INTERLEUKIN-2 IN SERUM OF CHILDREN WITH NEPHROTIC SYNDROME

Thesis

Submitted for Partial Fulfillment of the
M.D. Degree in **Pediatrics**

Presented by
Hassan Amin Elhemeiley
M.B.,B.Ch., M.Sc.

Supervised By
Prof. Dr. Farida Ahmed Farid
Professor of Pediatrics
Faculty of Medicine
Ain Shams University

Prof. Dr. Galila Mohamed Mokhtar
Professor of Pediatrics
Faculty of Medicine
Ain Shams University

Prof. Dr. Mona Mohamed Rafik
Prof. of Clinical Pathology
Faculty of Medicine
Ain Shams University

Dr. Mohamed Salah El-Din Faheem
Lecturer of Pediatrics
Faculty of Medicine
Ain Shams University

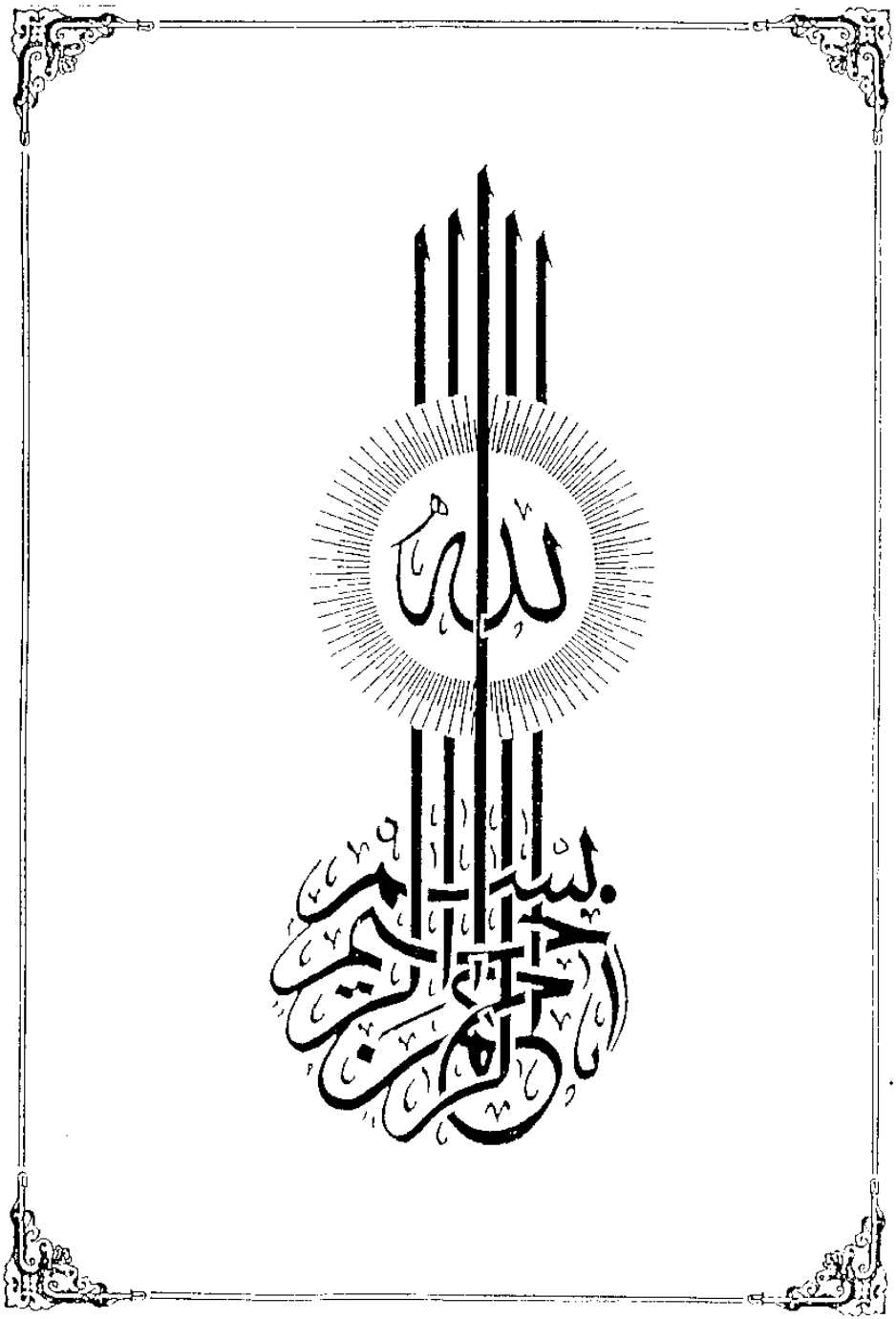
1994

بسم الله الرحمن الرحيم

﴿وقل رب زدني علما﴾

"صدق الله العظيم"

(سورة طه آيه رقم (١٤)



TO...

