RENAL FUNCTION IN CHRONIC LIVER DISEASE

THESIS

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in

Pediatrics

By

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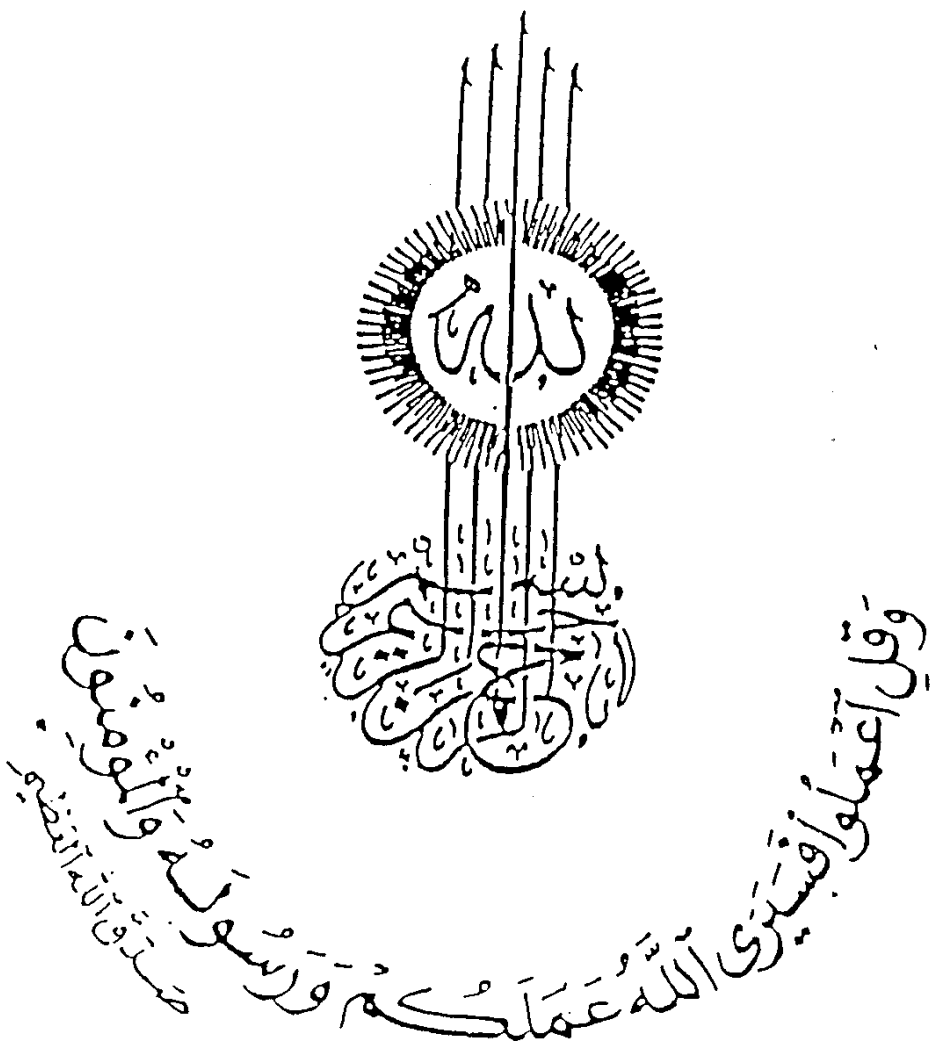

