TEST

CT angiography - chest

A chest CT angiogram uses X-rays and contrast dye to examine blood vessels in the chest.

WHAT IT MEASURES
Blood flow, narrowing, and blockages in major chest vessels

SAMPLE
None

FASTING NEEDED?
Sometimes, if your imaging service requests it

HOW LONG IT TAKES
Usually 30 to 60 minutes

RESULTS IN
Hours to several days; varies by laboratory and imaging service

USED FOR
Diagnosis, treatment planning, and monitoring

MAIN LIMITATION
Motion or poor contrast timing can hide vessel problems

Overview

CT angiography of the chest, or chest CTA, examines blood vessels in your chest. It combines computed tomography (CT) with an iodine-based contrast dye injected into a vein. The dye makes blood vessels clearer, and a computer creates detailed cross-sectional and three-dimensional images.

Different protocols examine different vessels. A CT pulmonary angiogram focuses on the pulmonary arteries, which carry blood from the heart to the lungs. An aortic CTA focuses on the aorta, the main artery carrying blood from the heart to the body.

Chest CTA differs from a standard chest CT because the images are timed to show contrast flowing through specific blood vessels.

Why the test is ordered

A chest CTA may be ordered to look for:

It can also help plan surgery or another procedure and monitor a known condition or previous

repair.

- A blood clot in a lung artery, called a pulmonary embolism
- A tear in the aortic wall, called an aortic dissection
- Widening or bulging of the aorta, called an aneurysm
- Narrowing, blockage, injury, or an unusual vessel structure
- Problems involving a graft, stent, or previous vascular repair
- The blood supply to a tumour or another chest abnormality

Who should have the test

Chest CTA is used when the results are likely to affect your care. It is not generally a screening test for people without a specific clinical reason.

Your healthcare team considers your symptoms, medical history, examination, blood tests, and other imaging. In emergencies, CTA can provide detailed information quickly.

Another test may be more suitable if iodine-based contrast cannot be used, your kidneys are working poorly, or radiation should be limited. Tell the imaging team if you are pregnant or could be pregnant. This does not automatically prevent the scan; the team will balance the need for imaging against radiation exposure and consider alternatives.

How to prepare

Follow your imaging service's instructions. Some centres allow normal food and fluids, while others ask you not to eat for several hours. Clear fluids may still be allowed.

You may need a kidney-function blood test, especially if you have kidney disease, diabetes, dehydration, heart failure, or a recent serious illness.

Tell the team about:

Most regular medicines can be continued. Do not stop metformin or any prescribed medicine unless your healthcare team specifically tells you to. Wear comfortable clothing and remove metal objects that could interfere with the images.

- Any previous reaction to CT contrast dye
- Asthma or serious allergies
- Kidney disease or recent kidney injury

- Pregnancy or possible pregnancy
- Metformin and other medicines you take
- Difficulty lying flat or holding your breath
- An implanted device, vascular graft, or stent

What happens during the test

A radiographer helps you lie on a narrow table, usually on your back with your arms raised. Sticky pads may record your heartbeat if the scan must be timed with your heart.

A small intravenous cannula is inserted into a vein, usually in your arm. Contrast dye is injected through it, often with an automatic injector. You may briefly feel warm, notice a metallic taste, or feel as though you are passing urine. These effects usually disappear quickly.

The table moves through a wide, ring-shaped scanner. You must keep still and may need to hold your breath for several seconds. The scan is quick, although preparation and image checks take longer. Staff can see, hear, and speak with you throughout. The cannula is usually removed before you leave.

Understanding your results

A radiologist reviews the images and sends a report to the healthcare professional who requested the test.

The report may describe whether an artery is open, narrowed, blocked, enlarged, torn, or affected by a clot. It may also mention the lungs, heart, bones, or other visible structures.

There is no universal reference range for chest CTA. Measurements such as aortic size are interpreted using the scan method and factors including your age, sex, body size, pregnancy status, medicines, previous surgery, and clinical circumstances.

An incidental finding is something unexpected that may not relate to the reason for the scan. Many need no action, while others require routine follow-up or another test.

What affects the results

The scan must capture enough contrast in the correct vessel at the right time. Images may be unclear if contrast timing is early or late.

Movement, breathing, or a fast or irregular heartbeat can blur images. Metal implants, surgical clips, stents, nearby concentrated contrast, and heavy calcium deposits can create streaks or shadows that hide or resemble disease. Body size and severe heart or circulation problems may also affect image quality.

Kidney problems may limit how much contrast can safely be given. If the images are not clear enough, the radiologist may recommend repeat imaging or a different test.

Accuracy and limitations

Chest CTA is highly useful for major chest-vessel conditions, but it is not perfect. Small clots in outer lung branches can be harder to see. Motion, poor breath-holding, or incorrect contrast timing may hide a problem or create an appearance resembling a clot, tear, or narrowing.

The scan shows anatomy at one point in time. It may not explain why an abnormality developed or whether it causes all your symptoms.

If CT contrast is unsuitable, alternatives may include a ventilation-perfusion lung scan for suspected pulmonary embolism, ultrasound to look for leg clots, or MRI for selected aortic conditions. Catheter angiography is more invasive but may be used when treatment is planned or CT findings are uncertain.

Risks and complications

CT uses ionising radiation. The amount varies with the protocol, equipment, and your body size. The expected benefit is weighed against this exposure, particularly for younger people and during pregnancy.

The cannula may cause discomfort, bruising, bleeding, or faintness. Contrast can leak into nearby tissue, causing pain and swelling. Most cases settle with simple care, but significant or worsening symptoms need assessment.

Mild contrast reactions include nausea, itching, hives, or a rash. Serious reactions affecting breathing or blood pressure are uncommon but require immediate treatment.

Intravenous iodine contrast presents greater concern for people with severe kidney impairment or current kidney injury. Kidney function may therefore be checked beforehand.

What happens next

You can usually resume normal activities. If you received a sedative, follow instructions about driving and supervision.

Drink normally unless you have been told to restrict fluids because of a heart or kidney condition. Routine results may be discussed at an appointment or provided through a patient portal; urgent findings are usually communicated sooner.

Contact the imaging service or your healthcare team if pain, redness, or swelling around the injection site worsens, or if you develop a persistent rash.

Call emergency services if you develop difficulty breathing, swelling of your face or throat, severe weakness, or collapse. These may indicate a serious delayed reaction and should not wait for routine follow-up.

Common questions

Can I drink coffee before a chest CT angiogram?

Follow your appointment instructions. Black coffee may be allowed when clear fluids are permitted, but some heart-timed protocols require avoiding caffeine. Milk or cream may count as food.

Does the time of day matter?

Usually not. Timing mainly affects fasting, medicine instructions, and the availability of kidney blood-test results.

Can I exercise beforehand?

Gentle activity is usually acceptable. Vigorous exercise may raise your heart and breathing rates and affect some images. Do not delay an urgent scan because of exercise restrictions.

Can I drive home afterward?

Usually, yes. Do not drive if you received a sedative, had a significant reaction, or feel unwell.

Will I feel the contrast dye?

You may briefly feel hot, notice a metallic taste, or feel as though you are passing urine. These expected sensations usually last less than a minute.

Can I have the test if I am allergic to shellfish or iodine?

Shellfish allergy does not itself predict a CT contrast reaction. A previous reaction to iodine-based contrast is more important. Tell the imaging team about all previous reactions and serious allergies.

Sources

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