The auditory evoked potential in epileptic patients

Thesis submitted in partial fulfillment of
Master Degree in Neuropsychiatry

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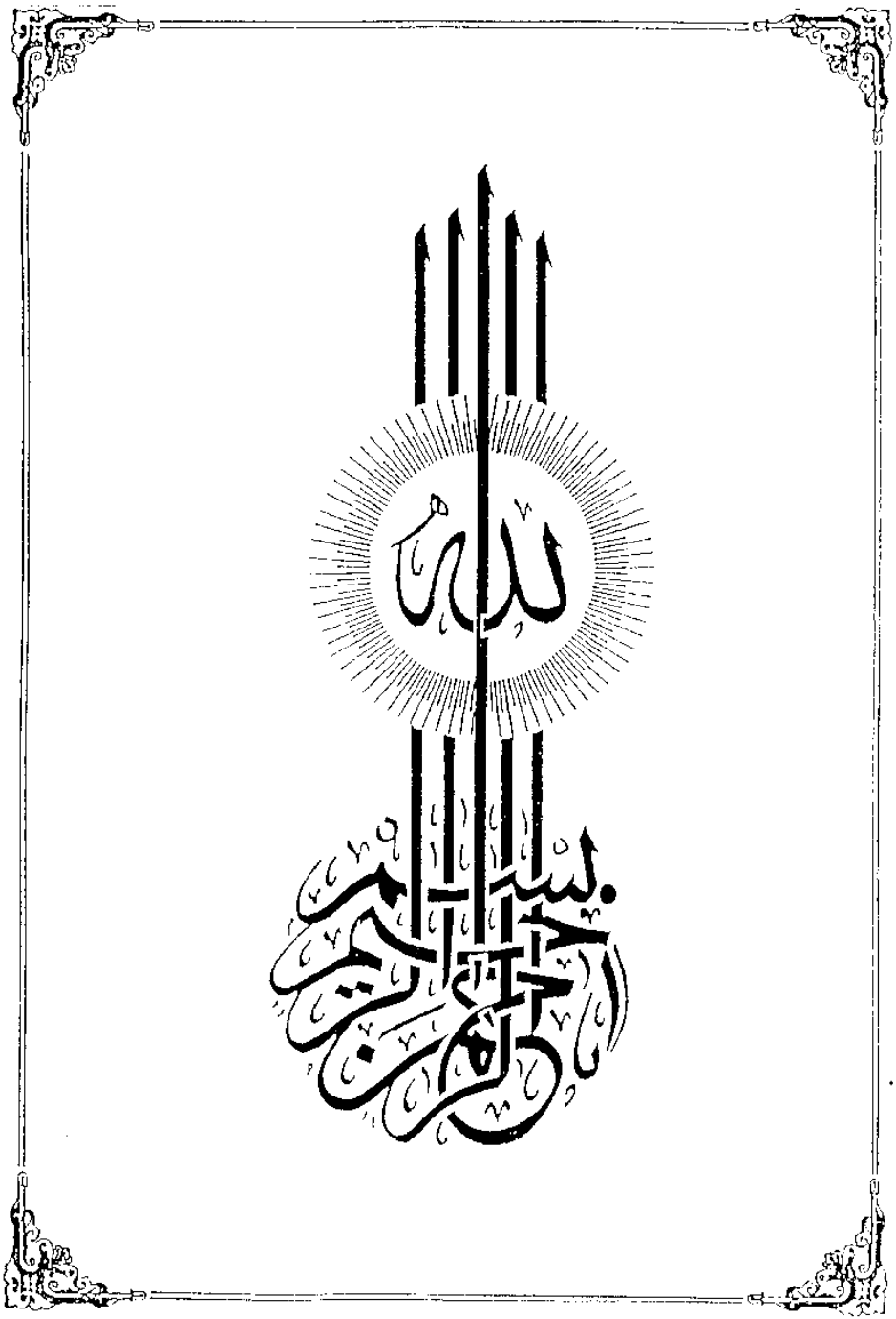
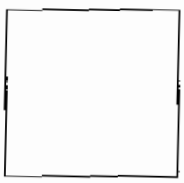
بسم الله الرحمن الرحيم

