الجامعة التقنية الوسطى

كلية التقنيات الصحية والطبية/ بغداد

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

Title: MRI of the neck.   العنوان:

Name of the instructor: اسم المحاضر:

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lecturer. Haydar Abdul Kader Taher

Target population: الفئة المستهدفة:

طلبه المرحلة الرابعة في قسم تقنيات الاشعة

Introduction: المقدمة:

MRI of the brachial plexus is a non-invasive imaging technique that uses a strong magnetic field and radio waves to produce detailed images of the nerves and other structures in the brachial plexus. The brachial plexus is a network of nerves that supplies the upper limbs with sensory and motor function

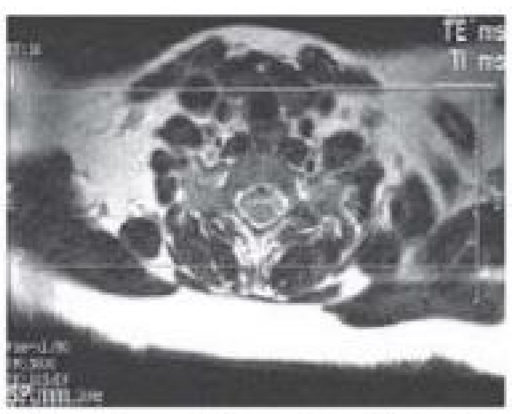
Scientific Content: المحتوى العلمي:

Indication

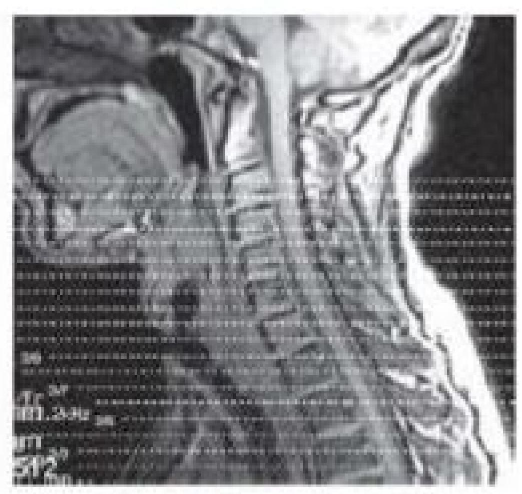
• Diagnosis and characterization of brachial plexus lesions, especially those secondary to carcinoma of the breast and the bronchus
• Thoracic outlet syndrome
• evaluation of the brachial plexus following trauma

Patient Position-CTL top

• Place the coil on the magnet table and plug it in.
• Place patient supine, head first. Rest the head and neck in the coil.
• Position the superior end of the coil at the base of the skull. This position should include C1 on a sagittal image so that you can count vertebra for localization purpose.



Axial localizer for Brachial Plexus showing correct Placement of the first and last slices of the coronal series



Sagittal localizer for axial slices

Brachial Plexus Sequences:

1. **Axial T1-Weighted Imaging:**
    - **Parameters:**
        - **Slice thickness: 3-5 mm**
    - **Use: Provides anatomical information of the brachial plexus and surrounding structures. Useful for detecting mass lesions and structural abnormalities.**

2. **<u>Axial T2-Weighted Imaging:</u>**
   - **Parameters:**
     - **Slice thickness: 3-5 mm**
   - **Use: Highlights soft tissues within the brachial plexus, aiding in the identification of nerve compression, tumors, and inflammatory changes.**

3. **<u>Coronal STIR Imaging</u>:**
   - **Parameters:**
     - **Slice thickness: 3-5 mm**
   - **Use: Provides multiplanar visualization of the brachial plexus and is particularly helpful for detecting inflammatory conditions, such as brachial plexitis.**
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4. **<u>Diffusion-Weighted Imaging</u> (DWI):**
   - **Parameters:**
     - **Slice thickness: 3-5 mm**
     - **b-values: Typically 0 and 1000 sec/mm^2**
   - **Use: Assesses tissue diffusion characteristics, which can aid in identifying nerve abnormalities, injuries, or tumors within the brachial plexus.**

5. **<u>3D Fat-Suppressed Imaging</u>:**
   - **Parameters:**
     - **High-resolution isotropic imaging**
     - **TR and TE similar to T1- or T2-weighted sequences**

- **Use: Provides detailed anatomical images and helps in evaluating the entire course of the brachial plexus, especially in cases of traumatic injuries or suspected tumors.**

These MRI sequences are tailored to assess the thoracic spine and brachial plexus, allowing for the diagnosis and evaluation of various conditions, including spinal cord compression, disc herniations, inflammatory disorders, nerve injuries, and tumors. The selection of sequences may vary based on clinical indications and the suspected pathology, and consultation with a radiologist or specialist is essential for determining the appropriate MRI protocol.

References: المصادر:

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

Mriquestions.com

Essential of body MRI 2018