TEST

CT angiography - head and neck

CT angiography uses X-rays and injected contrast to examine head and neck blood vessels

WHAT IT MEASURES
Blood flow and narrowing in head and neck arteries

SAMPLE
None

FASTING NEEDED?
Sometimes, if your imaging centre requests it

HOW LONG IT TAKES
Usually 15 to 30 minutes

RESULTS IN
Hours to several days, varying by radiology service

USED FOR
Diagnosis, emergency assessment, and treatment planning

MAIN LIMITATION
Calcification or movement can hide or mimic artery narrowing

Overview

CT angiography of the head and neck, often called CTA, examines blood vessels supplying the brain, face, and neck.

The scanner uses X-rays to create cross-sectional images. Iodine-based contrast is injected into a vein, usually in your arm, to make blood inside the arteries visible. A computer produces detailed views showing whether an artery is narrowed, blocked, enlarged, torn, or unusually formed.

CTA provides results quickly. It may be performed with other imaging, such as a non-contrast head CT to look for bleeding or brain injury.

Why the test is ordered

Your healthcare team may order a head and neck CTA to investigate:

CTA may also check a stent, aneurysm repair, or neck artery surgery. The reason for the scan determines which vessels are examined and whether other imaging is needed.

- A blocked or severely narrowed artery during a stroke assessment
- A transient ischaemic attack, or TIA
- An aneurysm, which is a weakened, widened area of an artery
- An arterial dissection, meaning a tear within an artery wall
- Abnormal connections between arteries and veins
- Blood vessel injury after trauma
- Fatty narrowing in the neck arteries
- Blood vessels around a tumour or before surgery

Who should have the test

CTA is generally used when a blood vessel problem is suspected or detailed images could guide treatment. It is not usually a routine screening test for people without symptoms or relevant risk factors.

Tell the imaging team before the scan if you:

These issues do not always prevent CTA. The team may arrange a blood test, change your preparation, give medication before contrast, or recommend another scan.

- Are pregnant or could be pregnant
- Have kidney disease or a recent kidney injury
- Previously reacted to CT contrast
- Have asthma or several serious allergies
- Take metformin or other prescribed medicines
- Have an overactive thyroid or receive thyroid treatment
- Recently had another scan using contrast

How to prepare

Follow your imaging centre's instructions. Some centres allow normal food and drink, while others ask you not to eat for several hours. Emergency scans may require little preparation.

Drink water unless you have been told to limit fluids because of a heart, kidney, or other condition. Take regular medicines unless your healthcare team says otherwise. Do not stop

metformin or another prescribed medicine on your own; advice depends on kidney function and the reason for the scan.

You may need a creatinine blood test to estimate kidney function, particularly if you have kidney disease, diabetes, recent serious illness, or other kidney risk factors.

Remove jewellery, hair clips, hearing aids, dentures, or clothing containing metal near your head and neck when asked. Metal can obscure the images.

What happens during the test

A radiographer helps you lie on your back on a narrow table. Your head may be supported to reduce movement.

A small intravenous line is placed in a vein in your arm or hand and connected to an injector. The table moves through a large ring-shaped scanner. You may be asked not to swallow and to hold your breath briefly. Staying still prevents blurred images.

As contrast enters your vein, you may briefly feel warm or flushed, notice a metallic taste, or feel as though you have passed urine. These sensations usually disappear quickly.

Image collection often takes seconds. The full appointment usually lasts 15 to 30 minutes, although preparation or emergency care can make it longer.

Understanding your results

A radiologist reviews the scan. The report may describe:

Stenosis means narrowing, occlusion means complete blockage, and patent means blood can pass through the vessel.

CTA has no single numerical reference range. A finding's importance depends on its location and appearance, your symptoms, earlier imaging, and why the test was requested. Your healthcare team will interpret the result alongside your examination and other tests.

- Whether major arteries are open or blocked
- The location and severity of narrowing
- An aneurysm's size, shape, and location
- Signs of a tear in an artery wall
- Unusual blood vessel connections

- Changes around a stent, operation, or other treatment
- Findings in nearby visible tissues

What affects the results

Movement, swallowing, coughing, or turning your head can blur small vessels. Images may also be unclear if contrast reaches the arteries too early or late because of injection timing, slow circulation, or reduced heart pumping.

Heavy calcium deposits can make narrowing look more severe. Dental fillings, implants, surgical clips, and some stents may cause streaks. A leaking or poorly positioned intravenous line can reduce the contrast reaching the bloodstream.

Previous surgery, radiation treatment, or vascular procedures can also alter normal anatomy.

Accuracy and limitations

CTA rapidly provides detailed images of large and medium-sized arteries and often detects major blockages, narrowing, aneurysms, and dissections. However, it cannot identify every vascular problem.

Very small aneurysms or abnormalities in tiny branches may be missed. Movement, metal, poor contrast timing, or extensive calcium may hide abnormalities or make normal vessels appear narrowed.

MRI may be better for small or early areas of brain injury. Ultrasound assesses blood flow in parts of the neck without radiation but does not provide the same view inside the skull. Catheter angiography can show smaller vessels and allow treatment during the procedure, but it is invasive and has greater procedural risks.

A normal CTA reduces the likelihood of a major visible vascular problem but cannot rule out every cause of neurological symptoms.

Risks and complications

CTA uses ionising radiation. The dose is kept as low as reasonably possible, but the test may not be appropriate in every situation, particularly during pregnancy.

The intravenous line may cause bruising, soreness, or faintness. Mild contrast reactions include itching, hives, nausea, or sneezing. Serious reactions involving breathing difficulty or low blood

pressure are uncommon but require immediate treatment.

Contrast can leak outside the vein and cause pain or swelling. Most cases settle with observation, but increasing pain, blistering, numbness, or marked swelling needs prompt medical assessment.

The risk of kidney injury from modern intravenous contrast is greatest in people with acute kidney injury or severe chronic kidney disease. The team may check kidney function and balance this risk against the scan's benefit.

After leaving, seek emergency help if you develop difficulty breathing, swelling of your face or throat, collapse, or rapidly worsening symptoms. A mild delayed rash without breathing problems is usually not an emergency, but contact your healthcare service for advice.

What happens next

In an emergency, important findings may be reported immediately. Routine reports can take several hours to a few days.

Next steps may include clinical follow-up, comparison with earlier scans, treatment of risk factors, monitoring, or another test such as MRI, ultrasound, or catheter angiography.

Do not wait for a routine report if you develop sudden facial drooping, one-sided weakness or numbness, trouble speaking, sudden loss of vision, severe loss of balance, or a sudden unusually severe headache. Call emergency services.

For stable symptoms or non-urgent results, follow up with the healthcare professional who requested the scan.

Common questions

Can I drink coffee before the scan?

Coffee may be allowed if you have not been asked to fast, but milk or cream may count as food. Follow your imaging centre's instructions; water is usually the simplest choice.

Does the time of day matter?

Usually not. Urgency, scanner availability, blood tests, or special preparation may affect scheduling.

Can I exercise beforehand?

Light activity is usually fine. Avoid strenuous exercise immediately beforehand if it could cause

dehydration, a fast heartbeat, or difficulty lying still.

Can I drive after a CTA?

Most people can drive after an uncomplicated CTA. Do not drive if you received a sedative, had a significant contrast reaction, or have symptoms that make driving unsafe.

How long does the contrast stay in my body?

Your kidneys remove most contrast through urine over the following hours. This may take longer if kidney function is reduced.

Is CTA the same as a regular CT scan?

No. CTA uses carefully timed intravenous contrast and specialised processing to focus on blood vessels.

Sources

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