

MAGNETIC RESONANCE IMAGING MAGNETRESONANZTOMOGRAPHIE (MRT)

Information and medical history for adults and young patients for preparation of an interview with the doctor

Klinik / Praxis



Data about the patient: Patientendaten:

englisch

with contrast medium mit Kontrastmittel orally oral

intravenously intravenös

Other Sonstiges: _____

On (date (Datum): _____

Part of the body to be checked: zu untersuchende Körperregion: _____

Dear patient, dear parents,

In your case/your child's case magnetic resonance imaging is planned for a more detailed examination (MRI or so called nuclear spin tomography). This form will serve to prepare you for your pre-procedure interview with the doctor. During the interview, the doctor will explain to you the advantages and disadvantages of the scheduled procedure compared with alternative methods available, and inform you of any risks of the procedure. The doctor will answer all of your questions in order to reduce any fears or concerns you may have. You may then consent to the procedure suggested to you. Your doctor will provide you with a copy of the completed and signed form after the interview.

MODE OF OPERATION OF MAGNETIC RESONANCE IMAGING FUNKTIONSWEISE DER MRT

Magnetic resonance imaging (abbr. MRI, NMR, MR), also called nuclear spin tomography, is a modern procedure of intersection of images, where by means of radio waves cross-section images of the human body are made in the magnetic field. In this case X-rays are not applied. MRI images allow the doctor to determine accurately the location and size of the findings (e.g. a fracture, tearing of tendons, infectious focus, tumour), and the connections with other organs as well as to plan the treatment.



For the purpose of examination, you will be placed on a special bed (usually in supine position) and you will be slid into the MRI tunnel (see the picture above) where a strong magnetic field operates. The human body is composed primarily of magnetizable water molecules, which are directed in the magnetic field. Now, impulses of high frequency (radio waves) are sent to regions of the body which are to be examined. This causes a loud banging sound, which shows that the device is working properly. Energized with these impulses, the body sends signals that are received by a special antenna (coil), and which the computer converts into

intersections of images. Using this method, exact images can be produced, primarily of soft tissues in the body.

According to current knowledge, the magnetic field and electromagnetic impulses of high frequency are harmless.

MRI is a painless method and usually takes 15 to 40 minutes depending on the body part which is examined. Processing, production, analysis and evaluation of MRI images require more time.

PROCESS OF EXAMINATION UNTERSUCHUNGSABLAUF

The MRI tunnel with a radius of about 70 cm is relatively narrow. For certain examinations and treatments, the so-called open MRI units with a very short tunnel are available nowadays. Depending on the body part being examined, you can be placed inside the device completely or e.g. when examining the knee joint, only partially. If you feel anxiety you can inform the doctor, i.e. his assistant over the intercom equipment or cancel the examination by means of pressing the button for cancellation. If you suffer from claustrophobia please inform your doctor before the examination, so that we can give you a sedative.

It may happen that you find the loud banging sound disturbing, therefore you get headphones or earplugs.

During the examination, you should follow the instructions of the medical staff and stay still and relaxed. Avoid any movements, as they may cause interference to the images and impede accurate assessment of the images. When the chest and abdomen are examined, you might have to hold your breath for a short time (10-30 seconds) if given the instruction to do so.

For certain examinations, it is necessary to use a contrast medium, which is injected into the blood, e.g. via a vein (usually in the arm). You will perhaps feel a small, painless heat which is spreading throughout your body and disappears after a few seconds. The contrast medium in comparison to the X-ray contrast medium does not contain iodine and is generally well tolerated.

When examining gastrointestinal the tract, before the examination you need to drink a contrast medium. When examining the

rectum and colon, possibly it may be necessary to enter water, or contrast medium through a tube into the intestine. For examination of the bladder, contrast medium must be entered into the bladder through a catheter.

ALTERNATIVE PROCEDURE ALTERNATIV-VERFAHREN

Alternative methods of examination may be ultrasound examination, simple X-ray examination, computed tomography (CT), PET (positron emission tomography) or scintigraphy. The doctor will explain the alternatives to you and why in your case nuclear spin tomography is recommended.

