Haptoglobin In Diabetes Mellitus

Thesis Submitted for the fulfillment of Master Degree in Endocrinology and Metabolism

By

Mosad Mohamed Ali

M. B.,Bch.

Ain Shams University

Supervisors

Prof. Dr.Mogazi Aly Mahgoub
Professor of Int. Medicine&Endocrinology,
Ain Shams University.

Prof. Dr. Mohamed Alaa El-Din Hamed
Professor of Int. Medicine&Endocrinology,
Ain Shams University.

Prof. Dr. Mohamed Fahmy Abdel-Aziz
Professor of Int. Medicine&Endocrinology,
Ain Shams University.

Prof. Dr. Gihan Kamal Hassan Aly
Professor of Clinical Pathology
Ain Shams University.

-1994-

ACKNOWLEDGMENT

"Thanks to God"

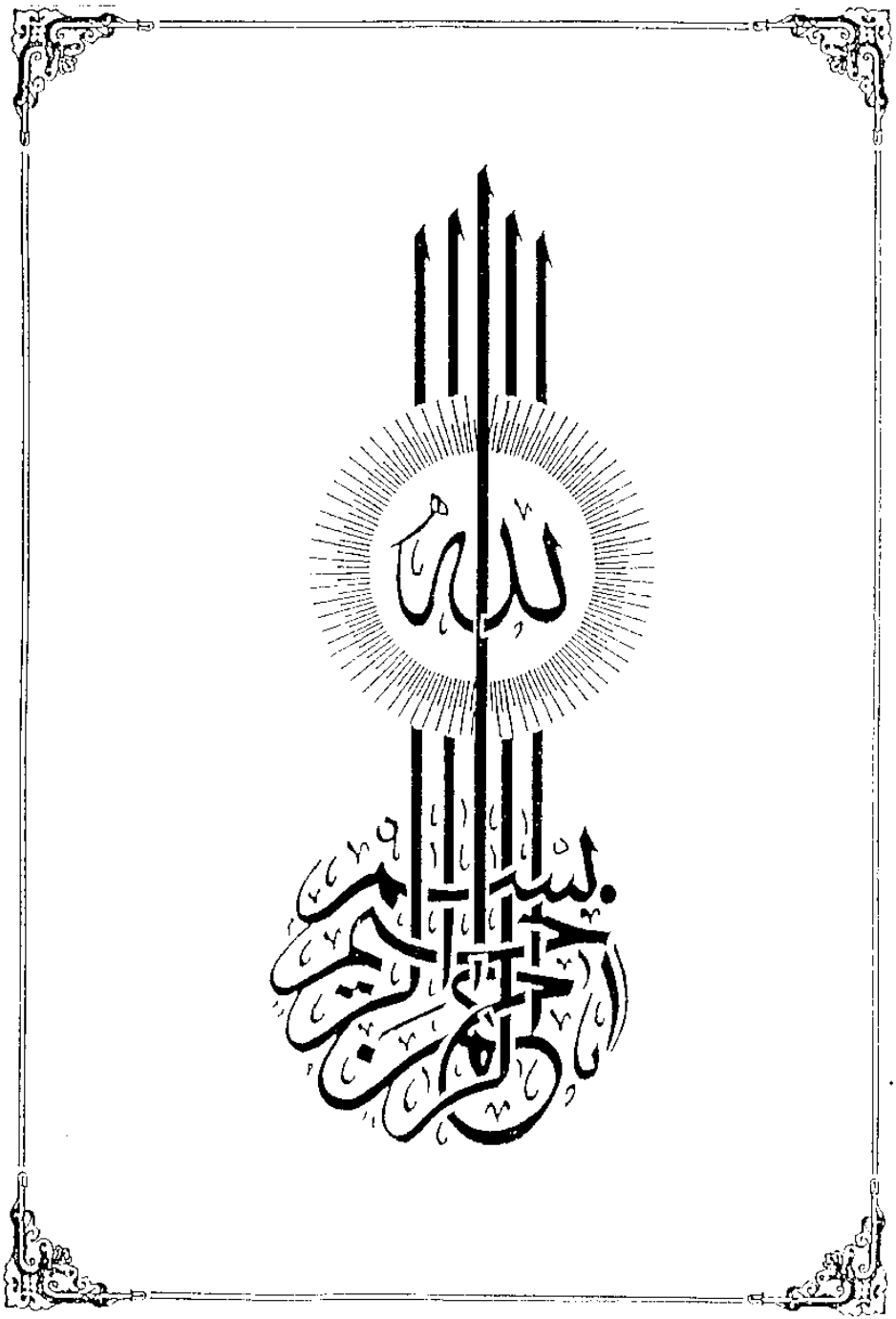
I would like to express my deepest gratitude and cordial thanks to Prof. Dr. MOGAZY ALY MAHGOUB, Professor of Internal Medicine and endocrinology, Ain Shams University for his kind advice, encouragement and fruitful criticism.

