DESFERRIOXAMINE IN BETA THALASSEMIA

THESIS

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BY

FARIDA HUSSEIN EL-RASHIDI
M.B.B.Ch.

Supervisors

Prof.Dr. AHMED SAMY KHALIFA
Professor of Pediatrics

Dr. LAILA EL-SHAWARBY
Lecturer of Clinical Pathology

Faculty of Medicine
Ain Shams University

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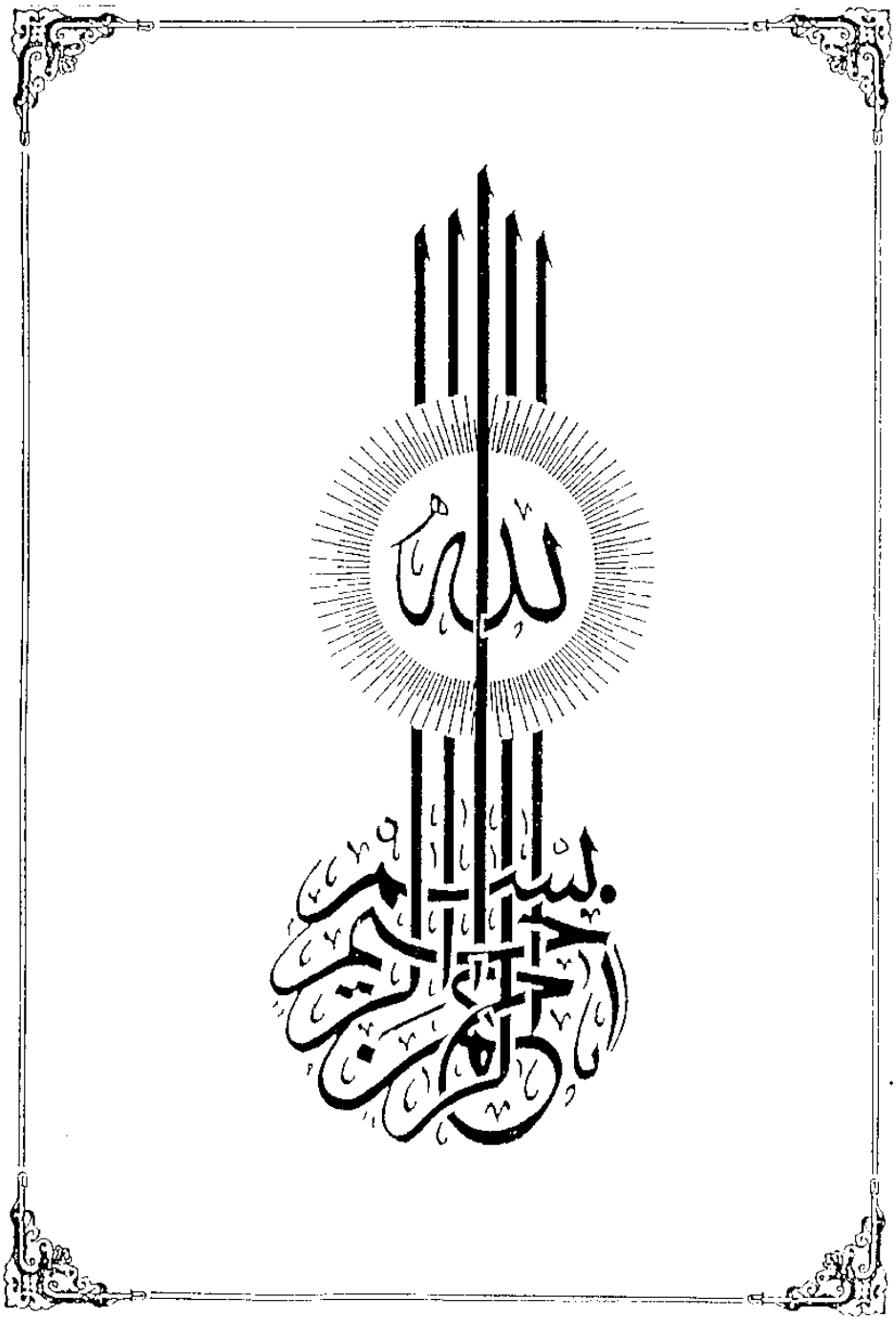
وقل اعملوا فسيرى الله عملكم ورسوله والمؤمنون

