

MRI Heart (Cardiac MRI) – RV & LV Function

Consumer Information

Contributors:

Dr Brett Lorraine

MBBS, FRANZCR

Dr Charles Lott, Ms Ann Revell, Dr Christine Walker,
A/Prof Stacy Goergen

What is an MRI Heart – RV & LV Function?

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 Heart – RV & LV Function scan may be performed to diagnose a congenital heart condition (a problem with your heart from the time of birth), or it may be performed to assess how your heart is functioning.

The RV (right ventricle) and LV (left ventricle) are the two lower chambers of the heart that receive blood from the upper chambers of the heart and pump it into the arteries by contraction or tightening of the chamber walls.

An MRI Heart – RV & LV Function scan will look at the way in which your heart works as a pump, to move blood through the lungs and around the body by way of the arteries. A short movie of the moving heart will be created from the images produced by the MRI scan, so that the way in which the heart muscle moves can be clearly seen and assessed. Calculations can be performed to measure the volume of the heart chambers, and to work out how much blood is being pumped with each heart beat. Both the RV and LV are assessed at the same time.

An injection of a special dye (usually called a contrast medium or contrast agent) called gadolinium (see [Gadolinium Contrast Medium \(MRI Contrast agents\)](#)) during the scan may occasionally be needed. This is not needed for the cardiac RV and LV function scan but may be needed if there are other heart problems to be assessed at the same time. The contrast is used for its ability to highlight heart abnormalities and also to define the blood vessels.

How do I prepare for an MRI Heart – RV & LV Function?

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.

What happens during an MRI Heart – RV & LV Function?

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 scanner, 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.

An MRI Heart – RV & LV Function scan does not of itself require the injection of contrast medium into the veins during the scan. Contrast may be needed if there are other heart problems to be assessed. The contrast is used for its ability to highlight heart abnormalities and also to define 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 on the rare occasions that it arises.

Are there any after effects of an MRI Heart – RV & LV Function?

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 Heart – RV & LV Function take?

The examination 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 Heart – RV & LV Function?

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.

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. See the item on *Gadolinium Contrast Medium (MRI Contrast agents)* for more information on NSF.

What are the benefits of an MRI Heart – RV & LV Function?

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. 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. MRI is considered to be the most effective test for measuring the pumping of blood through the heart.

Who does the MRI Heart – RV & LV Function?

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

Where is an MRI Heart – RV & LV Function 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 Heart – RV & LV Function?

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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