THESIS

In Hospital Prognosis of diabetic versus Non Diabetic Patient with Acute Myocardial Infarction

BY

MAGDY EL_SAYED EL_GANAYNY

M.B.,B.Ch.

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SUPERVISORS

Prof. Dr. FATHY ALI EL_SHERIEF

PROFESSOR OF MEDICINE

Ass. Prof. Dr. ADEL EL_ETRIBY

ASSISTANT PROFESSOR OF CARDIOLOGY

Ass. Prof. Dr. YEHIA EL_SHAZLY

ASSISTANT PROFESSOR OF MEDICINE

FACULTY OF MEDICINE

AIN SHAMS UNIVERSITY

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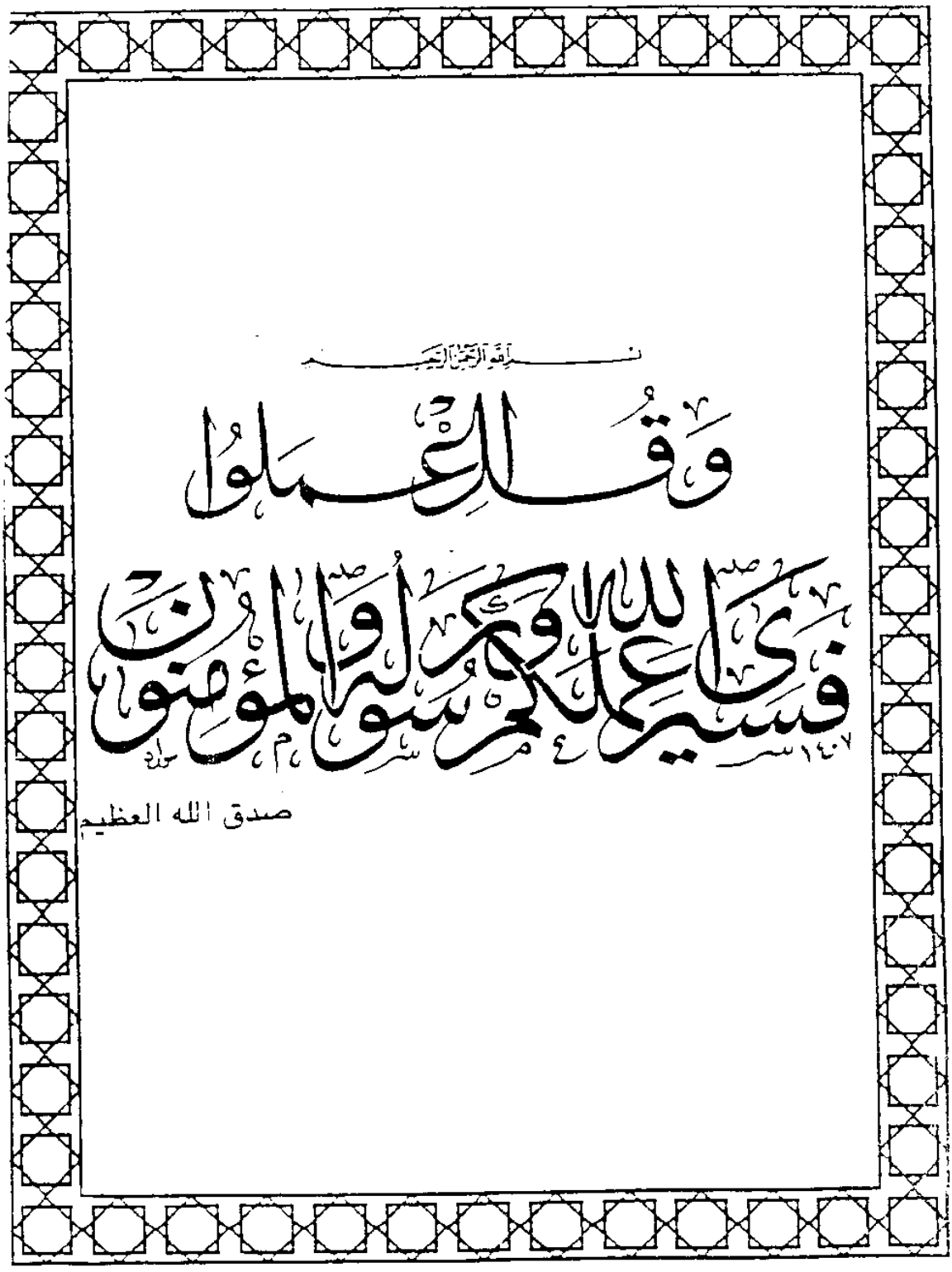

