LIPIDS AND LIPOPROTEIN PROFILE IN EGYPTIAN CHILDREN WITH BRONCHIAL ASTHMA

Thesis

Submitted in partial fulfillment of master degree

in

Pediatrics

By

Hesham Ramadan Abdel-Gawad Khater

M.B.B.Ch.

Under the supervision of

Prof. Dr. Mohamed F. El-Badrawy

Prof. of pediatrics

Faculty of Medicine . Ain Shams University

Dr. Gamal A. H. Mottier

Assistant Prof. of pediatrics

Faculty of Medicine . Ain Shams University

Dr. Nashwa A. A. El-Badawi

Lecturer of clinical pathology

Faculty of Medicine Ain Shams University

Faculty of Medicine

Ain Shams University

1994

LIPIDS AND LIPOPROTEIN PROFILE IN EGYPTIAN CHILDREN WITH BRONCHIAL ASTHMA

Thesis

Submitted in partial fulfillment of master degree

in

Pediatrics

By

Hesham Ramadan Abdel-Gawad Khater

M.B.B.Ch.

Under the supervision of

Prof. Dr. Mohamed F. El-Badrawy

Prof. of pediatrics

Faculty of Medicine . Ain Shams University

Dr. Gamal A. H. Mottier

Assistant Prof. of pediatrics

Faculty of Medicine. Ain Shams University

Dr. Nashwa A. A. El-Badawi

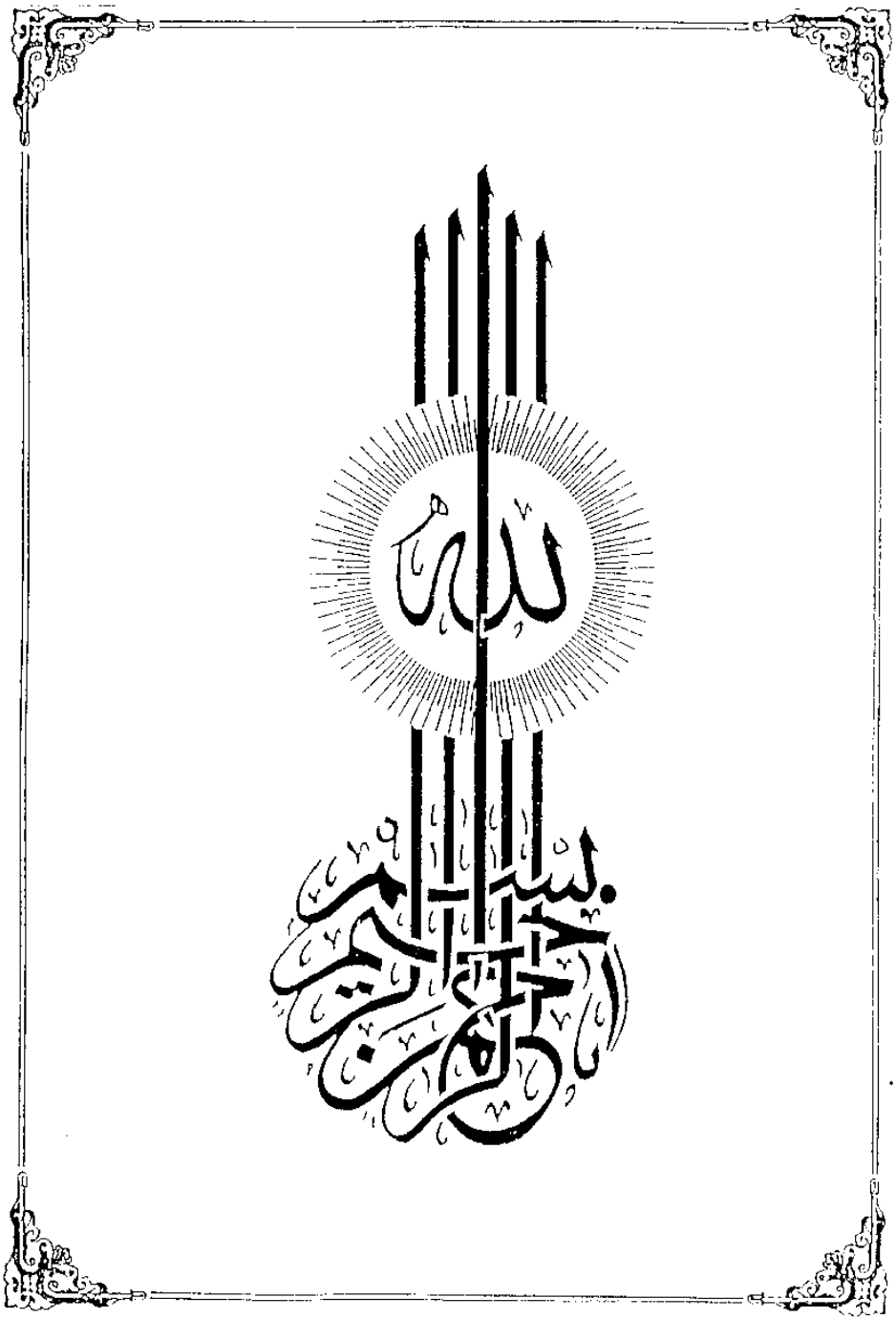
Lecturer of clinical pathology

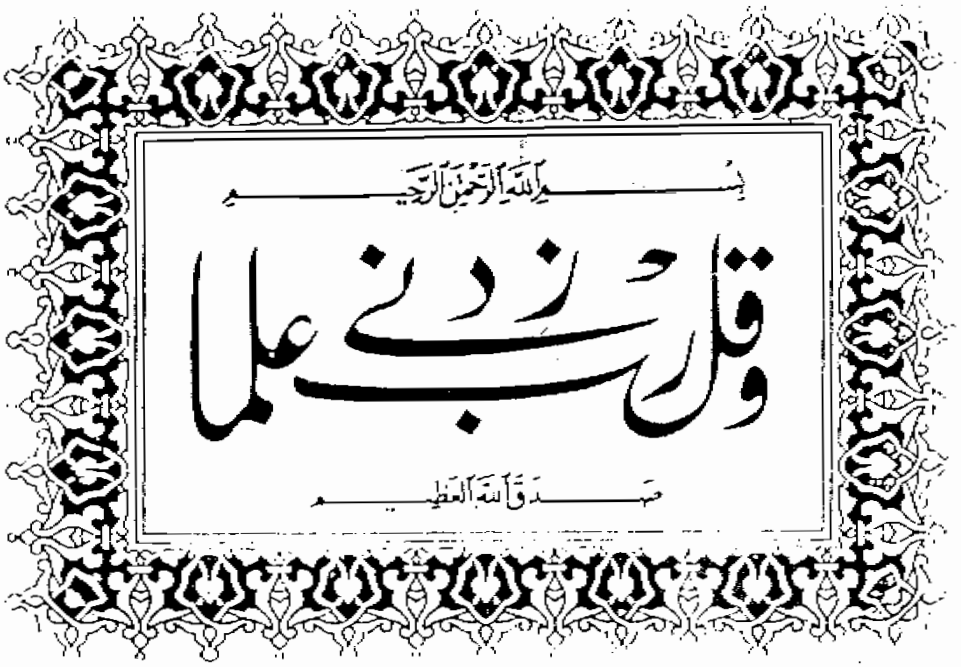
Faculty of Medicine. Ain Shams University

Faculty of Medicine

Ain Shams University

1994




بسم الله الرحمن الرحيم
وقل رب زدني علما
صدق الله العظيم

ACKNOWLEDGMENT

I wish heartly to express my deep gratitude and appreciation to ***Prof. Dr. Mohamed F. El -Badrawy***, Professor of pediatrics, Faculty of medicine, Ain Shams University, for his efforts, help and advices which are the real force behind the efforts spent in this work .