I would like also to express my cordial thanks to Prof. Dr. MOHAMED ALAA ELDEEN HAMED, Professor of Internal Medicine and endocrinology, Ain Shams University for his continuous help and supervision.

I would like also to express my cordial thanks to Prof. Dr. MOHAMED FAHMY ABD EL-AZEEZ, Professor of Internal Medicine and endocrinology, Ain Shams University for his continuous help and supervision.

Also I would like to express my gratitude and cordial thanks to Prof. Dr. GEHAN KAMAL HASSAN Professor Of Clinical pathology Ain Shams University for her kind help and supervision especially during the practical part of this work.

Lastly best wishes for all the patients and the normal healthy volunteers who agreed to participate in this study.



Introduction and Aim of The Work

The incidence of diabetes mellitus has been investigated by many centres and researchers. Diabetes causes many pathological manifestations. Among the organs and tissues it affects are the eyes , the kidney and nervous system.

Diabetic nephropathy is most common single cause of end stage renal failure (Herman & Teutsch 1984).

Diabetic retinopathy is one of the leading causes of blindness in the world (Aiello etal 1985).

On the other hand acute phase proteins - among them haptoglobin - can give us idea about these complications.

The aim of this work is to find out how far is haptoglobin related to these complications.

Contents

INTRODUCTION


REVIEW OF
LITERATURE

DIABETES MELLITUS

History of Diabetes

History of diabetes :

1500 BC.	Date of Ebers papyrus. the papyrus describes abnormal polyuria and was brought by Ebers in Luxor in the1870s.
500 BC.	Diabetes described ("honey urine") in the Ayur Veda of Susruta. Also recognized by Chinese.
AD50	Celsus described abnormal polyuria.
60	Clear description by Aretaeus of Cappadocia.
1000	Avicenna noted association between diabetes, skin infection and impotence
1682	Brunner observed polydipsia and polyuria in pancreatectomized dog.
1788	Cawley suggested the pancreas may be involved.
1869	Islets described by langerhans.
1889	Minkouski and Von Mering noted that pancreatectomy caused diabetes in the dog.
1909	de Meger called the postulated puncreatic factor insulin.
1921	Paulesco extracted insulin, Banting and Best extracted insulin, purified it and used it to treat diabetes in a dog

(Jeffcoate 1993)

Definition:

The word diabetes is derived from the Greek word Siphon (Hostetter 1986). It is defined as a disease which affects the metabolism of carbohydrate, protein and fat and which can cause complication in every tissue and organ of the body (Jeffcoate 1993).

Epidemiology of Diabetes in Egypt :-

After 1986 the prevalence of diabetes mellitus (**DM**) has been systematically studied using WHO diagnostic criteria, on a population basis and with a unified protocol.

The total prevalence of DM in Egypt is 4.3 % with distinct geographical differences : 5.7% in Urban areas , 4.1 % in the Rural agricultural parts and 1.5 % Rural desert areas inhabited by Bedouins (Arab 1992).

