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***Lipid Abnormalities of Diabetic
Children (Controlled and Uncontrolled)***

A Thesis Submitted for Fullfilment of the Philosophy Degree in
Childhood Studies (Medical Department)

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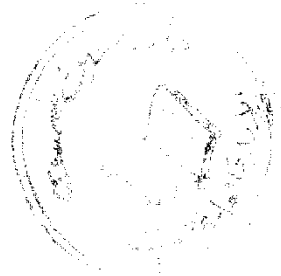
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Contents

	<u>Page</u>
Introduction and Aim of the study	1-2
Review of the literature	3-97
Plasma lipids	3 - 25
- Structure and Function of Plasma Lipids	3 - 9
- Lipid Transport and Metabolism	10 - 16
- Normal Plasma Lipids and Lipoproteins	16 - 18
- Cholesterol Screening	18 - 25
Plasma Lipid Measurements and Biological Variations	26 - 32
Dyslipoproteinemia	33 - 52
- Abnormal plasma lipids and lipoproteins	33-33
- Primary dyslipoproteinemia	33-45
- Secondary dyslipoproteinemia	45-52
Lipid Theory of Atherosclerosis	53 - 71
- Fatty Acids and Atherogenesis	53 - 55
- Lipid Peroxidation and Free Radicals	56 - 61
- Atherogenesis Process	61 - 67
- Dynamicity of atherosclerosis	67 - 71
Diabetes mellitus, Hyperlipidemia and Atherosclerosis	71 - 79
Prevention of Hypercholesterolemia	80 -89
Treatment of Lipid Abnormalities in Diabetes Mellitus	90 - 97
Subjects and Methods	98 - 102
Results	103 - 115
Discussion	116 - 126
Summary and Conclusion	127- 129
Recommendations	130 - 133
References	143- 183
Arabic Summary	

Abbreviations

Apo	apoproteins (Apolipoproteins)
ATP	Adenosine triphosphate
C	Cholesterol
CAD	Coronary artery disease
CE	Cholesterol ester
CDM	Controlled diabetes mellitus
FCH	Familial combined hyperlipidemia
FFA	Free fatty acid
PL	Phospholipids
HDL	High density lipoproteins
HTL	Hepatic triglyceride lipase
IDDM	Insulin dependent diabetes mellitus
LCAT	Lecithin cholesterol acyl transferase enzyme
LDL	Low density lipoprotein
LPL	Lipoprotein lipase
NC	Normal control subjects
NIDDM	Non insulin dependent diabetes mellitus
NIH	National Institute of Health
TC	Total cholesterol
TG	Triglycerides
VLDL	Very low density lipoproteins
UDM	Uncontrolled diabetes


List of Figures

	Page
Figure(1): Generalized structure of a plasma lipoprotein	3
Figure(2): Separation of plasma lipoproteins by electrophoresis	6
Figure(3): Structural formula of Cholesterol	7
Figure(4): Structural formulas for ω -3, ω -6 and ω -9 fatty acids	8
Figure(5): Metabolic fate of chylomicrons	12
Figure(6): Metabolic fate of very low density lipoproteins and production of low density lipoproteins	13
Figure(7): Metabolism of high-density lipoprotein	15
Figure(8): Schematic diagram of exogenous (dietary) and endogenous pathways of plasma lipoprotein metabolism	16
Figure(9): Overview of the first National Cholesterol Education Program guidelines (NCEP,1988)	21
Figure(10): Overview of the first National Cholesterol Education Program guidelines (NCEP 1993)	22
Figure(11): Essential fatty acid metabolism desaturation and elongation of ω -6 and ω -3 fatty acids.	53
Figure(12): Origin of ω -3 unsaturated fatty acids, biosynthesis of eicosanoids from arachidonic acid	54
Figure(13): Arachidonic acid structure	56
Figure(14): Chain reaction of lipid peroxidation	57
Figure(15): Reactive oxygen intermediates from molecular oxygen	57
Figure(16): Normal lipoprotein metabolism	77
Figure(17): Lipoprotein metabolism in diabetes	78
Figure(18): Fructosamine levels	108
Figure(19): Triglyceride levels	109
Figure(20): Total cholesterol levels	110
Figure(21): High density lipoprotein levels	111
Figure(22): Low density lipoprotein levels	112
Figure(23): Atherosclerotic index levels	113

