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# MR Angiography

## Imaging Department

## MAGNETIC RESONANCE ANGIOGRAPHY (MRA)

### What is MRA?

An MRA scan is a relatively new technique for examining blood vessels in the body.

The advantages are that it is non-invasive, requiring only a simple intravenous injection or, in some instances, no injection at all. The other attraction is that it does not require any exposure to Ionising Radiation.

MRA uses a very strong magnetic field plus radio-frequency waves to excite hydrogen nuclei (protons) contained within water in the blood vessels. The excited hydrogen nuclei gradually lose their excess energy in the form of radio waves that can be detected by special receiving coils placed close to the body part being examined.

By using series of pulses of such energy before and after the injection of a special dye (gadolinium) which highlights blood vessels, and by digitally subtracting one set of images with dye and those without, an image can be built up which clearly shows the vessels.

### Is there an alternative?

Your consultant thinks an MRA is the best test for your particular problem, but there are a number of other ways of looking at blood

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### Further Information

We endeavour to provide an excellent service at all times, but should you have any concerns please, in the first instance, raise these with the Matron, Senior Nurse or Manager on duty. If they cannot resolve your concern, please contact our Patient Advice and Liaison Service (PALS) on 01932 723553 or email [pals@asph.nhs.uk](mailto:pals@asph.nhs.uk). If you remain concerned, PALS can also advise upon how to make a formal complaint.

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Department: Imaging

Version: 1

Published: Feb 2012

Review: Feb 2014

Once the scan is finished you are free to go home and no special precautions or aftercare is needed.

A computer reconstructs the images which are then examined by an x ray specialist (radiologist). A report is written and sent to the referring consultant.

### **Are there any risks?**

No harmful effect of magnetic resonance has ever been demonstrated as there is no ionising radiation.

Despite this, to err on the side of absolute safety, it is not recommended to have MRA during the first trimester of pregnancy.

In a very small number of cases an allergic reaction has been described to the gadolinium injection, although this is nearly always minor (skin rash).

vessels such as Doppler ultrasound, CT angiography and catheter angiography. Each test has its own strengths and weaknesses. Sometimes more than one scan is needed to arrive at a final diagnosis.

### **The procedure itself:**

This is an outpatient procedure. No special preparation is needed. You will be asked to attend 10-15 minutes before your appointment time to fill in a safety questionnaire.

MRI scanning is safe and painless. There are no known side-effects.

You will be asked to lie on a narrow table, and receiving coils or pads may be placed around the region of interest. The table will then be moved into the scanning machine, which looks like a short tunnel, but is open at both ends. You will be given a buzzer which you can press to attract attention during the scan. You will be given ear plugs or headphones and will be offered a choice of music to listen to during the scan.

During the scan you will hear loud knocking noises, which occur in bursts during each imaging sequence. The radiographer will be able to see and hear you during the scan and can talk to you through an intercom.

Scans usually take about 30 – 60 minutes. During the scan you must remain motionless or else the images obtained will be blurred, and they may have to be repeated.

An injection of a contrast agent ( dye) will be given into a vein, to help with the interpretation of the scan. You should inform the staff if you have any known allergies.

If you have severe kidney problems we cannot use the injection. Your referring doctor will be asked to provide us with an up to date test of your kidney function to ascertain whether it is safe to use the injection. Often it is possible to get an image without the dye, although some detail may be lost.

### **Preparing for an MRI scan**

Usually, no special preparation is required. You can eat and drink normally unless you are told not to. You can continue normal activities. You should continue to take regular medication unless you are told otherwise.

You should inform the staff in the scanning department if you have:

- a pacemaker
- an artificial heart valve
- clips on blood vessels in the brain (for bleeding aneurysm)
- cochlear (inner ear) implants
- metal implants including joint replacements
- neuro-stimulators (TENS unit)
- an implanted drug infusion device
- exposure to metal fragments in the eyes
- impaired kidney function
- any allergies

You should also inform staff if you may be pregnant.

You will be asked to fill out a safety questionnaire before the scan.

If there is any doubt about whether you may have metal fragments in your eyes or elsewhere in your body, you may be required to have an X-ray to exclude this possibility before you can enter the scanning room.

You **must not** take any of these items into the scanning room:

- coins
- jewellery/watches
- keys
- credit cards or any other card with a magnetic strip
- hairpins/wigs
- hearing aids
- mobile phones and other metal objects
- dentures or partial plates

Comfortable clothing should be worn, without metal zips, fasteners or belt buckles. Depending on which part of the body is being scanned you may be asked to change into a patient gown.

You may bring a CD with you if you wish to listen to music of your own choice.

If you are claustrophobic, you should inform staff. Usually, with the help and support of our experienced staff, you will be able to tolerate the scan. If not, you may ask your doctor to prescribe a sedative.