used. Pregnancy affects planning because the test uses X-rays.

Accuracy and limitations

Catheter cerebral angiography provides highly detailed images and shows how contrast moves through arteries, small vessels, and veins.

A small abnormality may be missed because of movement, vessel overlap, incomplete contrast filling, or an inadequate viewing angle. Multiple views and selective catheter placement reduce this risk. Vasospasm, normal anatomical variations, artifacts, or overlapping structures can also resemble disease.

CT angiography may be preferred for a rapid, non-invasive overview. MR angiography avoids ionizing radiation and can sometimes be performed without contrast. Catheter angiography may be more useful when other scans are uncertain, very fine detail or blood-flow timing is important, or treatment is planned.

Risks and complications

Bruising, tenderness, or slight swelling at the catheter site is common. Less common complications include bleeding, a larger collection of blood under the skin, infection, artery damage, or reduced blood flow to the arm or leg.

Iodinated contrast can cause an allergic-like reaction or contribute to kidney injury, especially in people with kidney problems. The catheter can dislodge material or contribute to a clot, causing a stroke, although this is uncommon in diagnostic angiography. The test also exposes you to ionizing radiation.

After discharge, contact the procedure team promptly if pain or swelling increases, the wound leaks, or you develop a fever.

Seek emergency help for sudden facial drooping, arm weakness, trouble speaking, loss of vision, or a sudden severe balance problem. Emergency assessment is also needed for difficulty breathing, heavy bleeding that does not stop with firm pressure, or an access-side hand or foot that becomes cold, pale, numb, or very painful.

What happens next

You will be observed until the access site is stable and any sedation has worn off. Follow your discharge instructions about fluids, bathing, driving, lifting, exercise, and restarting medicines.

The clinician who requested the test will discuss the report with you. Depending on the findings, the next step may be monitoring, another imaging test, medicine, surgery, catheter-based treatment, or investigation of another cause. Recovery and follow-up may differ if treatment was performed during the procedure.

Common questions

Can I drink coffee before cerebral angiography?

If you have been told to fast, coffee may not be allowed, especially with sedation. Do not assume black coffee is permitted; follow your center's instructions.

Does the time of day affect the result?

No meaningful time-of-day effect is expected. Scheduling usually depends on fasting, medicines, and observation needs.

Can I exercise beforehand?

Ordinary activity does not usually affect the images. Follow restrictions related to your condition, and avoid arriving dehydrated or exhausted. Strenuous exercise is commonly restricted afterward to protect the entry site.

Will I be awake?

Many people remain awake with local anesthetic and light sedation. General anesthesia may be used for some treatments or when remaining still would be difficult.

Does the contrast dye hurt?

It may cause brief warmth, flushing, or a metallic taste. Report itching, hives, throat tightness, breathing difficulty, or sudden illness immediately.

When can I drive afterward?

Do not drive if you received sedation. Follow your written discharge instructions, as restrictions depend on the medicines, catheter site, and whether treatment was performed.

Sources



- American College of Radiology, American Society of Neuroradiology, Society of Interventional Radiology, and Society of NeuroInterventional Surgery - Practice Parameter for the Performance of Diagnostic Cervicocerebral Catheter Angiography in Adults
- RadiologyInfo.org - Cerebral Angiography
- American College of Radiology - Manual on Contrast Media
- Johns Hopkins Medicine - Cerebral Arteriogram
- U.S. Food and Drug Administration - Medical X-ray Imaging