INTRODUCTION AND AIM OF THE WORK

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Trying to understand and define the concept of epilepsy, epilepsy can be simply defined as a recurrent seizure but still comes the difficult question, what is seizure ?

A seizure is an episodic attack that can present with a heterogeneous group of clinical manifestations including motor, sensory and behavioral changes with or without loss of consciousness.

Many different biochemical or structural abnormalities of brain may underlie the disordered neuronal activity that results in human epilepsy. Identification of malfunctioning neurotransmitter systems in epileptic brain could lead to improved forms of therapy ***(Claudio et al., 2000).***

At another level from a neurophysiological point of view, epileptic seizure are attributed to abnormal electrical discharge of the brain, but not every abnormal discharge to be epilepsy. A theory was proposed to explain that it is due to abnormal discharge that are generated either by potentiation of excitatory mechanism or by failure of intrinsic cerebral inhibitory system ***(Sherwin, 1999).***

Lucke and his associates, (1996), *suggested that fits are dysarrhythmia of the nervous system and should be regarded in a similar way to cardiac dysarrhythmia. Thus, epilepsy could be understood as being a disorder of neuronal excitability which could provide a good base for investigating underlying mechanisms of epilepsy.*

To know that to how extent epilepsy is a miserable condition, sudden unexplained death syndrome (SUDS) account for about 10% of deaths in patients with epilepsy. It is associated with subtherapeutic postmortem serum antiepileptic drugs (AEDs), but no anatomic cause of death on autopsy ***(Telfeian and Connors., 1999).***

Our knowledge and understanding the prognosis of epilepsy has advanced significantly in the last two decades. However, in two areas more data are urgently required. First more studies focusing on the prognosis of individual epileptic

syndromes are warranted including studies that will result in better delineation of epileptic syndromes as yet ill defined ***(Stasheff et al., 1994).***

In the past 10 years, researches had been transformed by two new developments, the first is the introduction of imaging techniques which allowed proper studying of blood flow changes to different regions of the brain, and also the cerebral metabolism. The second development was the new understanding of the synaptic system in the brain with its mechanisms of inhibition and excitation. Both developments contributed in the growing of the new concept of biochemical basis of epilepsy. Much progress has occurred as regard molecular biology which lead to more accurate measurement and visualization of neurotransmitters specially amino acids both excitatory e.g. glutamate and aspartate and inhibitory e.g. GABA and glycine and also peptides e.g. opioids and somatostatin ***(Staedt etal., 1994).***

Although measurement of trace elements in hair has been done for more than 75 years according to ***Chittleborough, 1980,*** *interest in the utility of this procedure has accelerated lately. Hair analysis has been used to evaluate the trace element status in the body. Furthermore, trace elements are often more concentrated in the hair than in body fluids.* ***(Liu et al., 1998).*** *Hair has been recognized as a potential repository of all the*

elements that enter the body as a chemical calender. Anticonvulsant therapy induce alterations in both the metabolism and distribution of trace elements ***(Ilhan et al., 1999).***

The aim of this work is to identify possible disturbances in enzymes of the glutamate pathway in convulsive disorders and its relation to type of seizure, degree of seizure control and antiepileptics used. The possible presence of trace elements disturbances is also probed especially in relation to various antiepileptic drugs.