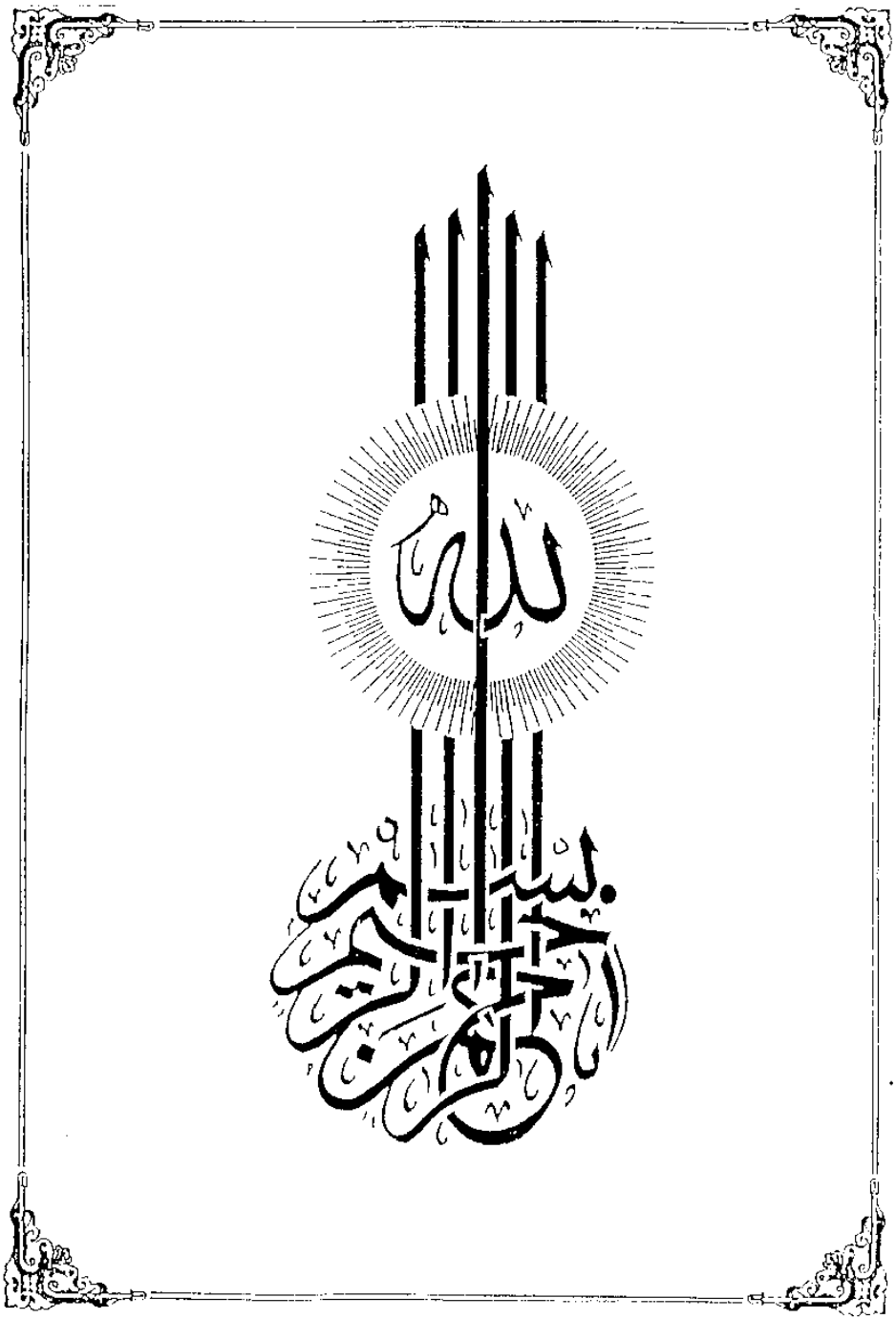

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LIST OF ABBREVIATIONS

ADH	:	Anti diuretic hormone.
ALT	:	Alanine transaminase.
ANA	:	Anti-nuclear antibody.
AST	:	Aspartate transaminase.
ATD	:	Alpha-1 antitrypsin deficiency.
B	:	Bilharzial.
C.L.d.	:	Chronic liver disease.
D.N.A.	:	Deoxy ribo nucleic acid.
E.B.V.	:	Epstein Barr Virus.
G.F.R.	:	Glomerular filtration rate.
H.B.S.A.	:	Hepatitis B. surface antigen.
H.B.V.	:	Hepatitis B. virus.
H.R.S.	:	Hepato-renal syndrome.
N.S.A.D.S.	:	Non steroidal anti-inflammatory drugs.
P++	:	Pulmonary hypertension
P.A.S.	:	Periodic acid schiff.
P.G. E_2	:	Prostaglandin E_2 (vasodilator).
PG.F.	:	Prostaglandin F.
PG. I_2	:	Prostaglandin I_2. (vasodilator).
P.S.P.	:	Phenol sulphenphtholin.
S.G.O.T.	:	Serum glutamic oxaloacetic transaminase.
S.G.P.T.	:	Serum glutamic pyruvic acid transaminase.
S.L.E.	:	Systemic lupus erythromatosus.
Tx A_2	:	Thromboxan A_2 (vaso constrictor).

