IgE LEVELS IN β-THALASSAEMIA

THESIS

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BY

MONA FATHY YOUSSEF

SUPERVISED BY

DR. LAILA ABOU ELMAGD
ASSIST. PROF. OF
CLINICAL PATHOLOGY
AIN SHAMS UNIVERSITY

PROF. DR. AHMED SAMI KHALIFA
PROF. OF PEDIATRICS
AIN SHAMS UNIVERSITY

DR. BASSIMA MAHMOUD AHMED
LECTURER OF CLINICAL PATHOLOGY
AIN SHAMS UNIVERSITY

DR. HANIZADA IBRAHIM ABDEL FATTAH
LECTURER OF CLINICAL PATHOLOGY
AIN SHAMS UNIVERSITY

FACULTY OF MEDICINE
AIN SHAMS UNIVERSITY
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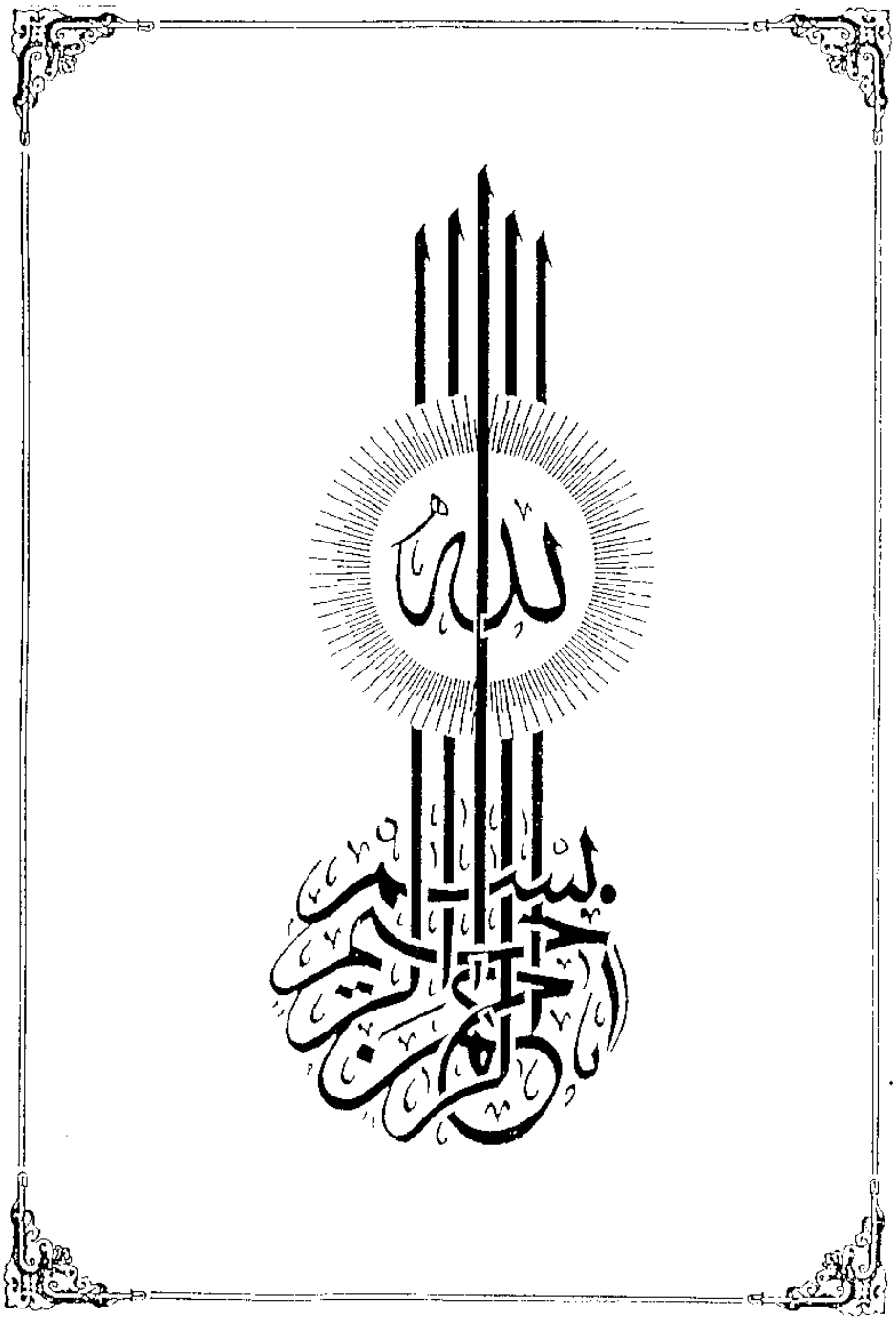

