TEST

Aortic angiography

Aortic angiography uses contrast dye and X-rays to show the aorta and blood flowing through it.

WHAT IT MEASURES
Aortic shape and blood flow using contrast X-rays

SAMPLE
None; this is an imaging test

FASTING NEEDED?
Sometimes, especially with sedation; follow your hospital's instructions

HOW LONG IT TAKES
Several hours, including preparation and recovery

RESULTS IN
Often same day; reporting time varies by imaging service

USED FOR
Diagnosis, treatment planning, and procedure guidance

MAIN LIMITATION
Shows the blood channel better than the aortic wall

Overview

Aortic angiography examines the aorta, the body's largest artery, which carries blood from the heart through the chest and abdomen.

During conventional aortic angiography, a thin catheter is inserted into an artery, usually through the groin or wrist, and guided toward the aorta. Iodine-based contrast dye is injected while X-ray images are taken. The contrast may reveal narrowing, blockage, unusual widening, leakage, or disrupted blood flow.

Also called catheter angiography or catheter-based aortography, this test differs from CT angiography, which uses a CT scanner and contrast injected into a vein. Catheter angiography is invasive but may be followed immediately by treatment.

Why the test is ordered

Aortic angiography may be used to investigate:

It can also help plan surgery, guide stent-graft placement, or support treatment of a blocked branch artery.

CT angiography is more commonly used as an initial test because it is fast and shows the aortic wall and nearby organs clearly. MRI angiography may be useful when avoiding ionizing radiation is important. Catheter angiography remains valuable when real-time images of blood flow are required or treatment may be performed during the procedure.

- An aneurysm, or abnormal widening of the aorta
- A dissection, or tear between layers of the aortic wall
- Narrowed or blocked arteries
- Aortic injury or bleeding
- An abnormal connection between blood vessels
- The position of a previous graft or stent

Who should have the test

Aortic angiography is not a routine screening test. It may be appropriate when symptoms, an examination, or another scan suggests a problem involving the aorta or one of its major branches.

The choice of test depends on the suspected condition, urgency, previous imaging, kidney function, pregnancy status, and whether immediate treatment may be needed.

How to prepare

Follow your hospital's instructions. You may need to stop eating and drinking for several hours, especially if sedation is planned. Do not assume black coffee is allowed unless your instructions say so.

Tell the care team if you:

Do not stop prescribed medicine unless the team arranging the test tells you to. Blood tests may be needed to check kidney function and clotting. You may need to remove jewellery and change into a gown.

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

- Have reacted to iodine-based contrast before
- Have asthma, kidney disease, diabetes, or a bleeding disorder
- Are pregnant or could be pregnant
- Take blood thinners like warfarin or apixaban , metformin, or other regular medicines
- Have recently been ill or had another contrast examination

What happens during the test

You lie on an X-ray table while staff monitor your heart rate, blood pressure, and oxygen level. A line may be placed in a vein for fluids or medicine. Sedation can help you relax, although you may remain awake.

The catheter site is cleaned and numbed with local anaesthetic. A small tube is placed into an artery, commonly in the groin or wrist. Using live X-rays, the clinician guides a catheter to the required part of the aorta. You should not usually feel it moving inside the blood vessels.

When contrast is injected, you may briefly feel warm or flushed, have a metallic taste, or feel as though you need to urinate. You may be asked to hold your breath or remain still. If planned and agreed, treatment may be performed through the catheter.

Afterward, the catheter is removed and pressure or a closure device seals the artery. You will be monitored and may need to keep the affected limb straight for a time.

Understanding your results

The images show the inner channel of the aorta and how contrast-filled blood moves through it. An unremarkable result generally means there is no unexpected narrowing, widening, leakage, blockage, or disrupted flow.

Possible findings include an aneurysm, narrowed or blocked artery, dissection flap, abnormal vessel connection, or contrast leaking from an injured vessel. The report may also describe branches supplying the brain, kidneys, bowel, or legs.

