Prevalence Of Insulin Dependent Diabetes Mellitus In School Children With A Study Of Microproteinuria In Diabetic Children

Thesis
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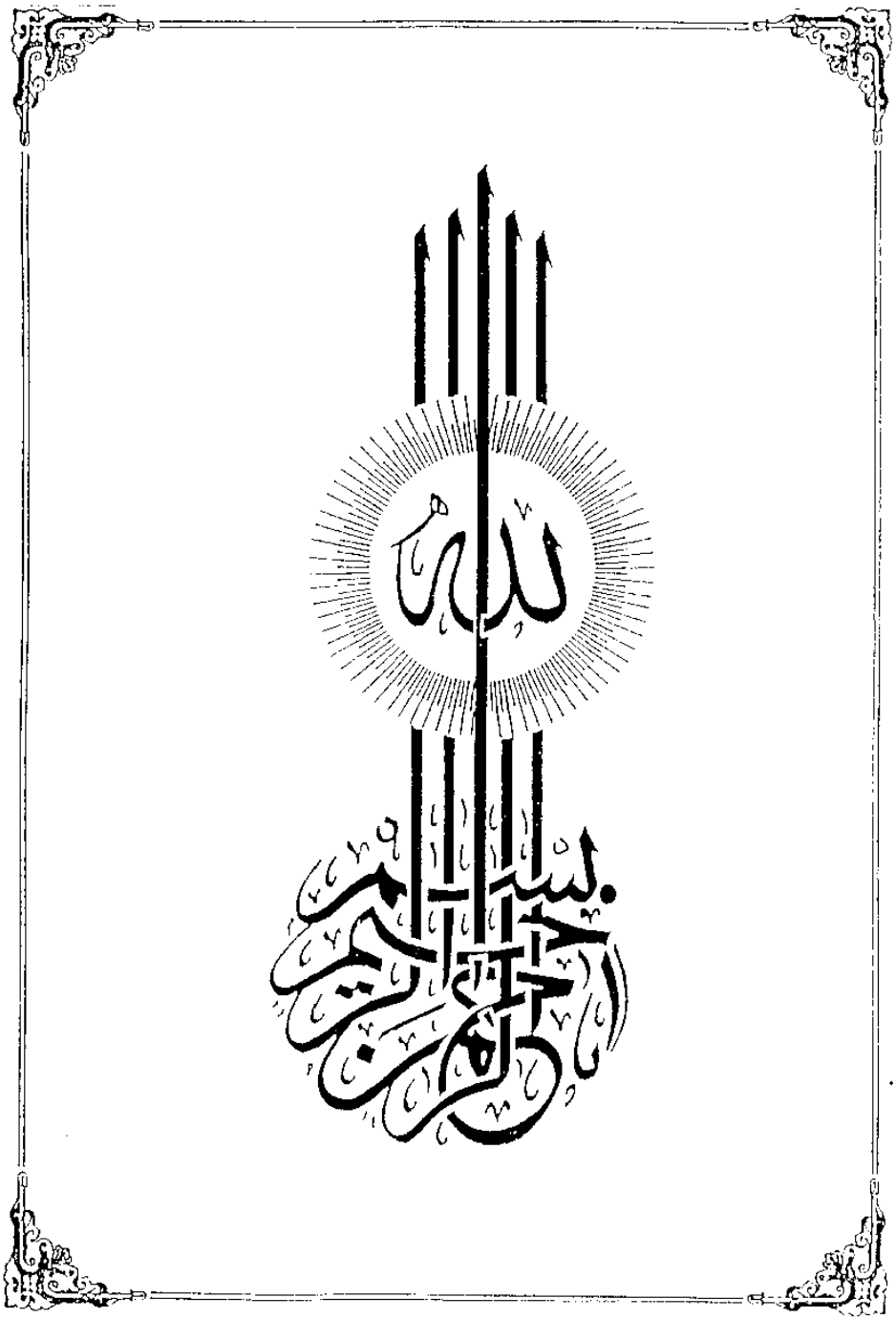