ADVICE FOR PREPARATION AND AFTERCARE

HINWEISE ZUR VORBEREITUNG UND NACHSORGE

Please inform the doctor about previous X-rays, CT and MRI examinations, i.e. previous findings and take them with you when consulting your doctor.

Please follow the instructions of your doctor regarding the intake of medicines and food. The instructions may vary depending on the type of examination.

Preparation:

Medication: Please inform your doctor of any medication you take or inject on a regular basis (in particular any anticoagulant agents such as Aspirin® [ASA], Marcumar®, Heparin, Plavix®, Ticlopidin, Clopidogrel, Eliquis®, Lixiana®, Xarelto®, Pradaxa® and metformin-containing antidiabetic medicines, so-called biguanides) or have taken irregularly over the course of the past eight days prior to the procedure (for instance painkillers such as Ibuprofen, Paracetamol). This includes any over-the-counter medication and herbal remedies. Your doctor will let you know if and for how long you should stop taking your medication.

When examining the gastrointestinal tract or pancreas, you need to come to the examination with an empty stomach.

Items made of metal, such as mobile phones, glasses, watches, jewellery, hairpins, hearing aids, money, keys, piercings, removable dental prosthesis, etc., should not get into the magnetic field. Digital data carriers and magnetic-stripe cards (EC cards, credit cards, etc.) could be erased by the magnetic field and should not be brought in, either.

If you have an electronic implant like a pacemaker, defibrillator, neurostimulator, insulin pump or an inner ear prosthesis an MRI-examination normally can be performed, but it is necessary to do some preparation. Therefore, inform the doctor and X-ray technician about this when you make the appointment.

If you have metal foreign bodies in the body, such as e.g. splinters of metal, depending on the position of the foreign body (lungs, brain, eye, adjacent blood vessels), MRI examination cannot be performed. Joint prostheses and metal implants after a previous surgery are safe.

Aftercare:

After the examination with a contrast medium, it is necessary to consume enough fluids in order to rinse the contrast medium quickly through the kidneys.

If you received a sedative or Buscopan for the examination of the abdominal cavity, in case you are an **outpatient**, it is necessary for an adult to pick you up. Make sure that someone is staying with you at home during the period recommended by the doctor. If not otherwise prescribed, you must not actively participate in road traffic (not even as a pedestrian) and you must not perform risky activities or make important decisions **for 24 hours after the examination**.

Please inform your doctor or come to the clinic, if you experience skin rash after the examination with a contrast medium. This requires immediate treatment. Problems may occur even a few days after the examination.

Women who use a coil, should have its position gynaecologically checked after MRI examination, in order to prevent unwanted pregnancy.

RISKS, POSSIBLE COMPLICATIONS AND SIDE EFFECTS

RISIKEN, MÖGLICHE KOMPLIKATIONEN UND NEBENWIRKUNGEN

It is well known that **any medical intervention entails some risks**. MRI is a harmless routine. Your doctor will explain to you in more detail risks which are specific to you during the talk. You can also reject detailed explanation. In that case, skip the chapter on risk and confirm that at the end of explanation.

Allergic reactions, for instance to contrast media, other medication or latex can lead to skin rash, itching, swelling, nausea and coughing. Severe reactions such as shortness of breath, spasms, tachycardia or **life-threatening circulatory shock** are rare. They may then result in permanent organ damage, such as brain damage, paralysis or kidney failure requiring dialyses.

Dyes containing metals in the (permanent) make-up or tattoos can lead from **skin irritation to burns**.

Slight **headache** or **ringing in the ear** (tinnitus) may occur, but they disappear quickly.

Risks specific of the administering of a contrast medium

Bruises (haematoma) at the puncture sites or surrounding sites appear occasionally. In most cases they disappear without treatment, after a few days or weeks.

During the injection of a contrast medium, **rupture of the vein** may occur, leading to **bruises** that require treatment. If the contrast medium leaks into the surrounding tissue, it can cause **inflammation**, which has to be treated with cold compresses for several days.