List of Tables

	Page
Table (1): Lipids of the blood plasma in humans	4
Table (2): Composition of the lipoproteins in plasma of humans	5
Table (3): Major and minor apolipoproteins	9
Table (4): Plasma lipid concentrations in the first two decades of life	17
Table (5): Plasma lipoprotein concentrations in the first two decades of life	18
Table (6): Lipid and lipoprotein levels in different lipoprotein phenotypes	34
Table (7): Metabolic classification of hyperlipoproteinemia in children and adolescents	34
Table (8): Different genetic disorders, with their underlying biochemical defects, phenotype and clinical presentations	35
Table (9): The Oslo diet-antismoking study. Cardiovascular events	84
Table (10): Clinical and laboratory data of the normal control subjects	103
Table (11): Clinical and laboratory data of the controlled diabetic children	104
Table (12): Clinical and laboratory data of the uncontrolled diabetic children	105
Table (13): Correlation coefficient between fructosamine and plasma lipoproteins in the normal control subjects	106
Table (14): Correlation coefficient between fructosamine and plasma lipoproteins in the controlled diabetic children	106
Table (15): Correlation coefficient between fructosamine and plasma lipoproteins in the uncontrolled diabetic children	107
Table (16): Comparative study of serum fructosamine in the normal control subjects, controlled diabetic children and uncontrolled diabetic children	108
Table (17): Comparative study of triglycerides in the normal control subjects, controlled diabetic children and uncontrolled diabetic children	109

Table (18): Comparative study of total cholesterol in the normal control subjects, controlled diabetic children and uncontrolled diabetic children	110
Table (19): Comparative study of high density lipoproteins in the normal control subjects, controlled diabetic children and uncontrolled diabetic children	111
Table (20): Comparative study of low density lipoproteins in the normal control subjects, controlled diabetic children and uncontrolled diabetic children	112
Table (21): Comparative study of Atherosclerotic Index in the normal control subjects, controlled diabetic children and uncontrolled diabetic children	113
Table (22): Correlation coefficient between total cholesterol and other lipoprotein variables	114
Table (23): Correlation coefficient between triglycerides and other lipoprotein variables	115



Introduction

and

Aim of The Study



Introduction

Atherosclerosis is the most important cause of morbidity and mortality in long standing diabetes mellitus (West,1978). There is a considerable evidence from intervention trials in non-diabetic populations that lowering serum cholesterol reduces the risk of coronary heart disease. Although no such trials have been performed in the diabetic population, said Betteridge (1989), the evidences from non-diabetic populations show such consistency that it is likely to be applicable in the diabetic population; which was also reported by Dunn (1982). He has also pointed out that changes in lipoprotein levels are major factor in the accelerated atherosclerosis which is so prevalent in patients with diabetes in developed world .

Patients with insulin dependent diabetes mellitus are at increased risk for coronary heart disease. Factors that may enhance the risk include dyslipidemia, hypertension and hyperglycemia. Unique abnormalities in the composition and metabolism of lipoproteins may occur in IDDM patients (Garg, 1994) .

Hyperlipidemia plays a crucial role in the etiology of atherosclerosis and coronary heart disease and its prognostic sequelae. It was noticed that the process of atherosclerosis begins as early as the first decade of life (Kwiterovich, 1990); as lipids play an essential physiological role in the cardiovascular system. Cholesterol and phospholipids are integral components of cell membranes; triglycerides are the main vehicles for the transport of fatty acids from the liver and intestine to, for example, the myocardium to provide energy or the endothelium to act as a substrate for prostaglandin synthesis (Thompson,1993).

Mann (1993), has reported that data are accumulating suggested that atherosclerosis begins in early life with formation of ' fatty streaks ' which can be seen in the aorta of children and teenagers; mainly at the

bifurcation points. These fatty streaks were also described by McGill (1968). He has also reported that nearly all children by 3 years of age have some degree of aortic fatty streaks. These begin to increase in size rapidly after eight years of age and involve approximately about fifteen percent of the aortic intimal surface by the fifteen years of age.

Dyslipidemia has been clarified by Thompson, (1993) as the pathogenic potential of excess or deficient numbers of lipoprotein particles in plasma. He has classified dyslipidemia into primary dyslipidemia and secondary dyslipidemia. Primary dyslipidemia has been further classified into familial hypercholesterolemia (FH), type III hyperlipoproteinemia (remnant lipoproteinemia), familial defective apolipoprotein B (FDB) and familial combined hyperlipidemia (FCH). Secondary dyslipidemia can reflect either increased production of lipoproteins (e.g. VLDL in alcohol-induced hypertriglyceridemia and LDL in nephrotic syndrome) or decreased clearance (e.g. the acquired defect of receptor-mediated LDL uptake seen in hypothyroidism). Other causes of secondary dyslipidemia include diabetes mellitus, chronic renal failure, usage of thiazide diuretics and beta adrenergic blocking drugs.

Aim of the study

The aim of the work is to study diabetic children in an attempt to reveal the relationship between plasma lipids and diabetes mellitus (controlled and uncontrolled).

Hypothesis:

- * Does diabetes mellitus predisposes to dyslipoproteinemia?
- * Is dyslipoproteinemia of diabetes mellitus prediagnose to atherosclerosis?
- * Does control of diabetes mellitus affect plasma lipid profile?
- * Can we consider the control of plasma lipids as a major line of management of diabetic patients?