Thyroid Function in Chronic Renal Failure

A Thesis
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Master Degree in Pedaitrics

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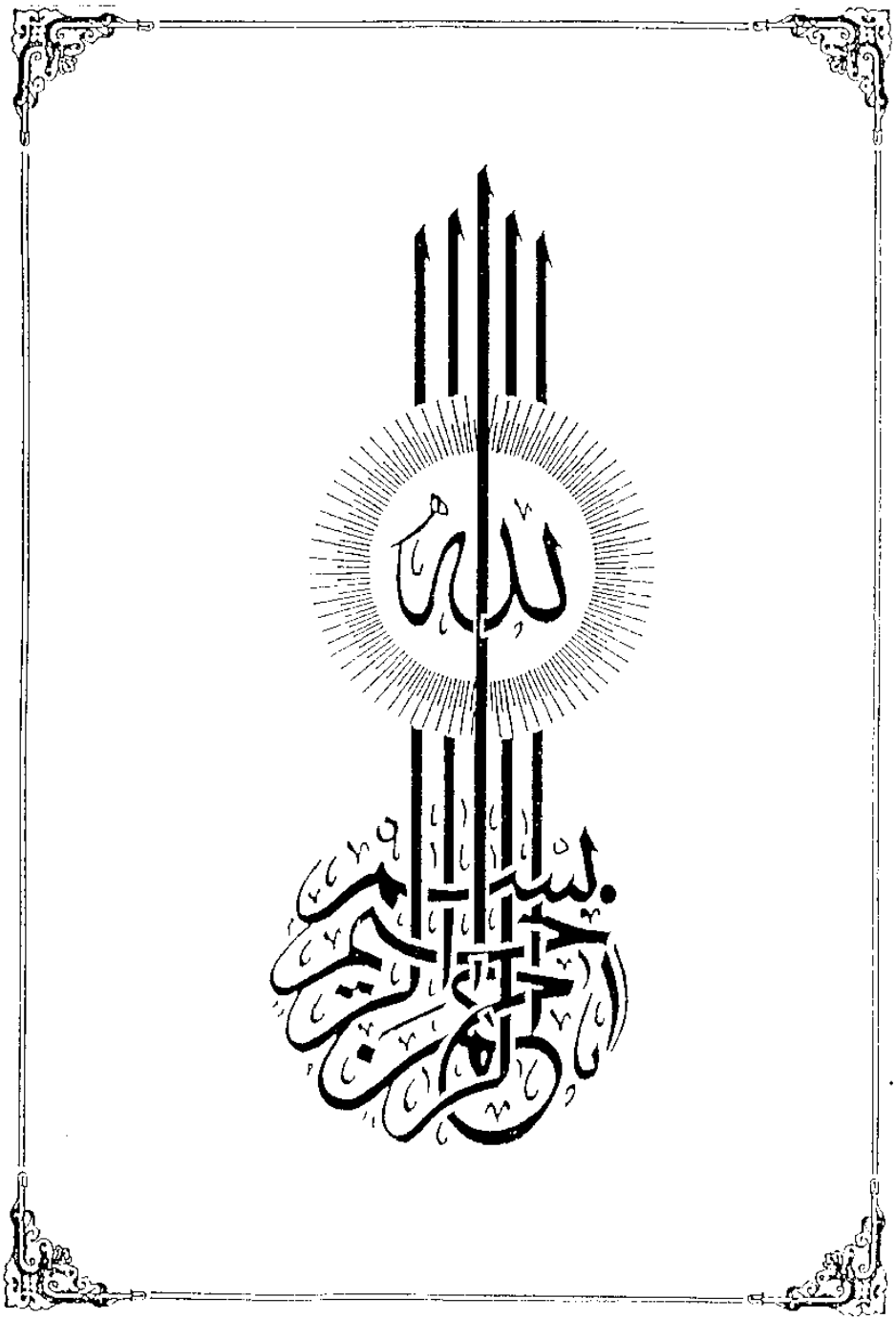

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To my parents
To my helpful understanding wife
To my lovely boy
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ACTH	A
A.N.P.	A
B.F.U.E.	B
B. LPH	B
C.F.U.E.	C
C.F.U.G.M.	C
CRF	C
ESRD	e
FSH	F
FT_4I	F
GFR	G
GH	G
HD	H
LH	L
PRL	P
PTH	P
RT_3	R
RT_3U	R
T_3	T
T_4	T
TBG	T
TRH	T
TSH	T
TT_3	T
TT_4	T

List of Abbreviations

ACTH	Adreno-corticorophic hormone
A.N.P.	Atrial natriuretic peptide
B.F.U.E.	Burst forming units erythroid
B. LPH	Beta lipoprotien
C.F.U.E.	Colony forming units erythroid
C.F.U.G.M.	Colony forming units granulocytes-monocytes
CRF	Chronic renal failure
ESRD	end-stage renal disease
FSH	Follicle stimulating hormone
FT_4I	Free thyroxin index
GFR	Glomerular filtration rate
GH	Growth hormone
HD	Hemodialysis
LH	Luteinizing hormone
PRL	Prolactin hormone
PTH	Parathyroid hormone
RT_3	Reverse triiodothyronine
RT_3U	Resin triiodothyronine uptake
T_3	Triiodothyronine
T_4	Thyroxin
TBG	Thyroid binding globulin
TRH	Thyroid releasing hormone
TSH	Thyroid stimulating hormone
TT_3	Total triiodothyronine
TT_4	Total thyroxin

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Introduction

INTRODUCTION

The kidney plays a role in the metabolism and clearance of thyroid hormones, thyroid stimulating hormone (TSH) and thyrotropin-releasing hormone (TRH). The kidney possesses a thyroxine-5-deiodinase which converts thyroxine (T_4) to triiodothyronine (T_3). It is also noted that normal renal functions, especially glomerular filtration rate, are influenced by the biologically active thyroid hormone T_3 (Oppenheimer, 1989).

Children with chronic renal failure share nonspecific clinical symptoms and signs seen in hypothyroidism such as growth retardation, poor appetite, lethargy, constipation, dry skin, and cold intolerance (Hardy et al., 1988).

Investigations of hypothalamo-pituitary-thyroid axis in patients with chronic renal failure have not yielded constant results, for example serum T_4 and T_3 levels have been found to be either low or normal (O'Sullivan and Murnaghan, 1989; and Sakurai et al., 1988). However, other studies uniformly reported normal serum TSH in these patients (Hardy et al., 1988).

It has been argued by some investigators that total T_4 and T_3 may be low but the free hormones were normal. This argument was supported by the low thyroid binding globulin (TBG) in some patients with protein-losing nephropathies. Other investigators, however, found normal TBG and low free T_3 in those patients (Lambert et al., 1989).

Aim of the Work

AIM OF THE WORK

In view of the above mentioned controversy, and of the importance of thyroid hormones for normal growth and development, the aim of this work is to study the thyroid hormone status in patients with chronic renal failure and the possible changes induced by hemodialysis.

Review of Literature