MRI Angiography, MRA

Magnetic resonance imaging (MRI) is a test that lets your doctor see detailed pictures of the inside of your body without using X-rays. Instead, strong magnets and radio waves work together in a magnetic field to form very detailed and sharp images which are produced by a computer and viewed on a TV monitor. These can be viewed in two and three dimensional forms. There is no x-ray radiation and the magnets and radio waves are harmless. When the studies are done on your blood vessels, it is known as MR angiography (MRA). MRA uses MRI technology to help in the diagnosis and treatment of heart disorders, stroke, and blood vessel diseases. MRA can provide detailed images of blood vessels without using contrast materials. Contrast materials are a material given intravenously (through the veins) which show up on x-rays or MRI's. Special forms of contrast material may be used to make MRI images (pictures) even more clear.

BEFORE YOUR TEST

MRI uses strong magnets, so you will be asked to remove your watch, jewelry, and other metal objects. Some makeup also contains traces of metal, so you may have to remove that, too. Braces and fillings normally are not a problem. An MRI test may take up to an hour. Please check in 15 minutes before your test is scheduled or as instructed. Follow any instructions you were given to prepare for the test.

LET YOUR CAREGIVER OR MRI TECHNOLOGIST KNOW ABOUT THE FOLLOWING:

(Note: The magnet used in MRI can cause metal objects in your body to move.)
Any previous surgery.

- If you have a pacemaker or any other implants, such as implanted neuro-stimulator, metallic ear implant, or metallic object within the eye socket. An MRA should also be avoided if there is a bullet fragment in the patient, or if the patient has a port for delivering insulin or chemotherapy.
- You have metal splinters in your body.
- You have tattoos. Some red dyes contain iron which is sometimes a problem.
- You are pregnant or think you may be pregnant.
- You are claustrophobic (afraid of cramped spaces).

DURING YOUR TEST

- You may be asked to wear a hospital gown.
- The machine can be noisy, so you may be given earplugs or headphones to listen to music.
- You may be injected with CONTRAST (a special “dye” that enhances the image).
- MRI is done in a long magnetic chamber. You will lie down on a platform that slides into the magnetic chamber. Once inside, you will still be able to talk to the technologist.
- You will be asked to hold very still. The technologist will tell you when you can shift position. You may have to wait a few minutes to make sure the images are readable.

AFTER YOUR TEST

- You can get back to normal activities right away.
- If you were given CONTRAST, it will pass naturally through your body within a day.
- A radiologist experienced in MRA will analyze the results and send a report to your caregiver, along with an interpretation of the findings.
- Your caregiver in turn will discuss the MRA findings with you.

BENEFITS OF MRA

- Detailed images of blood vessels and blood flow are obtained without having to insert a catheter (a long, narrow, hollow tube) directly into the area of interest, so that there is no risk of damaging an artery.
- The procedure itself and the time needed to recover are shorter than after a traditional catheter angiogram.
- MRA is less costly than catheter angiography.

- There is no exposure to X-rays during an MRI study.
- Contrast material may be used, but unlike catheter angiography or CT angiography which makes use of iodine-based contrast material, the risk of an allergic reaction from MRA contrast is low and kidney damage does not occur. Even without using contrast material, MRA can provide high-quality images of many blood vessels, making it very useful for patients with allergies.

LIMITATIONS OF MR ANGIOGRAPHY

- MRA does not image (show) calcium, as does CT angiography.
- For patients who are very claustrophobic (uncomfortable in close spaces), adequate nursing staff must be on hand to monitor sedation.
- Clearness of MRA images does not yet match those obtained by conventional angiography. MRI of small vessels, in particular, may not be clear enough for diagnosis and treatment planning.
- Sometimes it is difficult to separate images of arteries from veins using an MRA.

RISKS

- There are no definite side effects from any type of MRI study, including MR angiography.
- If CONTRAST medium is a problem, it usually can be relieved with mild sedatives or anti-anxiety medications.
- If a metal implant is present but is undetected, it may be affected by the strong magnetic field. In addition, if the implant is close to the examination site it may be hard to get high-quality images.
- MRI generally should be avoided during the first three months of pregnancy. Ultrasound is preferred at this time unless a serious condition is suspected that is best studied by MRA or MRI. It is not known what effects the MRI may have on a fetus. The general rule for MRI and other diagnostic studies in pregnancy is that they should be avoided. The MRA should be considered if there is substantial risk from missing the correct diagnosis because the procedure is not done.
- Women who are breast-feeding should inform the radiologist and ask how to proceed. They may pump breast milk before the exam for use until the gadolinium CONTRAST material, if used, has cleared from the body.

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