I would sincerely like to thank ***Dr. Gamal A. H. Mottier***, Ass. Prof. of pediatrics, Faculty of medicine , Ain Shams University , for his help, advices and remarks which put the work on the correct path .

Simple words will never be able to express my profound gratitude to ***Dr. Nashwa A.A. El-Badawi***, Lecturer of clinical pathology . Faculty of medicine, Ain Shams University, for her moral support, generous help and cooperation in offering all the facilities for achieving this work.

My thanks are also extended to the children and their parents who partcipated kindly in this work , wishing them all the best of health and hopping that this work may be of some value to them .

❖ ❖ ❖

List of Abreviations

- Apo - A = Apolipoprotein A.
- Apo - B = Apolipoprotein B.
- Apo - C = Apolipoprotein C.
- Apo - D = Apolipoprotein D.
- Apo - E = Apolipoprotein E.
- Apo - F = Apolipoprotein F.
- Apo - G = Apolipoprotein G.
- Apo - H = Apolipoprotein H.
- Apo - a = Apolipoprotein a.
- CAD = Coronary artery disease.
- CAMP = Cyclic adenosine monophosphate.
- C5 a = Complement 5 a .
- DNA = Deoxy ribose nucleic acid .
- EC = Esterified cholesterol.
- ECF = Extracellular fluid.
- Eo - B - CFU = Eosinophil - basophil - colony forming unit.
- Eo/B = Eosinophil / basophil .
- FC = Free cholesterol.
- Fig = Figure.
- GM/CSF = Granulocyte - Macrophage / Colony stimulating factor.
- H_1receptors = Histamine receptors
- HDL = High density lipoproteins.
- HDL - C = High density lipoprotein cholesterol.

