Pediatric MRI for Appendicitis



Children's magnetic resonance imaging (MRI) for appendicitis uses a powerful magnetic field, radio waves and a computer to produce detailed pictures of the inside of your child's abdomen and pelvis. MRI may be used to help diagnose or evaluate symptoms associated with appendicitis because it is non-invasive, fast, and does not use ionizing radiation.

Talk with your doctor about your child's health problems, medications, recent surgeries and allergies. The magnetic field is not harmful, but it may cause certain medical devices to malfunction. Most orthopedic implants pose no risk, but you should always tell the technologist if your child has any implanted medical or electronic devices. Inform your doctor and the technologist prior to the exam if your child has a known allergy to contrast material. Your child should wear loose, comfortable clothing and may be asked to wear a gown.

What is Pediatric MRI?

Pediatric magnetic resonance imaging (MRI) is a noninvasive medical test that uses a powerful magnetic field, radio frequency pulses and a computer to produce detailed pictures of your child's organs, soft tissues, bone and internal body structures. Because MRI does not use ionizing radiation (x-rays), it is frequently used in diagnosing and evaluating disease and trauma in children.

Detailed MR images allow physicians to evaluate various parts of the body and determine the presence of certain diseases. The images may be examined on a computer monitor, transmitted electronically, printed, copied to a CD, or uploaded to a digital cloud server. *For more information, see the Children's (Pediatric) MRI (https://www.radiologyinfo.org/en/info/pediatric-mri) page.*

What is appendicitis?

Appendicitis is a condition that results from inflammation of the appendix (http://www.radiologyinfo.org) . The appendix is a closed tube of tissue attached to the large intestine in the lower right part of the abdomen. Inflammation occurs when the appendix becomes infected or blocked by stool, calcification, foreign bodies or a tumor. If the appendix is inflamed and/or ready to burst, emergency care may be required. *For more information, see the Appendicitis (https://www.radiologyinfo.org/en/info/appendicitis) page.*

How is pediatric MRI used for appendicitis?

Children often initially undergo an ultrasound study to evaluate for appendicitis. In cases where the ultrasound study is not diagnostic, additional imaging may be recommended to diagnose appendicitis. Adults suspected of having appendicitis typically will undergo a computed tomography (CT) study, which uses x-rays to produce pictures of the inside of the body. However, in order to minimize the amount of radiation given to children, magnetic resonance imaging (MRI) may be recommended as an alternative to CT to diagnose appendicitis in children.

MRI is also useful in eliminating other possible causes of your child's pain, including:

- gastroenteritis – also known as "the stomach flu;" the stomach and intestine are irritated, causing pain, vomiting and diarrhea
- mesenteric lymphadenitis – lymph nodes in the membrane connecting the bowel to the abdominal wall are inflamed

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- Meckel's diverticulum – there is a bulge or weakness in the wall of the small intestine
- inflammatory bowel disease – the digestive track is inflamed
- intestinal obstruction – there is a blockage in the intestine
- ovarian cysts
- urinary tract infection involving one or both kidneys (pyelonephritis).

Who interprets the results and how do we get them?

A radiologist, a doctor trained to supervise and interpret radiology exams, will analyze the images. The radiologist will send a signed report to your primary care or referring physician, who will share the results with you.

What are the benefits vs. risks?

Benefits

- MRI is a noninvasive imaging technique that does not involve exposure to radiation.
- MR imaging of the abdomen has been shown to be as effective in diagnosing appendicitis as CT scans but without the radiation exposure.
- MRI has proven valuable in diagnosing a broad range of conditions.
- MRI can identify abnormalities that might be obscured by bone with other imaging methods.
- The MRI gadolinium contrast material is less likely to cause an allergic reaction than the iodine-based contrast materials used for x-rays and CT scanning.

Risks

- The MRI examination poses almost no risk to the average patient when appropriate safety guidelines are followed.
- If sedation is used, there are risks of excessive sedation. However, the technologist or nurse monitors your child's vital signs to minimize this risk.
- Although the strong magnetic field is not harmful in itself, implanted medical devices that contain metal may malfunction or cause problems during an MRI exam.
- Nephrogenic systemic fibrosis (http://www.radiologyinfo.org) is currently a recognized, but rare, complication of MRI believed to be caused by the injection of high doses of gadolinium-based contrast material in patients with very poor kidney function. Screening for adequate kidney function before considering a contrast injection minimizes the risk of this very rare complication.
- There is a very slight risk of an allergic reaction if contrast material is injected. Such reactions usually are mild and easily controlled by medication. If your child experiences allergic symptoms, a radiologist or other physician will be available for immediate assistance.

What are the limitations of Pediatric MRI for appendicitis?

High-quality images are assured only if your child is able to remain perfectly still and follow breath-holding instructions while the images are being recorded. If your child is anxious, confused or in severe pain, they may find it difficult to lie still during imaging.

A person who is very large may not fit into the opening of certain types of MRI machines.

The presence of an implant or other metallic object sometimes makes it difficult to obtain clear images. Patient movement can have the same effect.

MRI typically costs more and may take more time to perform than other imaging exams.

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