Introduction

Epilepsy is a heterogonous group of disorders with multiple causes. A common neurologic condition worldwide. Up to 8% of the population will experience at least once seizure in their lifetime. An epileptic seizure is a clinical manifestation of abnormal excessive neuronal activity arising in the grey matter of the cerebral cortex. The disorganized neuronal activity may be a purely electro-physiological event resulting in no clinically evident seizures, or it can lead to seizure specifically related to the site of activity or to some secondary activated site distant from the original source ***(Casino et al., 2004).***

Epileptic seizures are classified clinically, according to the 1981 international classification of epileptic seizures, into partial seizures in which paroxysmal neuronal activity is limited to one part of the hemisphere and generalized seizures, where the electrophysiological abnormality involves large areas of both hemispheres simultaneously and synchronously ***(Henry et al., 2004).***

Partial seizure with or without secondary generalization is among the most common neurological symptoms. It can be of a temporal lobe origin or extra-temporal origin. Temporal lobe epilepsy (TLE) is the most frequent cause of focal and refractory seizures. Mesial temporal sclerosis is the pathologic finding in 65% of temporal lobectomy in adults and is associated with other potentially epileptogenic lesions in 50% of cases. Mesial temporal sclerosis displays neuronal loss in the hippocampal Formation ***(Wen-Chau et al., 2005).***

The diagnosis of epilepsy depends on accurate assessment of clinical picture, however, successful management requires proper etiological diagnosis using certain diagnostic tools in order to provide valuable data regarding the etiology and the localization of epileptiform foci, these tools include EEG, CT and MRI. MRI is the technique of choice for investigation of patients with seizure disorder. MRI provides excellent anatomic information and tissue contrast, resulting in high sensitivity ***(Lemieux, 2004).***

Temporal lobe epilepsy (TLE) is often refractory to medical treatment and in these patients epilepsy surgery is considered. Successful surgery is dependent on accurate localization and lateralization of the epileptogenic zone. The preoperative evaluation involves a series of assessments and investigations including detailed clinical history, inter-ictal EEG, Video EEG monitoring, MRI, PET, SPECT, neuropsychology and neuropsychiatric assessment. MR imaging is highly sensitive in detecting and locating abnormalities in the temporal lobe and hippocampus in patients with TLE. An implementation of FLAIR and T1 IR sequence in the routine MR examination of the patient with TLE is recommended Advanced MR techniques including MR diffusion, perfusion and MRS have recently been assessed and are likely to enhance the pre-surgical evaluation of patients with TLE ***(Achten, 1998).***

MR spectroscopy is a non-invasive MR technique that gives the relative concentrations of certain chemical metabolites within 2 to 3 cubic centimeters (or so) of a tissue. Changes in tissue metabolites may be useful for diagnosing and characterizing certain lesions, MR neuro-spectroscopy helps in detecting abnormal spectra of various brain metabolites containing N-acetylaspartate (NAA), Choline (Cho), Creatine (Cr), gamma-Aminobutyric acid (GABA) and Glutamate. Technical

processing in MR systems, improved automated shimming methods and further development of special shim coils increase the magnetic field homogeneity and lead to a better spectral quality and spectral resolution. The handling of the systems becomes more user-friendly and is more likely to be used in recent diagnostics. The 1H-MRS has become a diagnostic tool for assessing a number of diseases of the central nervous system ***(Hammen et al., 2003).***

For medically intractable patients; accurate identification and localization of pathology prior to surgery is obligatory for a good prognosis after the operation. MR spectroscopy has demonstrated consistent metabolic abnormalities in partial seizures. Decreases in NAA as seen by MRS are found in hippocampal sclerosis, and elevated levels of lipid/lactate have been observed after electro-convulsive therapy. The reason for decrease in the N-acetylated compounds is thought to be related to neuronal hippocampal cell loss as observed in hippocampal sclerosis .With adequate asymmetry index, NAA/Cho+ Cr, MRS is a very sensitive guiding tool in predicting the side of involvement in patients with TLE***(Castillo et al., 2001).***