

**Evaluation Of Cognitive Functions & Its Relation To
Electroencephalography In Group Of Iraqi Epileptic
Patients**

A Thesis

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Presented By

Shaymaa Jasim Mohammed

M. B. Ch. B., M. Sc. Physiology

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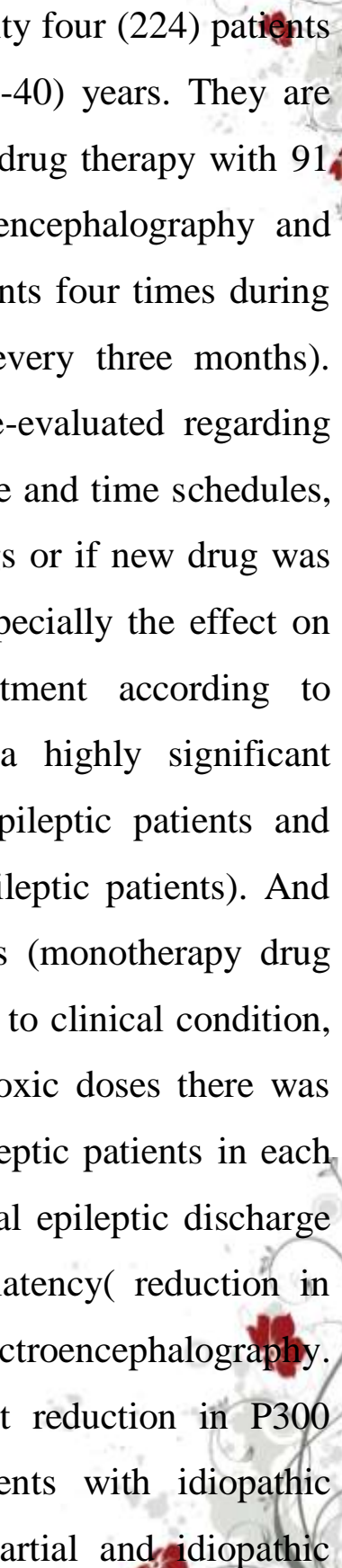
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Summary

Epilepsy defined as a condition in which a person has recurrent seizures due to a chronic underlying process, while **Seizure** is a paroxysmal event due to abnormal excessive hypersynchronous discharges from an aggregate of central nervous system neurons. **Electroencephalography** is the recording of the electrical activity of the brain and is obtained by means of electrodes placed on the scalp. The yield of Electroencephalography can be increased by repeating the study, running a prolonged trace and recording the Electroencephalography during sleep or during activation procedures e.g. hyperventilation, and photic stimulation.

Cognitive function means the ability to use and integrates basic capacities such as perception, language, actions, memory and thoughts. A computer techniques had been evolved for examining the processing of information in human brain at a physiological level. A small phasic brain potentials can be detected by means of non invasive procedures and they represent a reflections of patterned neuronal activities associated with informational transactions in the brain, these called event related potentials "ERP" and P300 wave is one of those waves that used to asses cognitive function. Cognitive & behavioral problems were recognized in patients with epilepsy in ancient times. Although some patients demonstrate normal intellect and pattern of behavior, some have interictal abnormalities in various cognitive domains such as reduced intelligence & attention, problems in memory, language and frontal executive functions.



In this prospective study Two hundred twenty four (224) patients included in the study with age range from (12-40) years. They are newly diagnosed as having epilepsy and on no drug therapy with 91 healthy age matched control subjects. Electroencephalography and event related potentials was done for each patients four times during the period of study which was 12 months (every three months). During each visit the patient condition was re-evaluated regarding Patient compliance to treatment, concerning dose and time schedules, any change in type or dose of antiepileptic drugs or if new drug was added, the side effect of antiepileptic drugs, especially the effect on concentration & re-evaluating dose of treatment according to Electroencephalography findings. We found a highly significant difference in mean P300 latency between epileptic patients and control subjects (prolonged p300 latency in epileptic patients). And after starting treatment with antiepileptic drugs (monotherapy drug regimen) with adjustment of the dose according to clinical condition, EEG findings and body weight and avoiding toxic doses there was more improvement in cognitive function in epileptic patients in each visit. In addition Patients with frequent interictal epileptic discharge show significant prolongation in mean P300 latency(reduction in cognitive function) than patient with normal Electroencephalography. Patients with partial epilepsy show significant reduction in P300 latency (better cognitive function) than patients with idiopathic primary generalized and patients with both partial and idiopathic

primary generalized epilepsy so patients with single seizure type have better cognitive function than patients with two or more seizure type,

beside that seizure type and duration are important causative factors in cognitive deficit in epileptic patients. The prolongation of P300 latency in patients with generalized epilepsy may be due to the fact that the generalized epilepsy involves global derangement of the cerebral cortex either in the initiation of the epileptic seizure or in the spread of the epileptic electrical neuronal discharge, while partial epilepsy involves a limited area of the brain. We also found that early treatment of epilepsy will prevent long term cognitive deficits & that's why adult population show more delayed improvement in cognitive function than children and adolescent since TCI (transitory cognitive impairment) can occur even with brief focal epileptic discharges and earlier than clinical attacks of seizure so it will cause accumulative burden on cognition and adversely affect cognitive function. And that's why patients with frequent interictal epileptic discharge show more reduction in cognitive function than patients with normal electroencephalography. Follow up epileptic patients with serial electroencephalography exam and p300 test will greatly help in management of epilepsy and follow up response to treatment.

تقييم الوظائف الذهنية و علاقتها بتخطيط الدماغ الكهربائي
عند مجموعة من المرضى العراقيين المصابين بالصرع

اطروحة مقدمة إلى
كلية الطب و هيئة الدراسات العليا في جامعة بغداد
كجزء من متطلبات نيل درجة الدكتوراه في علم وظائف الأعضاء

من قبل
شيما جاسم محمد
بكالوريوس طب و جراحة عامة
ماجستير فسلجة

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