



MotherToBaby

Medications & More During Pregnancy & Breastfeeding
Ask The Experts

Fact Sheet

by the **Organization of Teratology Information Specialists (OTIS)**

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Magnetic Resonance Imaging (MRI)

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. This sheet talks about whether exposure to Magnetic Resonance Imaging (MRI) and / or the use of contrast media for MRI may increase the risk for birth defects over that background risk. This information should not take the place of medical care and advice from your health care provider.

What is Magnetic Resonance Imaging (MRI)?

Magnetic resonance imaging, known as MRI, is a medical procedure that healthcare providers use to create very clear pictures of structures inside your body in order 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 radiofrequency energy (electric waves around the same energy as those used with radio broadcasts). 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 fetus. MRI can image the fetus and give the doctor a view of the placenta, baby's brain, airway, lungs, and abdomen.

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

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 body's surface (skin), and becomes less strong as it approaches the center of the body (where the fetus is located).

The MRI machine produces loud acoustic sounds and there has been interest in knowing if the MRI could have an effect on the fetal hearing. No cases of hearing damage have been documented in several small human studies looking at exposure to prenatal MRI.

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. However, the American College of Obstetricians and Gynecologists (ACOG) and the American College of Radiology have stated that a pregnant woman can have an MRI done, during any trimester, if necessary.

My doctor said there will be contrast used for my MRI. What is a contrast medium?

Some MRI procedures include the use of contrast media, 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 might 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. Normally, the body is able to quickly eliminate gadolinium-based contrast medium.

Can gadolinium contrast media increase the risk for birth defects?

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

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. However, this finding is based on just 7 cases; therefore, 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. The iron contrast media, which are rarely used, are very similar chemically to iron dextran and other injectable iron products which carry no risk to the breastfed infants.

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

What if the father of the baby an MRI with or without gadolinium contrast?

There is no information available about exposures that a father has to MRI (with or without gadolinium 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/>.

Please click here for references

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