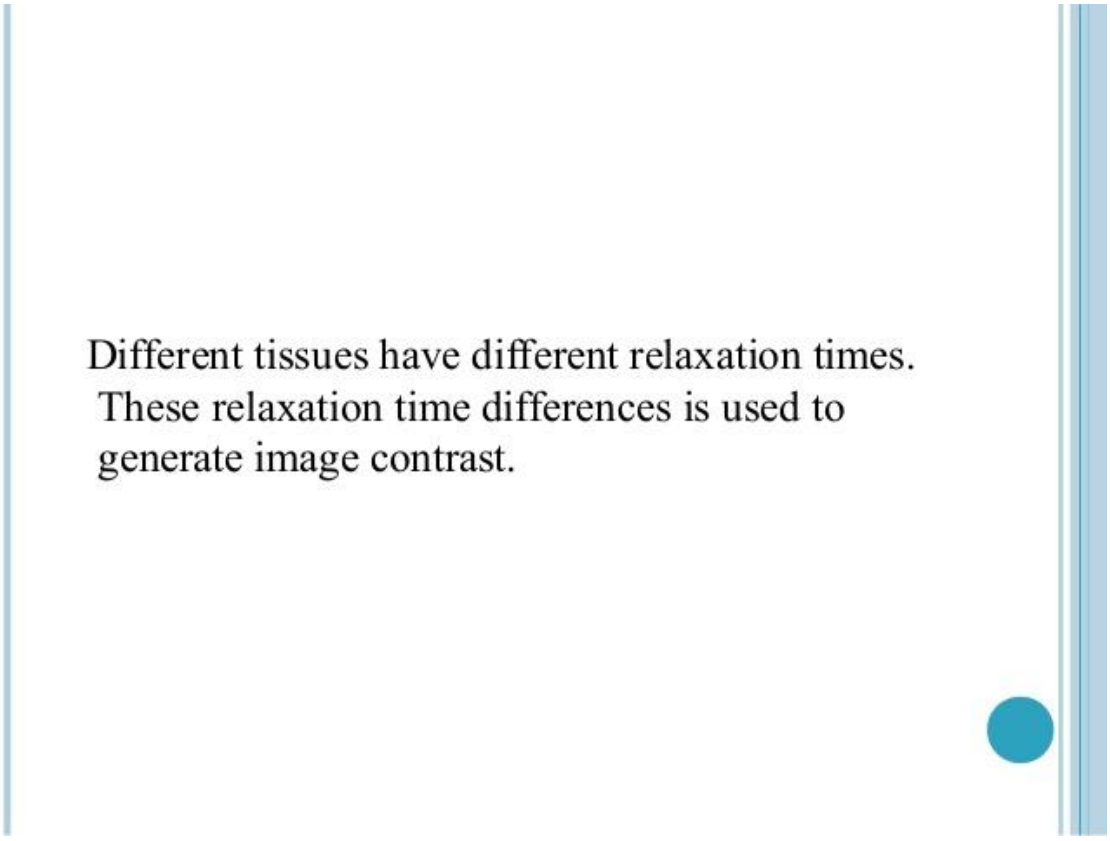
MRI is based upon the science of nuclear magnetic resonance (NMR). Certain atomic nuclei can absorb and emit radio frequency energy when placed in an external magnetic field. In clinical MRI, hydrogen atoms are most-often used to generate a detectable radio-frequency signal that is received by antennas in close proximity to the anatomy being examined. Hydrogen atoms exist naturally in people , particularly in water and fat. For this reason, most MRI scans essentially map the location of water and fat in the body



MRI: Advantages and Disadvantages

Advantages

The main advantages of magnetic resonance imaging scans are that :

- They do not involve exposure to radiation, so they can be safely used in people who might be particularly vulnerable to the effects of radiation, such as pregnant women and babies.
- MPC : axial , coronal, & sagittal
- They are particularly useful for showing soft tissue structures, such as ligaments and cartilage, and organs such as the brain , and eyes.
- They can provide information about how the blood moves through certain organs and blood vesssels, without use of contrast.
- Certain regions of the body are better assesed by mri e.g. spinal cord because of MPC & high soft tissue contrast .
- Can be used in pregnant women.

Disadvantages

The main disadvantages of magnetic resonance imaging scans are listed below:

- MRI scanners are very expensive.
- Speed of examination : slow
- Effect of magnetic field.
- The loud noises that are made by the magnets.
- claustrophobia .
- MRI scanners can be affected by movement, could effect by coughing, or swallowing, can make the image that are produced less clear.
- Insensetive to small amount of calcification & bone fracture
- May required anasthesia

Absolute contraindication to MRI

1.cochlear implant

2.Intra ocular f.b.

3.Heart base maker

4. Buillet & metalic f.b.

Regions better assesed by MRI

Knee, brai stem, spine, posterior fossa, pituitary gland.

The differences between CT and MRI scans are as follows:

A CT scan uses X-rays. An MRI does not use X-rays; it uses magnets and radio waves.

A CT scan does not show tendons and ligaments, an MRI does.

MRI is better for looking at the spinal cord.

A brain tumor is better seen on MRI.

A CT scan is better for looking at cancer, pneumonia, bleeding in the brain (especially from injury).

A CT scan shows organ tear and organ injury more quickly - so it may be the best choice for accident victims.

Broken bones and vertebrae are better seen on CT scan.

CT scans are better at visualizing the lungs and organs in the chest cavity

CT is less sensitive to patient movement than MRI.

CT can be performed if you have an implanted medical device of any kind, unlike MRI