Our Beloved, Great Prophet

MOHAMED

Who learned us and learned all the world .. how to be human beings

ACKNOWLEDGMENT

I would like to express my utmost gratitude to my eminent Professor Dr. **Farida Ahmed Farid,** *Professor of Pediatrics, Faculty of Medicine, Ain Shams University, for giving me the privilege of working under her meticulous supervision. I owe much to her constant encouragement and valuable guidance.*

I am greatly indebted to Professor Dr. **Galila Mohamed Mokhtar,** *Professor of Pediatrics, Faculty of Medicine, Ain Shams University, without her great help and wise guidance and judgement, this thesis could not have been accomplished.*

I appreciate the excellent technical assistance of Dr. **Mona Mohamed Rafik,** *Professor of Clinical Pathology, Faculty of Medicine, Ain Shams University, for her great effort in this work.*

My deep thanks are also offered to Dr. **Mohamed Salah El-Din Faheem,** *Lecturer of Pediatrics, Faculty of Medicine, Ain Shams University, to whom I owe many valuable remarks and a lot of precious time and effort.*

I am also grateful to the patients, their parents and all members of Pediatric Nephrology Unit who helped in some way or another to complete this work.

CONTENTS

LIST OF TABLES

LIST OF FIGURES

ABBREVIATIONS

AIDS	Acquired immunodeficiency syndrome
ARS	AIDS-related complex
α2P	α-2-plasma inhibitor
ATIII	Antithrombin III
CGN	Chronic glomerulonephritis
C3	Complement 3
C3NEF	Complement 3 nephritic factor
Con A	Concanavalin A
cAMP	Cyclic adenine monophosphate
cGMP	Cyclic guanosine monophosphate
CBC	Complete blood count
FSGS	Focal sclerosing glomerulopathy
GBM	Glomerular basement membrane
Anti-GBM	Anti-glomerular basement membrane
GFR	Glomerular filtration rate
G-CSF	Granulocyte colony stimulating factor
GM-CSF	Granulocyte-macrophage colony stimulating factor
GTPase	Guanosine triphosphatase
HIV	Human immunodeficiency virus
IL-1	Interleukin-1
IL-2	Interleukin-2
IgG	Immunoglobulin G
IFNα & B1	Interferon α and interferon B1
IFN-δ	Interferon-δ
ISKDC	International study of kidney disease in children
LGL	Large granular lymphocyte
LPS	Lipopolysaccharide
LDL	Low density lipoproteins
LAK	Lymphokine activated killer cells
LT & TNF	Lymphotoxine and tumour necrosis factor

M-CSF	Macrophage colony stimulating factor
Mag-GAR	Magnetic goat anti-rabbit
MHC	Major histocompatibility complex
MGN	Membranoglomerulonephritis
MPG	Membranoproliferative glomerulonephritis
MCNS	Minimal change nephrotic syndrome
MIF	Migration inhibitory factor
NK	Natural killer cells
NS	Nephrotic syndrome
PBL	Peripheral blood lymphocytes
PGE2	Prostaglandin E2
PHA	Phytohemagglutinin A
RIL-2	Recombinant IL-2
RIA	Radioimmune assay
EDTA	Sodium ethylene diamine tetra-acetate
SDS	Sodium docyl sulphate
SD	Standard deviation
T4	Thyroxine
TSH	Thyroxine stimulating hormone
TGFB	Transforming growth factor B
25, OH D2	25, hydroxy chole claciferol
VDBG	Vitamin D binding globulin
VPF	Vascular permeability factor

INTRODUCTION

INTRODUCTION

Although the etiology of minimal change nephrotic syndrome (MCNS) is not yet established, an immune pathogenesis is suspected. *Shalhoub (1974)* postulated that patients with MCNS had two underlying effects: primarily an abnormality in T-cell regulation resulting in uncontrolled proliferation of a T-cell clone or T-cell subclass; and secondly an increase in circulating levels of a thymic hormone or lymphokine capable of alternating glomerular permeability to proteins.

Interleukin-2 is a critical component of the immune response of T-lymphocytes and is an essential lymphokine for the clonal expansion and maturation of antigen triggered T-cell activity *(Welter and Mertelsmann, 1985)*. Decreased Interleukin-2 (IL-2) production has been observed in primary immunodeficiencies *(Flomenberg et al., 1983)* and in auto immune diseases *(Linker-Iseraeli et al., 1983)*.

Hinoshita et al., (1990) studied in vitro the IL-2 production of T-cells when stimulated with autologous non T-cells and found that IL-2 was significantly decreased in patients with MCNS, regardless the stage of the disease. They postulated possible primary interleukin-2 defect in MCNS rather than a secondary phenomenon.

AIM OF THE WORK

AIM OF THE WORK

The present study aims at estimation of serum level of IL-2 in children with nephrotic syndrome, and determination of its possible correlation with the disease stage as well as the mode of therapy, possible familial changes of IL-2 will be also studied.