GENETIC STUDIES OF EPILEPSY IN SOME EGYPTIAN CHILDREN AND THEIR FAMILES

THESIS

Submitted in partial fulfillment of Master Degree
in **Paediatrics**

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رسالة

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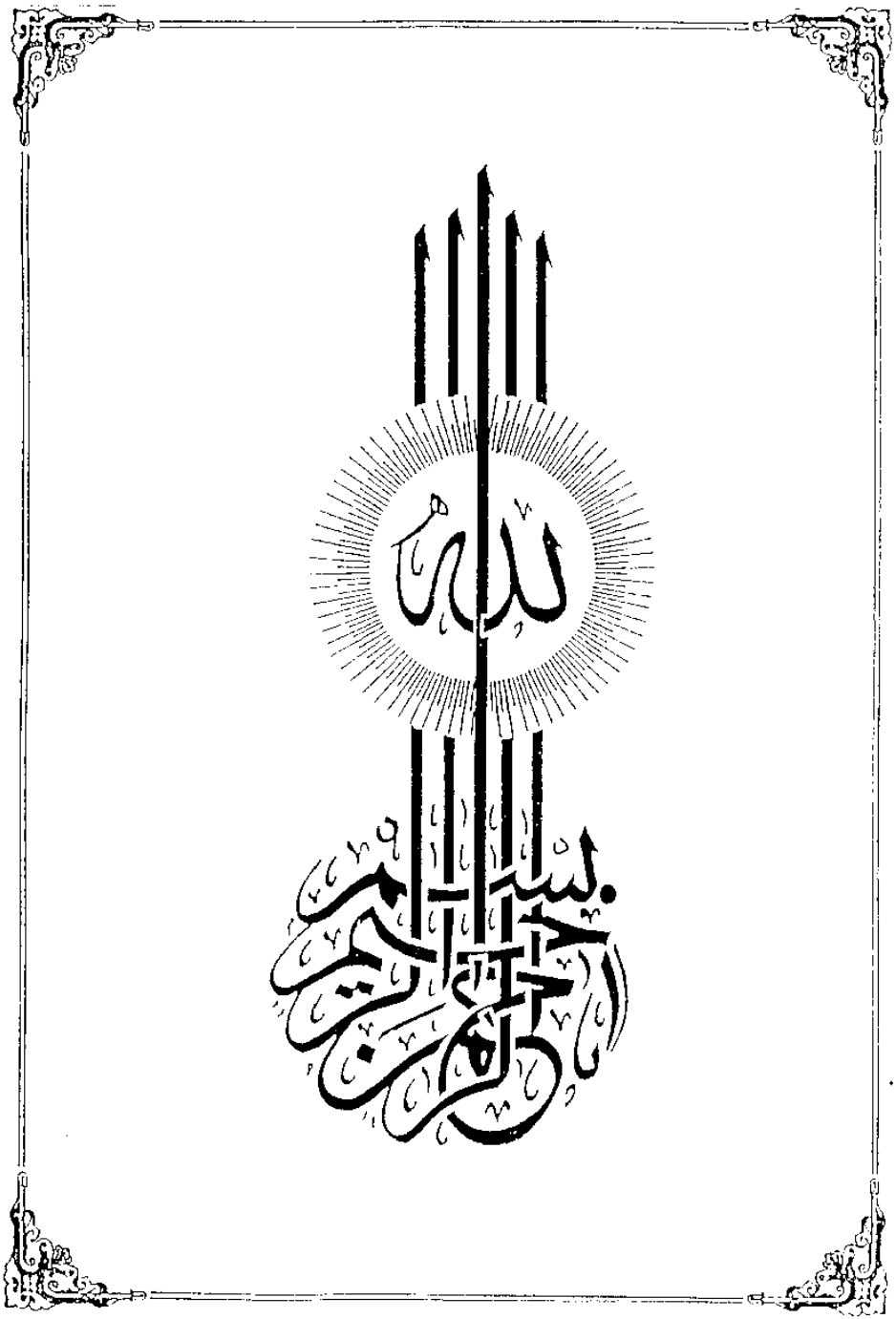

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LIST OF TABLES

Tab.No.	LIST OF TABLES (Continu)	Page

No.	LIST OF PEDIGREES	Page
-----	Examples of the commonly used symbols in pedigree studies	130
1	Family of the patient No.1 with PKU.	131
2	Family of the patient No.2 with ML II	131
3	Family of patient No.5 with autosomal recessive MR with epilepsy and spastic paraplegia.	132
4	Family of patients No.8 & 9 with COFS syndrome	132
5	Family of patient No.10 with lissencephaly syndrome	133
6	Family of patient No.11 with Dubowitz syndrome	133
7	Family of patients No. 13 & 14 with chromosomal abnormalities	134
8	Family of patient No.17 with idiopathic familial epilepsy	135
9	Family of patients No.18 & 19 with familial idiopathic epilepsy	135