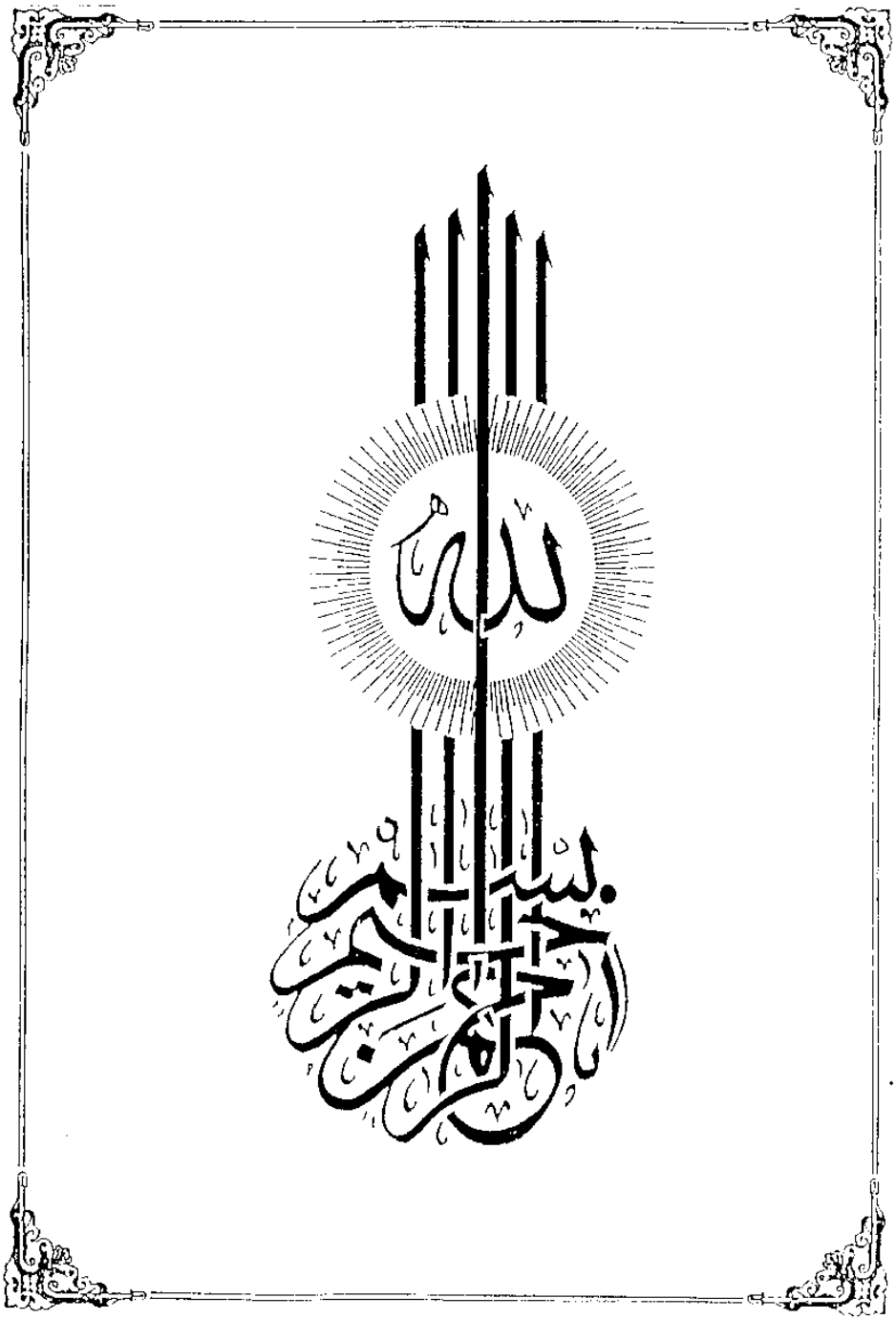

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NTRODUCTION

INTRODUCTION

Diabetes mellitus is a serious metabolic disorder. The true frequency is difficult to estimate because of different standards of diagnosis.

The disease is characterized by long term complications involving eyes, kidneys, nerves and blood vessels. While some patients may never develop these complications, others note their onset early, on the average symptoms develop 15-20 years following appearance of overt hyperglycemia.

Arteriosclerosis of the type seen in non diabetics occurs more extensively and earlier in diabetic patients than in general populations. Atherosclerotic lesions produce symptoms in various sites including coronary arteries. So, diabetic patients are more liable to ischemic heart disease.

Diabetes mellitus is strong independent risk factor for the development of atherosclerosis, predisposes to the development of other known risk factors for atherosclerosis such as hyperlipidemia and hypertension and is associated with obesity.

Diabetic patients also frequently develop primary cardiomyopathy associated with both systolic and diastolic left ventricular dysfunction.

So, it has been well established that patients with diabetes mellitus have a greater morbidity and mortality from cardiovascular disease than do nondiabetic patients.

Acute myocardial infarction is one of the major causes of mortality in cardiac patients. Mortality with acute myocardial infarction is approximately 35%

Many risk factors were recognized to help in precipitating myocardial infarction and altered its prognosis. These factors include hypertension, diabetes mellitus, smoking and hyperlipidemia.