A finding does not by itself determine treatment. Interpretation depends on its size, location, appearance, symptoms, previous scans, and your overall health. Laboratory reference ranges do not apply. Aortic measurements may be interpreted according to imaging method, age, sex, body size, pregnancy, and previous surgery.

What affects the results

Eating, coffee, exercise, and time of day do not usually change the aorta's structure, but they may affect preparation, sedation, blood pressure, or procedure safety.

Image interpretation can be affected by:

Kidney function affects whether iodine contrast is suitable rather than what the images show. Pregnancy affects imaging choice because angiography uses ionizing radiation. Blood thinners mainly increase bleeding risk rather than reducing image accuracy.

- Movement or difficulty holding your breath
- Weak, slow, or poorly timed contrast flow
- Overlapping vessels
- Temporary artery spasm caused by catheter contact
- Previous grafts, stents, or surgery
- Imaging only part of the aorta

Accuracy and limitations

Catheter angiography provides detailed, real-time images of blood flow and is useful for guiding catheter-based treatment. No single accuracy figure applies to every aortic condition.

Because contrast outlines the blood-filled channel, the test may miss disease confined to the aortic wall. An intramural haematoma-bleeding within the wall without an obvious open tear-may be clearer on CT or MRI. Incomplete imaging or poor contrast filling may produce a falsely reassuring result, while spasm or overlapping vessels may resemble narrowing.

CT angiography is often better for rapidly examining the whole aorta, its wall, and nearby organs. MRI angiography may be preferred in selected non-emergency cases when avoiding radiation or iodine contrast is important. Ultrasound can assess parts of the abdominal aorta but cannot show every segment clearly.

Risks and complications

Bruising, tenderness, or minor bleeding at the catheter site is common. Some people feel faint during needle or catheter procedures.

Less common complications include a larger collection of blood under the skin, infection,

artery damage, or reduced blood flow to the limb. Rarely, a clot or material from an artery wall can travel elsewhere in the body.

Iodine-based contrast can cause an allergic-like reaction. Most reactions are mild, but serious breathing or circulation problems can occur. Contrast may also contribute to acute kidney injury, particularly when kidney function is already reduced.

The test uses ionizing radiation, with exposure limited as much as possible. Sedation has separate risks, including slowed breathing and blood pressure changes.

What happens next

A clinician may discuss the initial images soon after the procedure, with a final report issued after review. If no immediate treatment is needed, you may go home after observation.

Follow instructions about the dressing, bathing, lifting, exercise, driving, and restarting medicines. Mild soreness or a small, stable bruise can usually be discussed at routine follow-up.

Seek urgent medical advice if the puncture site becomes increasingly painful, red, swollen, or starts bleeding again.

Call emergency services for bleeding that does not stop with firm pressure, rapidly enlarging swelling, or a limb that becomes cold, pale, weak, or numb. New severe chest or back pain, trouble breathing, fainting, facial drooping, speech difficulty, or sudden weakness also requires emergency assessment.

Common questions

Can I eat or drink coffee first?

Fasting is sometimes required, especially with sedation. Coffee may not be allowed even without milk, so follow your hospital's instructions.

Does the time of day matter?

It does not normally change the images, but appointment timing affects when you must stop eating, drinking, or taking certain medicines.

Can I exercise beforehand?

Ordinary activity usually does not affect the result. Avoid arriving dehydrated or immediately after unusually strenuous exercise, and follow post-procedure activity restrictions.

Is aortic angiography painful?

You may feel the local anaesthetic injection, pressure at the catheter site, and brief warmth from the contrast. Tell the team immediately about pain, breathing difficulty, itching, or other unexpected symptoms.

Can I drive home afterward?

Do not drive after sedation. Even without sedation, the hospital may advise against driving because the artery puncture could bleed.

Is this the same as CT angiography?

No. Catheter angiography places a tube into an artery and may allow immediate treatment. CT angiography uses contrast through a vein to create cross-sectional images without an arterial catheter.

Sources

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