Infections at the site of the injection with an abscess, tissue death (necrosis) or inflammation of the vein (phlebitis), are rare. In most cases they can be treated successfully with antibiotics. In extreme, exceptional cases, non-controllable infection with **life threatening blood poisoning** (sepsis) can occur.

Damage of the skin, soft tissues, i.e. nerves (e.g. by injection, haematoma, abscess from a syringe or contrast media which leaks near the vein when injecting a contrast medium (Paravasat) is rare. The consequences can be numbness, paralysis and pain. They generally disappear. It is rare that discomforts or scars remain despite the treatment.

After injection of the contrast medium, **inflammation of veins, circulatory disturbances** or blood clots forming (thrombi) may occur in the respective blood vessel. Clots can also be shifted and block blood vessels in other organs (**embolism**). Despite treatment, it may cause permanent damages (e.g. pulmonary embolism, stroke with permanent paralysis, kidney failure).

When taking a contrast medium based on Gadolinium, in case of a patient with limited kidney function it may cause nephrogenic systemic fibrosis (NSF) in extremely rare cases, a **disease of the connective tissue** that is difficult to cure, which affects the skin, joints and internal organs and can even lead to death.

Very small amounts of **gadolinium-containing contrast agents** can **accumulate**, for instance **in the brain**. This applies in particular to the older generation of "linear" contrast agents, which are only used in exceptional cases nowadays. However, to date, no damage or symptoms have been found in patients with accumulations of this kind.

Questions about Your Medical History Please fill in the following questionnaire carefully before your information talk. **Please tick the applicable box!** It goes without saying that your information will be treated confidentially. The information you provide will help the physician to better assess the risks in your particular case, to advise you on the complications that could occur, and to take any steps needed to prevent complications and side effects.

yes=ja no=nein

Gender: M / F, **age:** _____ **years, weighth:** _____ **kg, height:** _____ **cm**
 Geschlecht: m / w, Alter: Jahre, Gewicht: kg, Größe: cm,

Have you ever had an MRI scan, for instance during an earlier hospitalisation? yes no

Haben Sie schon einmal eine Magnetresonanztomographie, z. B. bei einem früheren Krankenhausaufenthalt, erhalten?

Were there any complications? yes no

Ergaben sich dabei Komplikationen?

If so, which ones? _____
 Wenn ja, welche?

Which area(s) of your body was (were) evaluated?

Welche Region(en) Ihres Körpers wurden hierbei untersucht?

Do you suffer from claustrophobia? yes no

Leiden Sie an Klaustrophobie („Platzangst“)?

Have you ever been injected a MRI contrast medium? yes no

Haben Sie schon einmal **MRT-Kontrastmittel** gespritzt bekommen?

Were there any complications? yes no

Ergaben sich dabei Komplikationen?

If so, which ones? _____
 Wenn ja, welche?

Do you have a pacemaker or a defibrillator? yes no

Haben Sie einen Herzschrittmacher oder Defibrillator?

Do you have any tattoos or piercings? yes no

Haben Sie Tätowierungen oder Piercings?

Do you usually wear a hearing aid? yes no

Tragen Sie gewöhnlich ein Hörgerät?

Do you have metal or implants (e.g. hip implant) in or on your body? yes no

screws, plates, pins, artificial joints such as hip or knee, stents in the heart vessel or other vessels, vessel clips, bypasses, spirals, heart valves, shrapnel or metal fragments, insulin- or medication pumps, inner- or middle-ear implants, electrical stimulation devices.

Haben Sie Metall oder Implantate im oder am Körper?

Schrauben, Platten, Nägel, künstliche Gelenke wie Hüfte oder Knie, Gefäßstützen in Herzkranz- oder anderen Gefäßen, Gefäßclips, Bypässe, Spirale, Herzklappen, Granat- oder Metallsplitter, Insulin- bzw. Medikamentenpumpen, Innen- oder Mittelohrimplantate, elektrische Stimulationsgeräte.

Other: Sonstiges: _____

Have you ever had metal splinters in the eye? yes no

Haben Sie jemals Metallsplitter ins Auge bekommen?