قالوا سبحانك لا علم لنا إلا ما علمتنا،
إنك أنت العليم الحكيم

صدق الله العظيم

سورة البقرة-الآية: ٣٢





To My Family

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List of Abbreviations

AERP:	Auditory Event Related Potentials
EEG:	Electroencephalography
rCBF:	Regional cerebral blood flow
GME:	Grand Mal Epilepsy
TLE:	Temporal lobe epilepsy
FLE:	Frontal lobe epilepsy
WAIS:	Wechsler Adult Intelligence scale
I.Q.:	Intelligent Quotient
ESES:	Electrical status epilepticus during slow wave sleep
AEDs:	Antiepileptic drugs
WMS:	Wechsler memory scale
STM:	Short term memory
LTM:	Long term memory
RAVLT:	Rey auditory verbal learning test
BVRT:	Benton visual test
CRT:	Discrimination (choice) reaction time
SRT:	Simple reaction time
POMS:	Profile of mood scale
WPSI:	Washington psychosocial seizure inventory
MEG:	Magnetoencephalography
PET:	Positron Emission Tomography
SPECT:	Single Photon Emission Computerized Tomography
CMRg:	Regional cerebral glucose metabolism
CAT:	Computerized Axial Tomography
IAT:	Intracarotid Amytal Test
RTE:	Right temporal epileptic focus
LTE:	Left temporal epileptic focus
MRI:	Magnetic Resonance Imaging
MR:	Mental Retardation
LHF:	Left hemispheric focus
RHF:	Right hemispheric focus
IGE:	Idiopathic generalized epilepsy
AVLT:	Auditory verbal learning test
LTL:	Left temporal lobectomy
RTL:	Right temporal lobectomy
ABR:	Auditory brain stem response
MLR:	Middle latency response
PsPs:	Postsynaptic potentials

MLT:	Medial temporal lobe
spEPS:	Sphenoidal evoked potentials
EP:	Evoked potentials
CBZ:	Carbamazepine
VPA:	Valproic acid
PB:	Phenobarbitol
VGB:	Vigabatrin
PHT:	Phenytoin
GABA:	Gamma Amino Buteric Acid
TGB:	Tiagabine
LTG:	Lamotrigine
GBP:	Gabapentin
DC	Direct current

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INTRODUCTION AND AIM OF THE WORK

Introduction and Aim of the Work

Event evoked potential has been used extensively in recent years to study brain mechanisms underlying cognition and to characterize information processing in normal and cognitively disabled populations, it is also thought to reflect neuropsychological correlates of cognitive process **(Triantafyllou et al, 1992).**

The most frequently studied has been the P300 event evoked potential (ERP) **(Sutton et al, 1965-1976)** which is a target detection response. It has been postulated to reflect stimulus expectancy **(Duncan-Johanson & Donchin, 1977)** and orienting reflex **(Roth et al, 1978)**, stimulus evaluation time **(Kutas et al, 1977; Magliero et al, 1984)**, or the updating of representations in working memory **(Fabiani et al., 1986).**

On the other hand, epilepsy is one of the neuropsychiatric diseases with mental associations which had been the interest of many studies. Epileptics make a substantial portion (3-10%) of mental hospital admission **(Slater and Roth, 1969)**, it almost always has been accompanied by some degree of mental deterioration that is not inevitable since some patients retain their normal functioning.

However, grades of abnormality were recognized by **Reyonolds (1981)** and they started from only subtle

changes in their memory extending to more extensive cognitive defects **(Trimble, 1989).**

Nevertheless, until the late 1950s, the usual objective assessment of intellectual deterioration in epilepsy was the IQ test **(Brown and Reynolds, 1981).** But, more recently, the measures used had evolved with the changing focus of investigations and tests of more discrete cortical functions, a major one of them is the P300 **(Goodin et al, 1983).**

The aim of the present study is to:

Evaluate the role of long latency auditory event related potentianl (AERP) in estimation of cognitive dysfunction in epileptic patients.

Identify the difference in cognitive dysfunction in different types of epilepsy.

Study the cognitive effects of anticonvulsant drugs.

REVIEW OF LITERATURE