Magnetic Resonance Imaging (MRI)

This sheet talks about exposure to magnetic resonance imaging (MRI) and the use of contrast media for MRI in pregnancy and breastfeeding. This information should not take the place of medical care and advice from your healthcare provider.

**What is Magnetic Resonance Imaging (MRI)?**

Magnetic resonance imaging, known as MRI, is a medical procedure used to create very clear pictures of the inside of your body to diagnose certain diseases or conditions. MRI does NOT use ionizing radiation like an x-ray or computer-assisted tomography (CT) scan. Instead, it uses a magnetic field and radio waves. A typical MRI scan lasts from 20 to 90 minutes, depending on the part of the body being imaged. It is a painless procedure that is not expected to cause any tissue damage.

An MRI may be prescribed for a pregnant woman for her or for a developing baby. MRI can image the pregnancy and give healthcare providers a view of the placenta, baby’s brain, airway, lungs, and abdomen.

*I had an MRI before I knew I was pregnant. Could it have harmed my baby?*

In every pregnancy, a woman starts out with a 3-5% chance of having a baby with a birth defect. This is called her background risk. One study that looked at more than 1,700 pregnant women who were exposed to MRI during the first trimester did not find an increased chance of birth defects. Heat produced by the scanner may be able to reach the patient during an MRI (especially if it is a long procedure). However, heat is thought to be the strongest when it first hits the skin and becomes less strong as it approaches the center of the body (where the baby is located).

The MRI machine makes loud acoustic sounds and there has been interest in knowing if the MRI could affect fetal hearing. No cases of hearing damage have been seen in several small human studies looking at exposure to MRI during pregnancy.

*I am pregnant. What if I need an MRI?*

If you are pregnant or think that you could be pregnant, you should notify your healthcare provider and the radiologist or MRI technologist before having a MRI done. The American College of Obstetricians and Gynecologists (ACOG) and the American College of Radiology (ACR) have stated that a pregnant woman can have an MRI done, during any trimester.

*I was told there will be contrast used for my MRI. What is a contrast medium?*

Some MRI procedures use contrast media. Contrast media is a substance injected into a vein to help get a clearer picture of the area in the body that is being studied. Contrast media used with MRI can contain gadolinium or superparamagnetic iron oxide.

There have been no animal or human studies to evaluate the safety of superparamagnetic iron oxide contrast during pregnancy, so it is not a preferred contrast agent for pregnant women. There is some information on gadolinium-based contrast agents. Usually, the body can quickly eliminate gadolinium-based contrast medium.

The American College of Radiology (ACR) safety guidelines have said that contrast agents should not be routinely given to pregnant patients. However, there are cases when the benefit of using contrast outweigh potential risks. If you need to have an MRI, talk to your healthcare provider about the use of contrast agents.

*Can gadolinium contrast media increase the chance for birth defects?*

Gadolinium media can cross the placenta and reach the baby. Two studies in over 400 women given
gadolinium contrast during pregnancy did not find an increased chance for birth defects above the background risk.

**Can gadolinium contrast media increase the chance for other pregnancy complications?**

One study of 24 women given gadolinium contrast media in the first trimester of pregnancy did not find a greater chance for pregnancy or newborn complications. One small study reported a small increased chance for stillbirth or death by one month of age, but no greater chance for other health concerns in the children (up to age four) of women who received a MRI with a gadolinium agent during pregnancy. This finding is based on just 7 cases so it is possible that the chance of stillbirth was more related to the mother’s underlying health condition (the reason she had the MRI done).

**Can I have an MRI done if I am breastfeeding?**

Because the MRI only uses magnetic fields and radio waves to get images, there are no concerns about having this procedure done while breastfeeding. Your child can resume breastfeeding as soon as the MRI is done.

**Can I have an MRI with gadolinium contrast or superparamagnetic iron oxide nanoparticles while breastfeeding?**

Very little gadolinium is likely to get into breast milk. One report found that less than a half percent (less than 0.5%) of an adult dose of a gadolinium contrast agent was found in the milk of a mother 24 hours after it had been given to her. Similar results have been seen in the milk of 17 additional nursing mothers. This very low amount is not expected to cause problems in a nursing infant. ACOG states that no wait time is required after having an MRI with contrast, and women can resume breastfeeding as soon as the procedure is done.

There have been no animal or human studies on the use of superparamagnetic iron oxide contrast during breastfeeding. Superparamagnetic iron oxide is similar to other injectable iron products which are not expected to cause risks to a breastfed child.

Be sure to talk to your healthcare provider about all of your breastfeeding questions.

**If a man has an MRI, with or without contrast, could it affect his fertility (ability to get partner pregnant) or increase the chance of birth defects?**

There is no information available about exposures that a father has to MRI (with or without contrast). In general, a father’s exposures are unlikely to increase risks to a pregnancy. For more information, please see the MotherToBaby fact sheet Paternal Exposures at https://mothertobaby.org/fact-sheets/paternal-exposures-pregnancy/pdf/.

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