Have all these splinters been removed by an eye doctor? yes no

Are there required blood thinning medications (anticoagulants) or have there been taken any or have any been injected during the past 8 days? yes no

Werden regelmäßig blutgerinnungshemmende Mittel benötigt oder wurden in der letzten Zeit (bis vor 8 Tagen) solche eingenommen/gespritzt?

If so, which ones? _____
 Wenn ja, welche:

Do you take any other medications? yes no

Nehmen Sie andere Medikamente ein?

If so, which ones: Wenn ja, bitte auflisten:

(including non-prescription medications, natural or herbal medications, vitamins, etc.)
 (Auch rezeptfreie Medikamente, natürliche oder pflanzliche Heilmittel, Vitamine, etc.)

Are you pregnant? not certain nicht sicher yes no

Besteht eine Schwangerschaft?

Do you drink alcohol regularly? yes no

If so, what and how much: _____

Trinken Sie regelmäßig Alkohol? Wenn ja, was und wie viel:

Do you have or have you ever had any of the following diseases: Liegen oder lagen nachstehende Erkrankungen vor:

Allergies / Oversensitivity? yes no

Medications, foods, contrast media, iodine, sticking plaster, latex (e.g. rubber gloves, balloons), pollen (grass, trees), anaesthetics, metals (itching caused by metal spectacles frames, jewellery, jeans buttons).

Allergie/Überempfindlichkeit? Medikamente, Lebensmittel, Kontrastmittel, Jod, Pflaster, Latex (z.B. Gummihandschuhe, Luftballon), Pollen (Gräser, Bäume), Betäubungsmittel, Metalle (z. B. Juckreiz durch Metallbrillengestell, Modeschmuck oder Hosennieten).

Other: Sonstiges: _____

Heart, circulatory or blood vessel diseases? yes no

Heart attack, chest pain and/or tightness (angina pectoris), heart defect, irregular heart rhythm, inflammation of heart muscle, inflammation of the inner layer of the heart, heart valve disease, heart surgery (possibly with insertion of an artificial heart valve, pacemaker, defibrillator), high blood pressure, stroke, varicose veins, inflammation of a vein, brain aneurysm.

Herz-/Kreislauf-/Gefäß-Erkrankungen? Herzinfarkt, Angina pectoris (Schmerzen im Brustkorb, Brustenge), Herzfehler, Herzrhythmusstörungen, Herzmuskelentzündung, Herzinnenhautentzündung, Herzklappenerkrankung, Herzoperation (ggf. mit Einsatz einer künstlichen Herzklappe, Herzschrittmacher, Defibrillator), hoher Blutdruck, Schlaganfall, Krampfader, Venenentzündung, Gefäßbaussackung im Gehirn.

Other: Sonstiges: _____

Diseases of the respiratory tract (breathing passages) or lungs? yes no

Asthma, chronic bronchitis, emphysema.

Erkrankung der Atemwege/Lungen? Asthma, chronische Bronchitis, Lungenemphysem.

Other: Sonstiges: _____

Do you have a malignant tumour (cancer)? yes no

Leiden Sie an einer Tumorerkrankung (Krebs)?

Are you receiving or have you received chemotherapy? yes no

Erhalten oder erhielten Sie eine Chemotherapie?

Metabolic diseases? Diabetes, gout. yes no

Stoffwechsel-Erkrankungen? Diabetes, Gicht.

Other: Sonstiges: _____

Kidney diseases? Kidney insufficiency. yes no

Nierenerkrankungen? Nierenfunktionsstörung.

Other: Sonstiges: _____

Communicable (contagious) diseases? yes no

Hepatitis, tuberculosis, HIV.

Infektionskrankheiten? Hepatitis, Tuberkulose, HIV.

Other: Sonstiges: _____

Any other acute or chronic diseases/illnesses? yes no

Nicht aufgeführte akute oder chronische Erkrankungen?

Please describe: Bitte kurz beschreiben:

If certain answers are preselected, please correct them if anything has changed.)