LIST OF FIGURES

LIST OF ABBREVIATIONS

BFNC	: Benign familial neonatal convulsions
Ca^{2+}	: Calcium ions
cDNA	: Complementary DNA
CMV	: Cytomegalovirus
CNS	: Central nervous system
COFS	: Cerebro-oculo-facio-skeletal syndrome
CP	: Cerebral palsy
CSF	: Cerebro spinal fluid
CT	: Computed tomographic scan.
di	: dicentric chromosome
DNA	: Deoxyribonucleic acid
DNPH	: Dinitrophenyl hydrazine
DZ	: Dizygous twins
EEG	: Electroencephalography
GABA	: Gamma aminobutyric acid
GTC	: Generalized tonic-clonic seizures
HIM	: Human immunodeficiency virus
HLA	: Human leucocytic antigens
Hz	: Hertz
IM	: Intramuscular
IQ	: Intelligence quetient
IV	: Intravenous
JME	: Juvenile myoclonic epilepsy
K^+	: Potassium ions
M.S	: Metabolic screening
ML	: Mucolipidosis
MR	: Mental retardation
MRI	: Magnetic resonance imaging
MSUD	: Maple syrup urine disease
MZ	: Monozygous twins
NCPP	: National Collaborative Perinatal project.
NF	: Neurofibromatosis
PCR	: Polymerase chain reaction
PKU	: Phenylketonuria
PVH	: Periventricular haemorrhage
RFLP	: Restriction fragment length polymorphism
RNA	: Ribonucleic acid
SQ	: Social quetient
T_3	: Triiodothyronine
T_4	: Thyroxine
TORCH	: Toxoplasmosis, Rubella, cytomegalovirus, Herpes simplex virus
TS	: Tuberous sclerosis

CONTENTS

INTRODUCTION

INTRODUCTION

Epilepsy is the tendency to develop recurrent seizures. It has a worldwide prevalence with no geographical, cultural, or sex predelection.

Incidence of epilepsy was estimated in U.S.A. as 0.331/1,000/year with a prevalence of 3.7/1,000/year *(Kotagal 1990).*

The incidence of epilepsy is highest in the first decade, with a small secondary peak after age 60 *(Crombie et al, 1960; Pond et al, 1960).*

Seizures are by far the most common manifestation of neurological disease in the newborn *(Kotagal, 1990).*

Seizures are classified clinically into: (Dreifuss, 1983):

1- Partial seizures.

2- Generalized seizures.

3- Unclassified (neonatal seizures).

4- Status epilepticus.

The most common causes of neonatal and childhood seizures are: (Wallace 1992):

* **Metabolic Derangement such as:** Hypoxic-ischemic encephalopathy, hypocalcaemia, hypomagnesaemia, hypoglycaemia, hyponatraemia, and inborn errors of metabolism.

* **Intracranial haemorrhage.**
* **Infections:** Such as congenital intrauterine infections (e.g. toxoplasmosis and herpes simplex) and bacterial meningitis.
* **Drug Induced:** Withdrawal or toxic.
* **Vascular causes:** Such as malformations of intracerebral blood vessels, vasculopathies and embolic or thrombotic phenomena.
* **The genetic role in epilepsy was suspected in different studies.**

Seizures were described in different syndromes caused by chromosomal aberration such as in trisomy 18 *(Kotagal 1990)*, trisomy 12 p syndrome *(Guerrini et al, 1990)*, deletion (2)(q31 q33) *(Ramer et al, 1990)*, Angelman syndrome with deletion of 15q *(Fryburg et al, 1991)*, ring chromosome 20 *(Halal et al, 1992)*, ring chromosome 6 *(Paz-y-Mino et al, 1990)* and ring chromosome 17 in a case of Miller-Dieker syndrome *(Sharief et al, 1991)*.

Some cases with epilepsy were reported to be inherited as autosomal dominant conditions as in benign familial neonatal convulsions and Neurofibromatosis I *(Wallace 1992)*.

Epilepsy was also described in autosomal recessive disorders such as some inborn errors of metabolism as in phenylketonuria, maple syrup urine disease, non-ketotic

hyperglycinaemia, urea cycle disorders and galactosaemia *(Kotagal 1990).*

The genetic mechanism has also been identified in benign partial epilepsies (Doose & Baier 1991; Pedley 1991; Sillanpaa et al, 1991).

Little studies have been done for evaluation of genetic causes of epilepsy in Egypt.

AIM OF THE WORK

AIM OF THE STUDY

1. It is an updating review on epilepsy emphasizing a diagnostic, prognostic and therapeutic overview as well as knowledge about the genetic basis of epilepsy.

2. To study the genetic role in cases of neonatal and childhood epilepsy among some Egyptian families.