INSIDE RADIOLOGY

# MRI Heart (Cardiac MRI) Angiogram Aorta and Great Vessels

**Consumer Information**

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## What is an MRI Angiogram - Aorta and Great Vessels?

Magnetic resonance imaging (MRI) uses a high strength magnet and radiowaves to scan the body and produce pictures or images. MRI does not use radiation, required for many other types of imaging and is not known to have any long term harmful effects.

An MRI of the aorta and great vessels is tailored to examine the main artery leaving the heart (aorta) and its branches supplying blood to the head and arms (also known as the "great vessels"). The examination will assess the size of the aorta, its wall, and any associated diseases.

Angiogram is the medical term used when dedicated imaging of blood vessels is performed. Narrowing of the major vessels to the head and neck can be evaluated. Blood flow through the aorta can also be measured.

An MRI Angiogram - Aorta and Great Vessels scan often involves the injection of a special dye (usually called a contrast medium or contrast agent) into the veins during the scan. The contrast highlights the arteries and blood vessels.

## How do I prepare for an MRI Angiogram - Aorta and Great Vessels?

No special preparation is required. You will be asked to complete a questionnaire prior to the examination to ensure that it is safe for you to enter the MRI machine and be exposed to the magnet.

If you have a history of kidney disease your doctor may wish to do a blood test before the scan, to ensure that the contrast medium (known as "gadolinium chelate") can be safely given, if required (see *Gadolinium Contrast Medium (MRI Contrast agents)*).

## What happens during an MRI Angiogram - Aorta and Great Vessels?

You can wear your normal clothing to the examination but may need to remove some clothing prior to the scan. This is to eliminate any metallic objects that may interfere with the magnetic field in the scanning room, and to allow easy access for leads that will be placed on your chest to monitor your heart beat. You will be offered a hospital gown.

You will be positioned on the scanner bed by a radiographer, who is specially trained to perform MRI scanning. The leads to monitor your heart beat will then be placed on your chest. If an injection of contrast medium (gadolinium chelate) is required, a small needle will be placed in a vein in your arm. A special set of detectors encased in plastic, which work in conjunction with the main magnet to receive the radiowave signal to produce the images, will be rested on your chest like a blanket.

Once ready, you will be placed inside the MRI machine, which is like going into a short tunnel. You will be aware of humming and knocking noises going on around you, which indicates that the scanner is running. It is normal to feel a little warm during the scan. You will be asked to hold your breath from time to time during the scan, to help produce the best images possible.

The MRI machine can be noisy, so you will be provided with headphones and you can listen to music (you are welcome to bring your own CD) and speak with the radiographer performing the scan. You will also be given a squeeze ball to hold in your hand during the scan. Squeezing the ball will make the radiographer aware that you wish to speak. A microphone is located within the MRI machine.

Once you are comfortable and positioned, the radiographer will return to the control console, leaving you in the MRI machine. From here the radiographer will control the scanner to instruct the machine which part of the body to examine, and which views to perform to best investigate your particular condition. You will be able to communicate with the radiographer at all times.

A radiologist (specialist doctor) who will supervise the procedure may require injection of contrast medium (gadolinium chelate) during the scan. The contrast medium can assist in identifying slight changes within the heart muscle and to highlight the blood vessels. If required, the injection is performed while you are inside the scanner, using the small needle which may have been placed in your arm at the beginning of the study. The injection is given through an extension tube connected to the needle.

The gadolinium chelate is very safe, but as with all medications, allergic reactions can occur (see Gadolinium Contrast Medium (MRI Contrast agents)). The hospital radiology department or radiology practice where you are having the scan is equipped to deal with this in the rare occasion that it arises.

## Are there any after effects of an MRI Angiogram - Aorta and Great Vessels?

Usually there are no after effects. You will be free to continue the day you have planned once the scan is complete.

## How long does an MRI Angiogram - Aorta and Great Vessels take?

The scan uses very different technology to a normal X-ray, and does take more time to perform. Depending on the problem being investigated the scan time can vary from 20 to 45 minutes.

## What are the risks of an MRI Angiogram - Aorta and Great Vessels?

**MRI machine**

Once you have completed the pre-scan questionnaire and have been assessed as safe to enter the MRI machine, there are no significant risks from the MRI machine itself (see *Magnetic Resonance Imaging (MRI)*).

Most people are suited to this examination, although there are some restrictions due to the strength of the magnet and its possible effects on devices or implants such as pacemakers.

**Contrast medium**

If a contrast medium (gadolinium chelate) injection is required for the scan there is a very small risk of allergic reaction.

Recently, a condition called *nephrogenic systemic fibrosis* (NSF) has been identified as a rare but significant side effect of contrast injection. This complication is more likely to occur in those people with very poor kidney function, including people who are already on dialysis (a process that filters the blood of patients whose kidneys are not functioning properly using a kidney machine). This rare but serious reaction takes weeks to months to develop. For more information on NSF see the information item titled Gadolinium Contrast Medium (MRI Contrast agents).

## What are the benefits of an MRI Angiogram - Aorta and Great Vessels?

MRI scans avoid the need for exposure to potentially harmful radiation (X-rays). This is of particular benefit for all patients who are assessed as able to have an MRI, especially young patients, and those who will require repeat scans through their life to monitor their condition.

MRI scans have an advantage over X-rays in their ability to show clear images of the soft tissues of the body, and the scan can be specifically tailored to show complex anatomy (areas of the body). The scan is unique in its ability to calculate blood flow through the arteries and blood vessels. Blurring of the image due to movement of the heart and blood vessels can be overcome by scanning in time with the heart beat.

## Who does the MRI Angiogram - Aorta and Great Vessels?

The scan is performed by a radiographer specially trained in MRI scanning, under the supervision of a radiologist (a specialist doctor). A cardiologist (heart specialist) may also be involved.

## Where is an MRI Angiogram - Aorta and Great Vessels done?

The examination is a highly specialised test, and is not available at all hospitals or radiology practices. Your doctor is likely to be able to refer you to the hospital or radiology practice nearest to you offering these scans.

## When can I expect the results of my MRI Angiogram - Aorta and Great Vessels?

The time that it takes your doctor to receive a written report on the test or procedure you have had will vary, depending on:

- the urgency with which the result is needed
- the complexity of the examination
- whether more information is needed from your doctor before the examination can be interpreted by the radiologist
- whether you have had previous X-rays or other medical imaging that needs to be compared with this new test or procedure (this is commonly the case if you have a disease or condition that is being followed to assess your progress)
- how the report is conveyed from the practice or hospital to your doctor (in other words, email, fax or mail)

Please feel free to ask the private practice, clinic, or hospital where you are having your test or procedure when your doctor is likely to have the written report.

It is important that you discuss the results with the doctor who referred you, either in person or on the telephone, so that they can explain what the results mean for you.

**Please note:**

This information is of a general nature only and is not intended as a substitute for medical advice. It is designed to support, not replace, the relationship that exists between a patient and his/her doctor. It is recommended that any specific questions regarding your procedure be discussed with your family doctor or medical specialist

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