- صدق الله العظيم -



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TO MY MOTHER

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LIST OF ABBREVIATIONS

DF	:	*Desferrioxamine*
FO	:	*Ferrioxamine.*
HBsAg	:	*Hepatitis B surface antigen.*
NANB	:	*Non A Non B*
SGPT	:	*Serum glutamic pyruvic transaminase.*
SGOT	:	*Serum glutamic oxalo-acetic transaminase.*
T_3	:	*Tri-iodothyronine.*
T_4	:	*Tetra-iodothyronine.*
HS	:	*Highly significant*
NS	:	*Non significant.*

INTRODUCTION

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Beta thalassemia is the commenest chronic haemolytic anemia in Egypt (Sabry, 1973).

It has been previously reported in Egypt both in homozygous and heterozygous state (Diwani, 1944 ; Nor El Din and Awny, 1950).

Repeated blood transfusions are recquired to keep the thalassemic patients alive. Hypertransfusion regimen, designed to maintain the hemoglobin level above 9 gm/dL, was of value to maintain a near normal rate of growth and development, and to allow fewer complications (Piomelli et al., 1969). Transfusion siderosis was the unfortunate consequence of massive accumulation of iron.

Several recent development have led to a renewed interest in iron chelation therapy, for transfusion dependent patients with secondary iron overload. Up till now desferrioxamine ranks first among iron chelating agent (Weatherall, 1982). The pharmacological peculiarities of desferrioxamine due to the poor absorption from the gastrointestinal tract (Keberle, 1964), short half life and the long infusion time required to achieve a steady state levels (Summers et al.,1979),

suggested that continous infusion, particularly the subcutaneous route would be the method of choice (Propper et al., 1977 and Hussain et al., 1976).

A number of small portable continous infusion pumps have been designed to facilitate administration of desferrioxamine by the subcutaneous route, but they are relatively expensive and are beyond reach by the majority of patients in the developing countries.

AIM OF THE WORK

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The aim of the present study is to compare continous infusion desferrioxamine subcutaneous administration and subcutaneous infusion by drip. The rate of excretion and the drop in the serum iron levels will be compared between the two methods.

An additional aim of this study is to asses the effect of one weak chelation therapy on serum transaminases as a liver function test.

REVIEW OF LITERATURE

BETA THALASSEMIA

The thalassemia syndromes are a group of genetically determined anemias, which result from inherited abnormality of globin chain production.
The clinical expression of each thalassemic defect depends upon the globin chain involved, the extent of the defect, the adequacy of compensatory adjustment in the production of other globin chains and the effect of proteolysis of the excess normal chain (Kwaku-Ohene and Schwartz, 1980).

Beta thalassemia is the most common thalassemic syndrome. It is a hemolytic disease with wide range of clinical complications. In this type, Beta globin chain synthesis is imparied. As a result hemoglobin A ($\alpha_2 B_2$) production will be affected, while hemoglobin F($\alpha_2 \gamma_2$) and hemoglobin A_2 ($\alpha_2 \delta_2$) containing no Beta chains are increased. The deficiency of Beta chain production leads to hypochromic microcytic anemia.
The major factor contributing to anemia is hemolysis occurring in bone marrow and spleen.

Classification of Beta thalassemia:

The beta thalassemia can be classified into B^0 thalassemia in which no globin chain are synthesized and the B^+ thalassemia in which there is a reduced rate

of Beta chain production. The B^{+} thalassemia can be further subclassified at a descriptive level into:

* Severe Mediterranean forms, where HbF is in the range of 50 - 90%.
* Mild Negro forms, where HbF is in the range of 20 - 40%.

Weatherall (1982), reported another well defined subgroup of both B° and B^{+} thalassemia in which A_2 level is normal.

A variety of terms have been used to describe the B-thalassemia syndromes. The most severe form of B-thalassemia i.e., thalassemia major is characterized by severe anemia and life limiting complications of iron overload. Thalassemia intermedia is used to designate a less severe hemolytic anaemia. Chronic transfusion therapy is not required and survival into adult life is the rule. Thalassemia minor is an asymptomatic disorder associated with prominent abnormalities of erythrocyte morphology but with little or no anemia. Finally thalassemia minima refers to a condition that is undetectable except by inference from family studies.