To my wife

whom I owe her the motive to finish this work

To my parents

who instilled in me a passion for knowledge

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List of Abbreviations

ACE	Angiotensin Converting Enzyme
BMG	Beta-2-Microglobulin
DEMPU	Diabetes Endocrine Metabolic Pediatric Unit
GBM	Glomerular Basement Membrane
GDM	Gestational Diabetes Mellitus
GFR	Glomerular Filtration Rate
HbA_1	Glycated Hemoglobin
HLA	Human Leukocyte Antigen
IDDM	Insulin Dependent Diabetes Mellitus
LMW	Low Molecular Weight
NAG	N-Acetyl Beta glucosaminidase
NIDDM	Non Insulin Dependent Diabetes Mellitus
RBP	Retinol Binding Protein
UAER	Urinary Albumin Excretion Rate

Introduction
&
Aim of Work

Introduction

Diabetes Mellitus is a syndrome of disturbed energy homeostasis caused by a deficiency of insulin or its action and resulting in abnormal metabolism of carbohydrate, protein, and fat. It is the most common endocrine-metabolic disorder of childhood and adolescence with important consequences on physical and emotional development. Individuals affected by insulin-dependent diabetes confront serious burdens that include an absolute daily requirement for exogenous insulin, the need to monitor their own metabolic control, and the need to pay constant attention to dietary intake. Morbidity and Mortality stem from the metabolic derangement and from long-term complications that affect small and large vessels and result in retinopathy, nephropathy, neuropathy, ischemic heart disease, and arterial obstruction with gangrene of the extremities.

The acute clinical manifestations can be fully understood in the context of current knowledge about the secretion and action of insulin; genetic and other etiologic considerations point to autoimmune mechanisms as factors in the genesis of type I diabetes, and there is an emerging consensus that the long-term complications are related to metabolic disturbances. These considerations form the basis of the therapeutic approaches to this disease (***Behrman et al., 1992***) .

Diabetes Mellitus has been known since antiquity. Reference is made in a Papyrus Ebers (1550 B.C.) to "a medicine to drive away the passing of too much urine". The first accurate clinical description of the disease was made by Aretaeus of Cappadozia in the second century A.D., who stated, "Diabetes is a wonderful affection, not very frequent among men, being a melting down of the flesh and limbs into urine". The early references to diabetes most certainly were to the ketoacidotic form of the disease. Thomas Willis described the sweet character of the urine in diabetes in the latter part of the seventeenth century. He recognized that

diabetes was rare among the ancients, "But in our age given to good fellowship and guzzling down chiefly unalloyed wine; we meet with examples and instances enough". He undoubtedly was describing the increasing frequency of a non-ketotic form of the disease ***(Wrenshall et al., 1962).***

Throughout the course of history, diabetes mellitus was thought to be a single entity. The concept that diabetes mellitus is not a single disease, but rather a clinical syndrome characterized by inappropriately elevated fasting and or postbrandial blood glucose and the development of long term microvascular, macrovascular, and neuropathic changes is of very recent origin and stems from numerous investigations into the epidemiology, genetics, etiology, and pathogenesis of clinical diabetic states.

Aim of Work

The aim of work is to determine the prevalence of insulin dependent diabetes mellitus among school age children in Egypt and to assess the role of β_2-microglobulin as a tool to detect early renal affection in diabetic children and to study the effect of diabetes metabolic control and duration of the disease on the presence of microproteinuria.

Review of Literature

Classification of Diabetes Mellitus

Diabetes Mellitus is not a single entity but rather a heterogeneous group of disorders in which there are distinct genetic patterns as well as other etiologic and pathophysiologic mechanisms that lead to impairment of glucose tolerance.

Before 1980, a variety of descriptive terms were used to classify diabetes, some based on the age of onset and others, the stage or the degree of severity of the disease. A welter of confusion hindered the assessment of data from studies of the natural history of the disease and its complications. The U.S. National Diabetes Data Group then created a new classification based on clinical or descriptive observations from epidemiologic studies of large populations to provide uniform designations and a framework for collecting investigative and epidemiologic data on diabetes ***(National Diabetes Data Group, 1979).***

A similar but more inclusive classification adopted by the world Health Organization Expert Committee on Diabetes Mellitus in 1980 has been accorded general acceptance ***(WHOEC, 1980).***

Three major forms of diabetes and several forms of carbohydrate intolerance have been identified. The overall classification of diabetes mellitus and other categories of glucose intolerance is shown in table "I".

- **Type I-Insulin Dependent Diabetes Mellitus (Juvenile-Onset Diabetes)**

Type I diabetes is usually characterized by abrupt onset of symptoms, although present evidence suggests that its evolution may involve an antecedent period of slowly developing autoimmune damage to the pancreatic B-cells ***(Gorsuch et al., 1981 ; Harrison et al., 1992).***