Handbook of MRI Technique Catherine Senior 5TH EDITION 2022
Step by step MRI Jaganmohan Reddy v parsed

Radiopedia

الجامعة التقنية الوسطى

كلية التقنيات الصحية والطبية/ بغداد

قسم: تقنيات الاشعة المادة: التصوير بالرنين المغناطيسي
المرحلة: الرابعة

Title: MRI of the trauma and suspected fracture. :العنوان

Name of the instructor: اسم المحاضر:

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Target population: الفئة المستهدفة:

طلبه المرحلة الرابعة في قسم تقنيات الاشعة

Introduction: المقدمة:

It's important to note that while MRI is excellent for soft tissue and certain types of fractures, it may not always be the first-line imaging modality in acute trauma cases. In cases of suspected fractures, X-rays are typically used as an initial screening tool, and MRI may follow to provide additional information or assess soft tissue injuries. The choice of imaging depends on the clinical scenario, and consultation with a healthcare provider or radiologist is essential to determine the most appropriate imaging approach.

Pretest: الاختبار القبلي:

Why the MRI is not the first diagnostic tool for the fractures

Scientific Content: المحتوى العلمي:

Indications for MRI in Trauma and Suspected Fracture:

1. **Soft Tissue Injuries**: MRI is highly sensitive for detecting soft tissue injuries, including ligament, tendon, and muscle tears or sprains. It can help assess the extent of soft tissue damage.
2. **Stress Fractures**: MRI is effective in detecting stress fractures, which may not be visible on X-rays. It can provide early diagnosis and help prevent further injury.
3. **Bone Bruises**: MRI can detect bone bruises or contusions, which are often associated with traumatic injuries but may not be visible on X-rays.
4. **Articular Cartilage Injuries**: MRI is valuable for assessing the integrity of articular cartilage in joints, such as the knee, ankle, or shoulder, which is essential for determining the extent of joint damage.

5. **Spinal Cord and Nerve Evaluation**: In cases of spinal trauma, MRI can assess the spinal cord and nerve roots for injury, herniated discs, or compression.

Common MRI Sequences for Trauma and Suspected Fracture:

The choice of MRI sequences may vary depending on the suspected injury and the area being examined. Common sequences include:

1. **T1-Weighted Imaging**: Provides anatomical detail and helps assess bone fractures and the presence of hemorrhage.
2. **T2-Weighted Imaging**: Highlights differences in tissue water content and is sensitive to soft tissue injuries, edema, and inflammation.
3. **Short Tau Inversion Recovery (STIR)**: Suppresses fat signal and enhances the visibility of fluid, making it useful for detecting bone marrow abnormalities, fractures, and soft tissue injuries.
4. **Fat-Suppressed Sequences**: These sequences suppress the signal from fat, making it easier to visualize soft tissue injuries and fractures.
5. **Gradient Echo Sequences**: Sensitive to blood products and hemorrhage, these sequences can be used to detect bleeding or bone bruises.
6. **3D Sequences**: Provide high-resolution images and are useful for assessing complex fractures, joint injuries, or spinal trauma.
7. **Contrast-Enhanced MRI**: Contrast agents may be used to enhance the visibility of vascular injuries, such as arterial or venous injuries.

Specific Uses:

- In cases of suspected ligament or tendon injuries (e.g., ACL tear in the knee), MRI can help assess the integrity of these structures.
- MRI can identify and evaluate meniscus tears in the knee and labral tears in the shoulder or hip.

- It is valuable for assessing the extent of muscle injuries (e.g., strains or tears) and determining the need for surgical intervention.
- In spinal trauma, MRI can detect spinal cord injuries, herniated discs, or fractures of the vertebral bodies.
- MRI can help guide treatment decisions by providing detailed information about the extent and location of injuries.

Posttest: :الاختبار البعدى

Mention the specific use of the MRI with trauma?

References: المصادر:

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MRI questions and answer