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CT angiography – chest

CT angiography combines a CT scan with the injection of dye. This technique is able to create pictures of the blood vessels in the chest and upper abdomen. CT stands for computed tomography.

How the Test is Performed

You will be asked to lie on a narrow table that slides into the center of the CT scanner.

While inside the scanner, the machine's x-ray beam rotates around you.

A computer creates multiple separate images of the body area, called slices. These images can be stored, viewed on a monitor, or printed on film. Three-dimensional models of the chest area can be created by stacking the slices together.

You must be still during the exam, because movement causes blurred images. You may be told to hold your breath for short periods of time.

Complete scans usually take only a few minutes. The newest scanners can image your entire body, head to toe, in less than 30 seconds.

How to Prepare for the Test

Certain exams require a special dye, called contrast, to be delivered into the body before the test starts. Contrast helps certain areas show up better on x-rays.

- Contrast can be given through a vein (IV) in your hand or forearm. If contrast is used, you may also be asked not to eat or drink anything for 4 to 6 hours before the test.
- Let your health care provider know if you have ever had a reaction to contrast. You may need to take medications before the test in order to safely receive it.
- Before receiving the contrast, tell your provider if you take the diabetes medication metformin (Glucophage). You may need to take extra precautions.

The contrast can worsen kidney function problems in people with poorly functioning kidneys. Talk to your provider if you have a history of kidney problems.

Too much weight can damage the scanner. If you weigh more than 300 pounds (135 kilograms), talk to your provider about the weight limit before the test.

You will be asked to remove jewelry and wear a hospital gown during the study.

How the Test will Feel

The x-rays produced by the CT scan are painless. Some people may have discomfort from lying on the hard table.

If you have contrast through a vein, you may have a:

- Slight burning feeling
- Metallic taste in your mouth
- Warm flushing of your body

This is normal and usually goes away within a few seconds.

Why the Test is Performed

A chest CT angiogram may be done:

- For symptoms that suggest blood clots in the lungs, such as chest pain, rapid breathing, or shortness of breath
- After a chest injury or trauma
- Before surgery in the lung or chest
- To look for a possible site to insert a catheter for hemodialysis
- For swelling of the face or upper arms that cannot be explained
- To look for a suspected birth defect of the aorta or other blood vessels in the chest
- To look for a widening of an artery (aneurysm)
- To look for a tear in an artery (dissection)
- To assess certain blood vessels around the heart

Normal Results

Results are considered normal if no problems are seen.

What Abnormal Results Mean

A chest CT may show many disorders of the heart, lungs, or chest area, including:

- Suspected blockage of the superior vena cava: This large vein moves blood from the upper half of the body to the heart.
- Blood clot(s) in the lungs.
- Abnormalities of the blood vessels in the lungs or chest, such as aortic arch syndrome.
- Aortic aneurysm (in the chest area), also called thoracic aortic aneurysm.
- Narrowing of part of the major artery leading out of the heart (aorta).
- Tear in the wall of an artery (dissection).
- Inflammation of the blood vessel walls (vasculitis).

- Problems with pulmonary vessels, including narrowing of pulmonary veins of abnormal connections between pulmonary arteries and veins (arteriovenous malformations).

Risks

Risks of CT scans include:

- Being exposed to radiation
- Allergic reaction to contrast dye
- Damage to kidneys from contrast dye

CT scans use more radiation than regular x-rays. Having many x-rays or CT scans over time may increase your risk for cancer. However, the risk from any one scan is small. You and your provider should weigh this risk against the benefits of getting a correct diagnosis for a medical problem. Most modern scanners use techniques to use less radiation.

Some people have allergies to contrast dye. Let your provider know if you have ever had an allergic reaction to injected contrast dye.

- The most common type of contrast given into a vein contains iodine. If you have an iodine allergy, you may have nausea or vomiting, sneezing, itching, or hives if you get this type of contrast.
- If you absolutely must be given such contrast, your provider may give you antihistamines (such as Benadryl) and/or steroids before the test.
- The kidneys help remove iodine out of the body. Those with kidney disease or diabetes may need to receive extra fluids after the test to help flush the iodine out of the body.

Rarely, the dye may cause a life-threatening allergic response called anaphylaxis. If you have any trouble breathing during the test, you should notify the scanner operator immediately. Scanners come with an intercom and speakers, so someone can hear you at all times.

Your provider may ask you to avoid the use of metformin for two days after the CT-angiogram.

Alternative Names

Computed tomography angiography - thorax; CTA - lungs; Pulmonary embolism - CTA chest; Thoracic aortic aneurysm - CTA chest; Venous thromboembolism - CTA lung; Blood clot - CTA lung; Embolus - CTA lung; CT pulmonary angiogram

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