

The role of brain MRI in mesial temporal lobe epilepsy

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Background: Mesial temporal lobe epilepsy is the most common form of epilepsy. Since its pathophysiological substrate is usually related to hippocampal sclerosis, the seizures are typically resistant to antiepileptic drugs and surgical treatment is considered in most patients. Defining the affected region on medical imaging is of paramount importance in this situation. The study aimed to evaluate the role of brain magnetic resonance imaging (MRI) in patients with suspected mesial temporal lobe epilepsy and its ability to reveal the responsible epileptogenic focus.

Material and methods: The study included 96 patients aged 3 to 48 years old with clinical suspicion of temporal lobe epilepsy who underwent a brain MRI scan at the Medpark International Hospital in the period 25.01.2017 – 25.01.2018. The scans were performed on a *Siemens Essenza* 1.5 Tesla MRI scanner using a specially designed epilepsy imaging protocol (sag T1W, T2W, T2-tirm, DWI). Additional sequences (such as cor T2 FLAIR, T1 IR + contrast) were also included if required.

Results: From a total of 96 patients, brain MRI revealed the potential epileptogenic region in 27 (28%) cases. The MRI findings in these patients included increased signal intensity in the region of hippocampus (23 patients), hippocampal atrophy or volume loss (19 patients), enlarged temporal horn (11 patients), smaller temporal lobe (10 patients) and collateral white matter atrophy (6 patients).

Conclusions: In our study, mesial temporal sclerosis was the most common identifiable cause of seizures. Even though brain MRI features may vary, the increased hippocampal signal intensity was the most consistent finding.

Key words: MRI, mesial temporal epilepsy, mesial temporal sclerosis.

The roles of CT and MRI techniques in ischemic stroke

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Background: Ischemic stroke is the second most common cause of death and the leading cause of disability. Imaging modalities such as computed tomography (CT) and magnetic resonance imaging (MRI) are essential in diagnosing the stroke and guiding the treatment strategy. Choosing a specific technique might be challenging in different clinical situations.

Material and methods: The study involved searching PubMed database with the following keywords: ischemic stroke, computed tomography, magnetic resonance imaging. The search revealed over 1100 articles, from which 52 were relevant for the studied topic.

Results: A head CT scan can quickly exclude the presence of hemorrhage and reveal related signs of ischemia such as the loss of contrast between the gray and white matter, hyperdense vessel sign, etc. CT imaging can also exclude other pathologies that may resemble stroke clinically. MRI is generally more sensitive than CT in the detection of ischemia, although an MRI exam is more complicated and time-consuming, which can limit its applications in an emergency. The major advantages of MRI are also related to absence of radiation and relatively safer contrast agents. Imaging vertebral and carotid arteries and their branches is an essential part of a stroke protocol and both CT and MR angiography techniques can be used for this purpose, each having its own advantages and disadvantages. A variety of newly emerged techniques such as perfusion computed tomography of the brain can also significantly improve the detection of fresh ischemia.

Conclusions: It is most likely that CT and MRI will coexist for decades, and the imaging modality for patients with acute neurological deficits will be decided according to local conditions and patient's characteristics. Patients are likely to benefit from developmental research of both imaging techniques.

Key words: ischemic stroke, computed tomography, magnetic resonance imaging.

The importance of computed tomography in the management of renal trauma

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Background: Contrast-enhanced computed tomography (CE-CT) has become the imaging modality of choice for evaluating abdominal trauma and has replaced the intravenous urography as the primary modality for assessing suspected renal injuries. The aim of this study was to assess the value of CE-CT in the management of renal trauma.