**Magnetic resonance imaging (MRI):** a modern, safe (without ionizing radiation) diagnostic method that provides visualization of deeply located biological tissues and is widely used in medical practice. MRI provides a detailed image and is considered the best method for detecting various tumors, examining the central nervous system and spine. The MRI result is a full-fledged, three-dimensional picture of the examined area of the body.

The MRI method makes it possible to visualize sections of the brain, spinal column and spinal cord on a display screen, and then on an X-ray film. The information allows you to differentiate the gray and white matter of the brain, assess the state of its ventricular system and subarachnoid space, as well as to reveal various forms of pathologies, such as volumetric processes in the brain, demyelination zones, foci of inflammation and edema, hydrocephalus, traumatic lesions, hematomas, abscesses and manifestations of cerebral circulatory disorders.

Valuable information is revealed on MP tomograms of the spine, especially on sagittal sections. Structural manifestations of osteochondrosis are visualized, including the condition of the vertebrae and ligamentous apparatus, intervertebral discs, their prolapse and impact on the dura mater, spinal cord, and ponytail. Intravertebral neoplasms, manifestations of hydromyelia, hematomyelia and other pathological processes are also visible.

The diagnostic potential of MRI can be increased by pre-administration of certain contrast agents. Contrast agents such as gadolinium preparations are usually injected into the bloodstream.

During MRI, the patient is not exposed to ionizing radiation. However, there are limitations to MRI, such as the presence of metallic foreign bodies in the cranial cavity, which can lead to their displacement under the influence of a magnetic field and, consequently, cause additional damage to nearby brain structures. MRI is contraindicated if the patient has an external pacemaker, pregnancy and severe claustrophobia (fear of being in a cramped room). The duration of the MRI examination (30 minutes) may be complicated by the need to maintain the patient's immobile state.

Magnetic resonance imaging, like any study, has its own diagnostic limits, as well as possible limited sensitivity and specificity in the diagnosis of pathological processes. Therefore, if there are doubts about the feasibility of conducting a study, it is recommended to consult with your doctor or an MRI doctor.

Magnetic resonance imaging continues to improve, expanding the scope of its application.

**Standard types of MRI examinations:**

**Without contrast enhancement and Contrast (intravenous bolus contrast)**

- MRI examination of the brain, spine, joints, all organs and systems

**Advanced features include:**

- Studies of blood vessels without contrast enhancement using black blood flow.

- MR-enterography.

- DWIBS with MultiTransmit technology (pseudo scintigraphy).