

Benefits and Risks involved in Magnetic Resonance Imaging (MRI)

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DESCRIPTION

A magnetic field and radio waves produced by a computer are used in the medical imaging procedure known as Magnetic Resonance Imaging (MRI), which produces precise images of body's organs and tissues. Large magnetised tubes constitute the majority of MRI equipment. The magnetic field in an MRI machine causes body's water molecules to temporarily realign. These aligned atoms emit tiny signals that are used to make cross-sectional MRI pictures, which resemble the slices in a loaf of bread.

The organs and structures inside the body can be seen clearly with an MRI scan which is a painless procedure. These finely detailed images are created by MRI using a powerful magnet, radio waves, and a computer. It does not employ X-rays (radiation). When an individual requires regular imaging for diagnosis or treatment monitoring, especially of the brain, MRI is the imaging test of choice because it doesn't use X-rays or other radiation.

The MRI machine is a large, cylindrical (tube-shaped) device that emits radio wave pulses from a scanner while producing a strong magnetic field around the patient. While some MRI machines resemble confined tunnels, others are more open. The atoms in the body align in the same way due to the MRI scanner's strong magnetic field. The MRI equipment then emits radio waves, which cause these atoms to shift from their initial positions. The atoms return to their original positions after the radio waves are switched off, sending back radio signals.

A computer receives these signals and transforms them into a picture of the body part being studied. This image can be seen on a monitor. Instead of Computed Tomography (CT), MRI may be used to examine organs or soft tissue. The ability of MRI to distinguish between different soft tissue types and between normal and abnormal soft tissues is improved.

Benefits involved in Magnetic Resonance Imaging (MRI)

- MRI is a non-invasive imaging technique which does not involve exposure to radiation.
- In some cases, MR images of the body's soft-tissue organs like the liver and many others are more capable of identifying disease than other imaging techniques. Because of this information, MRI is a very useful tool for early diagnosis and evaluation.
- MRI has shown to be helpful in the diagnosis of a wide range of diseases, including cancer, heart and vascular disease, as well as abnormalities of the muscles and bones.
- MRI can reveal problems that bone might obscure with other imaging techniques.

Risks involved in Magnetic Resonance Imaging (MRI)

- When technologists follow to the necessary safety precautions, the MRI test nearly never poses a risk to the average patient.
- Sedation during the exam has the risk of being overused. To reduce this risk, the doctor will monitor the vital signs.
- However the strong magnetic field is not harmful but it might result in the malfunction or image distortion of implanted medical devices.
- A known side effect of gadolinium contrast injection is nephrogenic systemic fibrosis.

CONCLUSION

Some MRI equipment may not be capable of holding a huge individual. The scanners have weight restrictions. It can be challenging to get clear images when there are implants or other metallic objects present. The same result can be achieved *via* patient movement. Low-quality MR images can also be produced by ascites fluid accumulation in the abdomen or pelvis.

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