- HLA - DR = Human leucocyte antigen - DR.
- IgE = Immunogloblin E .
- IL_1 = Interleukin 1.
- IL_3 = Interleukin 3.
- IL_4 = Interleukin 4.
- IL_5 = Interleukin 5.
- IL_8 = Interleukin 8.
- IDL = Intermediate density lipoproteins .
- LCAT = Lecithin cholesterol acyl transferase.
- LDL = Low density lipoproteins.
- LDL - C = Low density lipoprotein cholesterol.
- LPC = Lysophosphatidyl choline.
- LTC_4 = Leukotriene C_4
- LTD_4 = Leukotriene D_4
- LTE_4 = Leukotriene E_4
- M_1 = Muscrinic receptors 1.
- M_2 = Muscrinic receptors 2.
- M_3 = Muscrinic receptors 3.
- mRNA = messenger Ribose nucleic acid .
- NAD = Nicotene adenine dinucleotide.
- NANC = Non adrenergic non cholinergic.
- O.D. = Optical density .
- PAF = Platelet activating factor.
- PE = Phosphatidyl ethanolamine.
- PGD_2 = Prostaglandin D_2

- PGE_2 = Prostaglandin E_2
- PGF_2 = Prostaglandin F_2
- PGI_2 = Prostaglandin I_2
- RAST = Radio - allergen - sorbent - test.
- r. p. m. = Round per minute.
- RSV = Respiratory cyncitial virus.
- SHR = Spontanous histamine release.
- SRT = Slow releasing theophylline.
- TC = Total cholesterol.
- TG = Triglycerides.
- VIP = Vasoactive intestinal peptide.
- VLDL = Very low density lipoproteins.
- TXA_2 = Thromboxame A_2 .

TABLE OF CONTENTS

INTRODUCTION AND

AIM OF WORK

INTRODUCTION

Bronchial asthma is a common pediatric problem, which has its effects on the patient's daily activity, more school days are missed as a result of asthma than any other chronic illness *(El-Mehairy et al., 1989).*

Hence, any new approach to the problem may help for better outcome of the illness if not prevents its occurrence . It was found that there is an incease in the concentration of high density lipoprotein cholesterol *(Nath, et al., 1987)*and total cholesterol *(Agarwal and Nath, 1978)* in adults suffering from Bronchial asthma and allergic rhinitis. They did not consider increased high density lipoprotein cholesterol a chance finding and postulated that , this may play a role in the pathogenesis of the disease .Moreover, a positive association of high plasma levels of cholesterol and low density lipoprotein cholesterol with coronary artery disease has been established.

An increased suspicion of similar association between an altered plasma lipid profile and the future development of atheroscalerosis among the pediatric population also exists *(Zahavi et al., 1987 and Finberg et al., 1986).*

Aim of the work :

Is to study the serum levels of total cholesterol (TC), high-density lipoprotein cholesterol (HDL-C), low-density lipoprotein cholesterol (LDL-C), Triglycerides (TG), apolipoprotein- A1 (Apo-A1), and apolipoprotein-B (Apo-B) and evaluate atherogenic ratios namely, apo-B / apo-A1, TC/HDL-C and LDL-C / HDL-C in 30 Egyptian children suffering from bronchial asthma. This aims to determine if changes reported in adults also, occur in children which may have some implication on the pathogenesis of the disease and the future occurrence of ischemic heart disease and atheroscalerosis among these children.

BRONCHIAL ASTHMA

BRONCHIAL ASTHMA

Definition :

Godfrey, (1985) attempted to formulate a definition of childhood asthma based on clinical and physiological criteria. Asthma in childhood is a disease characterized by wide variations over short periods of time in resistance to flow in intrapulmonary airways and manifisted by recurrent attacks of cough or wheeze separated by symptom free intervals. The airway obstruction and clinical symptoms are largely or completely reversed by treatment .

However, ***Bierman and Pearlman, (1990)*** defined asthma as a condition characterized by acute attacks of shortness of breath and wheezing associated with at least partially reversable airway obstruction .

*** Prevelance and incidence of bronchial asthma :**

Asthma is responsible for a significant proportion of both acute and chronic illness in childhood ***(Bierman and Pearlman, 1990).***

It affects approximately 5% to 10% of children and it is of growing concern because of an appearent increase in morbidity and mortality ***(Burney, 1992)*** .

*** Morbidity, mortality and prognosis :**

Childhood asthma is the most common chronic lung disease in children and accounts for the most common cause of visits to the emergency room and admission to the hospital *(Ellis, 1983)*.

It is a leading cause of morbidity in childhood. In 1975, Millions restricted activity days were attributed to asthma in children under 17 years of age *(National center of health statistics, 1990).*

Siegel, (1987) said that, death due to asthma is not a new phenomenon, but until recently it has not been widely recognized. The mortality data indicated that, advances in medications for treatment of asthma have not prevented death. In fact , one must be even concerned that, medications might be playing a role in producing rates of hospitalization for asthma and deaths due to asthma *(Buist and Vollmer, 1990)*.

Indeed, recent publications from NewZealand and Canada suggest a relationship between death and overuse of B-agonists, particularly fenoterol, but also, albuterol **(Crane et al., 1989 and Spitzer et al., 1992).**

Many studies indicated that,asthma does improve in most children during adolescence . Those individuals with persistant wheezing to the age of 14 years do not become entirely asymptomatic in adolescence,