REVIEW

DIABETES MELLITUS

Definition:-

Diabetes is a systemic disease characterized by hyperglycemia, hyperlipidemia and hyperaminoacidemia. It is caused by a decrease in the secretion or activity of insulin and is associated frequently with specific lesions of the microcirculation, neuropathic disorders and a predisposition to atherosclerosis.

Diabetes is universal, with widely varying prevalence rates in different populations and with the same population (*West KM (ed): 1978*).

In the United States (U.S), an estimated 6 million persons are known to have diabetes, with an equal number unrecognized. Prevalence rates in 1973 ranged from 1.3/1000 among persons under 17 years of age to 78.5/1000 among those age 65 years or over (*Diabetes data publication No. 78-1468 :1978*), with diabetes reported 50% more frequently in females than in males and slightly more frequently in non whites

(2.4%) than in whites (2.0%).

The public health burden is accentuated not only by the high mortality rates (rates for patients with diabetes are several times higher than those of non diabetic population) but also by the high morbidity associated with chronic complications of diabetes.

Classification:-

Diabetes is subclassified as : Type I, insulin - dependent diabetes mellitus (IDDM). Type II, non insulin - dependent diabetes mellitus (NIDDM) and other types of diabetes.

A. Type I - Insulin - dependent Diabetes Mellitus.

Type I disease is usually characterized by an abrupt onset of symptoms, although present evidence suggests that its evolution may involve an antecedent period of slowly developing autoimmune damage to the pancreatic β cells. (*Gorsuch AN et al :1981*).

Genetic factors related to histocompatibility antigens (*Human Lymphocyte antigens*) DR3 and DR4 are associated with the predisposition to humoral or cytotoxic immune activity directed against islet tissues. (*Irvine WJ et al :1979*). Environmental factors particularly certain viral agents such as Coxsackie B, mumps and rubella, are postulated to play an etiologic role in predisposed individuals (*Craighead JE: 1981*).

Failure of insulin secretory capacity causes Ketosis - proneness in the basal state, a clinical feature which differentiates Type I from Type II diabetes. Patient with Type I disease depend on insulin injection to prevent Ketosis and to sustain health.

Type I diabetes, which involves about 15% of the diabetic population, occurs primarily in young patients, but may be seen at any age.

B. Type II - Noninsulin - Dependent Diabetes Mellitus

Type II disease is recognized as having a strong genetic basis, as evidenced by studies of identical twins and by familial transmission of diabetes in an autosomal dominant inheritance pattern (*Fajans SS, et al :1978*). There is, however, no association with human Lymphocyte antigen distributions, and islet cell antibody is not present.

Patients with Type II disease are Ketosis - resistant under normal conditions but may exhibit Ketosis during severe stress or infection.

Environmental factors, such as obesity, play a role in inducing or worsening glucose tolerance in these patients (*Brodoff BN, et al :1982*).

Pathophysiologic alternations are of two forms in patient with Type II diabetes

1) A decreased insulin secretory response to the glucose stimulus characterized by reduced acute insulin release, and decreased total insulin secretion relative to the blood glucose concentration.

2) Reduced sensitivity or responsiveness to insulin related to decreased insulin - receptor activity and to post - receptor defects (*DeFronzo RA, et al : 1983*).

Two major sites of insulin resistance are defined in Type II diabetes mellitus. In the basal state, the overproduction of glucose identifies the liver as a site of insulin resistance. This is reflected in an increased hepatic glucose output in the postabsorptive state leading to a rise in fasting plasma glucose concentrations. In the fed state, the primary site of insulin resistance is muscle, demonstrated by a 50% reduction in glucose uptake by peripheral tissues of patients with diabetes during insulin glucose clamp studies (*DeFronzo RA, et al : 1983*).

Type II diabetes, which occurs in 80 to 85% of the diabetic population, is usually encountered in adults, but may occur in young patients.

Patients with Type II diabetes often respond to weight reduction, dietary management, exercise and sulfonylurea medications.

C. Other Types of Diabetes Mellitus

Formerly termed secondary diabetes, the subclass other types is heterogeneous and includes specific disorders such as pancreatic disease, hyperendocrinopathies (Cushing's syndrome, pheochromocytoma, glucagonoma, aldosteronoma, acromegaly), chemical agents or drug induced diabetes (Glucocorticoids, most thiazide diuretics, diphenylhydantoin, oral contraceptives, clonidine, lithium), or genetic syndrome associated with glucose intolerance (e.g hyperlipidemia, Turner's syndrome).

IMPAIRED GLUCOSE TOLERANCE

The designation impaired glucose tolerance applies to individuals whose plasma glucose concentrations lie between normal and values diagnostic of diabetes. Plasma glucose concentration in such individuals may progress to overt diabetes over variable time periods, but the majority remain the same. In some, plasma glucose concentrations may improve to normal.