The commonest age of onset of type 1 DM falls between 4-18 years, with a peak at 12-14 years and there appears to be a tendency for DM to develop at a younger age among Egyptians. As in other communities the highest prevalence of DM as a whole occurs at later age - in the 5th and 6th decade. Gender distribution indicates a 1:1.4 male to female rates (Arab 1992).

Family studies point to a high rate of inheritance from consanguineous

parents among diabetes, with no specific difference between Insulin Dependent Diabetes Mellitus (IDDM) and Non Insulin Dependent Diabetes Mellitus (NIDDM) (Arab 1992).

Special studies on high risk group indicate high prevalence rates of DM, such as 22% among close relatives, 28.4% with obesity and 30% in premature atherosclerosis (Arab 1992).

Among hypertensives a prevalence of 20.2% DM was found to be increased to 33.2 %, 36.3 % when hypertension is associated with obesity, positive family history or premature atherosclerosis respectively. The prevalence of gestation diabetes is 3.5 % (Arab, 1992).

Personal commumication with Dr. M. A. Aly, Diabetes Institute, who supervised a survey on diabetes prevelance in Cairo zone in 1993, revealed that the incidence is about 18% in those above 20 y. No marked difference between males and females. Some risk factors as- obesity, hip/waist ratio and positive family history- were put into consideration. 13% of the whole study (about 2%) were type I diabetes and the rest (about 16%) were type II diabetes.

Epidemiology of diabetes in the Middle East:-

Bacchus et. al. 1985 concluded that it is still difficult to estimate the prevalence and incidence of diabetes in the Middle East.

Data collection in some epidemiological studies of the disease in that area has been inadequate, partly because culture mores have prevented access to some segments of Middle Eastern society.

They added that the studies have generally not used standard diagnostic criteria and analytic methods. The available data have made it clear, that non insulin dependent diabetes is becoming as prevalent in the Middle East as it is in the industrialization west.

Classification :-

The classification recommended by the National Diabetes committee on Diabetes is :-

1- Insulin dependent ketosis prone type of DM (type 1 diabetes).

2- Non- Insulin dependent non ketosis prone type of DM (type 2 diabetes).

3- Diabetes associated with certain condition and syndromes e.g. pancreatic disease, hormonal imbalance, certain genetic syndromes, drugs and chemicals.

4- Gestation diabetes which is restricted to women who develop glucose intolerance during pregnancy.

5- Impaired glucose tolerance which is a term restricted to individuals, their plasma glucose levels between normal and those considered diabetic.

6- Individuals with normal glucose tolerance who have experienced transient hyperglycemia be classed as previous abnormality of glucose tolerance.

7- Individuals who are at high risk to develop DM, be classed as potential abnormality of glucose tolerance. (National diabetes group 1979 , Drury 1986)

Diagnosis :-

The diagnosis of diabetes may be established on basis of fasting venous plasma glucose concentration when the level of which is greater than 7.8 m mol/L (140 mg / dl) on more than one occasion. (National diabetes data group 1979)

In certain situations when a considerable doubt exists about patient's glucose tolerance , fasting level is less than 140 mg /dl , these cases exhibit sustained elevated venous plasma glucose values during an oral glucose tolerance test using 75 gm oral carbohydrate food. (National diabetes data group 1979)

Values $\geq$ 200 mg /dl at 2 hours of the ingestion of carbohydrate dose at some other time point between time 0 and 2 hours are diagnostic (Drury1986).

The WHO criteria of diagnosis of IGT specify that the fasting blood glucose should be normal and the 2 hours blood glucose is greater than 140 mg % but less than 200 mg % (Drury 1986).

An oral glucose tolerance test is performed over 3 hours using 100 gm oral glucose food with sampling at zero, 1, 2, 3 hr's.

The test is abnormal when any two of the following value are equaled or exceeded :-

Fasting venous plasma glucose value	105 mg %
1-2 hr's value	189 mg %
2 hr's. value	165 mg %
3 hr's value	146 Mg %

(Drury1986).