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A B B R E V I A T I O N S

ALA	=	Amino levulinic acid.
ALT	=	Alanine aminotransferase.
C-domain	=	Constant domain.
C_L	=	Constant light chain.
Fab	=	Fraction of antigen binding.
Fc	=	Fraction crystalizable.
HB_sAg	=	Hepatitis B surface antigen.
$HTLV_{III}$	=	Human T cell lymphotropic virus type III.
MNC	=	Mononuclear cells.
mRNA	=	Messenger ribonucleic acid.
PACIA	=	Particle counting immuno assay.
PRIST	=	Paper radioimmunosorbent assay.
RAST	=	Radioallergosorbent test.
RIA	=	Radio immunoassay.
RIST	=	Radioimmunosorbent assay.
V- domain	=	Variable domain.
V_L	=	Variable part of light chain.

INTRODUCTION

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β-thalassaemia major is a severe disturbance of β-globin synthesis with consequent poor erythropoiesis and reduced erythrocyte survival [*Ohne-Frempong and Schwartz, 1980*] .

Moreover, the thalassaemic patients are subjected to many serious problems like, increased incidence of infections, repeated blood transfusion, splenectomy and chronic liver disease.

Accordingly β-thalassaemic patients have been reported to suffer from many immunological changes. These changes consisted of reduced values of T-lymphocytes [*Khalifa et al., 1988*], modification in neutrophil functions and increased IgG, IgA, IgM and IgE levels [*Ropars et al., 1979 & Khalifa et al., 1983*].

Little is reported about the increase level of IgE which differ in its pathogenesis than that of other immunoglobulins.

The study of IgE in thalassaemia , may offer more information about its increase production in liver disease and its relation to blood transfusion and splenectomy.

The aim of this study is to measure IgE levels in children with β-thalassaemia major to evaluate any immunological changes, to correlate serum IgE level with frequency of transfusion and with the effect of splenectomy.

REVIEW OF LITERATURE

β - THALASSAEMIA MAJOR

The thalassaemia syndromes are group of inherited disorders of haemoglobin synthesis in which the production of one or more of the globin chains is either diminished or absent with compensatory over production of other chains [*Weatherall and clegg, 1972*].

The most common is the β-thalassaemia in which β-chain production is impaired with production of excess α-chains *(Fessas and Loukopoulos, 1976)*.

The defect in β-chain synthesis is due to reduction in either the amount or the functional capacity of the m-RNA *[Benz and Forget, 1971]*.

The study of globin chain synthesis in the homozygous state revealed two major types of β-thalassaemia, one with some residual β-chains [β^+ type] and another with no β-chain [β° type] [*Weatherall and Clegg, 1981*].

β^+-thalassaemia :

It is the most common type of β-thalassaemia in which the thalassaemic reticulocytes have a reduced activity of β-chain m-RNA [*Benz and Forget, 1971*] due to a reduction in

the amount of β-chain m-RNA rather than reduced activity of normal amount of β-chain m-RNA [*Housman et al., 1973*].

The shortage of cytoplasmic β-globin m-RNA in β⁺thalassaemia may result from a defect in the processing of the nuclear m-RNA precursors [*Nienhuis et al., 1984*].

The defect in processing may result from a single base substitution in the small intervening sequence, this change may have created a new splice site and interfere with post-transcriptional processing of β-globin m-RNA precursors [*Dobkin et al., 1983*] with formation of an abnormal m-RNA which retain some of the small intervening segment. This abnormal m-RNA will be trapped in the nucleus and not translated. The small amount of precursor m-RNA that is processed correctly will be transported into the cytoplasm where translation takes place [*Metherall et al., 1986*].

β°-thalassaemia :

It constitutes 10% of homozygous β-thalassaemia. Absence of β-chain production may be due to a base substitution which prevents normal processing of precursor β-m RNA molecules [*Kazazian et al., 1984*].

It may also resuts from mutation in the coding region of β-globin m-RNA causing premature termination signal [non