LIST OF TABLES

		Page
Table (1)	: Collective data of 15 cases having chronic liver disease C Ld.	53
Table (2)	: Collective table showing random liver functions tests and kidney functions tests in children having chronic liver disease (C.L.d).	54
Table (3)	: Collective table showing random kidney functions tests in the control group.	55
Table (4)	: Comparison between serum creatinine level (in mg %) in children with chronic liver disease (CLD) and that of the control group.	56
Table (5)	: Comparative study between urinary creatinine level (mg%) in children with C.L.d and the control group.....	56
Table (6)	: Comparison between urine volume (ml/24h) in children with C.L.d and control group.	57
Table (7)	: Comparison between creatinine clearance (in ml/min) in children with C.L.d and control group.	57
Table (8)	: Comparison between blood urea (in mg%) in children with C.L.d and control group.	58
Table (9 A.B.C)	: Statistical correlation between liver functions tests and kidney functions tests in children with C.L.d.	58
Table (10)	: Comparison between serum creatinine level (mg %) in children with non-bilharzial C.L.d and those with bilharzial liver disease.	60
Table (11)	: Comparison between urine creatinine mg % level in children with non-bilharzial chronic liver disease and those with bilharzial liver disease.	60
Table (12)	: Comparison between urine volume (ml/24h) level in children with non-bilharzial chronic liver disease and those with bilharzial liver disease.	61
Table (13)	: Comparison between creatinine clearance ml/min level in children with non-bilharzial C.L.d and those with bilharzial liver disease	61
Table (14)	: Comparison between blood urea (mg %) level in children with non bilharzial chronic liver disease and those with bilharzial liver disease.	62

Table (15)	:	Comparison between SGOT level in non - bilharzial chronic liver disease and those with bilharzial liver disease	62
Table (16)	:	Comparison between SGPT level in children with non bilharzial chronic liver disease and those with bilharzial liver disease	63
Table (17)	:	Comparison between serum alkaline phosphatase level in children with non-bilharzial chronic liver disease and those with bilharzial liver disease	63
Table (18)	:	Comparison between serum creatinine level mg% in children with bilharzial liver disease and the control group ...	64
Table (19)	:	Comparison between urine creatinine level (mg%) in children with bilharzial liver disease and control group	64
Table (20)	:	Comparison between urine volume (ml/24h) in children with bilharzial liver disease and control group	65
Table (21)	:	Comparison between creatinine clearance (ml/min) in children with bilharzial liver disease and control group	65
Table (22)	:	Comparison between blood urea mg% in children with bilharzial liver disease and control group	66
Table (23)	:	Comparison between serum creatinine level mg% in children with non-bilharzial liver disease and control group	66
Table (24)	:	Comparison between urine creatinine level mg% in children with non-bilharzial liver disease and control group	67
Table (25)	:	Comparison between urine volume ml/24h. in children with non-bilharzial liver disease and the control group ...	67
Table (26)	:	Comparison between creatinine clearance ml/min in children with non-bilharzial chronic liver disease and the control group	68
Table (27)	:	Comparison between blood urea mg% in children with non-bilharzial chronic liver disease and the control group ...	68

CONTENTS

	Page
Introduction and aim of the work	1
Review of literature	3
- Physiology of the liver	3
- Physiology of the kidney	5
Liver disorder associated with renal dysfunction :	11
A- Renal affection in hepatic fibrosis "Schistosomal nephropathy"	11
B- Renal affection in hepatic cirrhosis	15
C- Kidney affection in obstructive jaundice	21
Hepato-renal syndrome	23
Disorders involving both liver and kidney	27
1- Congenital disease	27
2- Metabolic disease	29
3- Infectious disease	33
4- Immuno-complex-disorder	34
5- Collagen-vascular disorder	36
6- Disorder of unknown cause	38
Kidney function tests	41
Subjects and methods	46
Results	53
Discussion	71
Summary and conclusion	76
References	79
Arabic summary	--

INTRODUCTION
AND
AIM OF THE WORK

INTRODUCTION AND AIM OF THE WORK

Introduction :

It was found in many studies that there were some correlation between impairment of liver function and those of the kidney which had merged under the subject of hepato-renal syndrome, so the liver and kidney were frequently affected together in the same patient **(Rimola et al., 1986)**.

Functional or spontaneous renal circulatory failure may be a feature of end stage cirrhosis and may accompany hepatic failure **(Kew et al., 1971)**.

Lesser degree of renal dysfunction were common in earlier stage of hepatic decompensation, so tests of renal function in patients with hepatic decompensation showed progressive impairment of glomerular filtration rate and of renal plasma flow, which was generally correlated with clinical deterioration **(Wilkinson et al.,1974)**.

The evaluation of renal function in patients with decompensated cirrhosis was important for prognosis of potentially nephrotoxic medication, and recognition of changes in glomerular filtration rate that may occur with such therapeutic modalities as paracentesis and diuretic therapy **(Maxine et al .,1987)**.

Aim of the work :

The aim of this work was to study some aspects of renal functions in children suffering from chronic liver diseases in order to detect any early impairment in kidney functions .

REVIEW OF LITERATURE

PHYSIOLOGY OF THE LIVER

The liver carried out approximately 1500 identifiable functions, however the primary functions of the liver are production and storage of essential nutrients, excretion of bile and establishment of the processes of elimination **(Henning, 1981)**.

Metabolic functions of the liver :

Carbohydrate Metabolism :

The liver stores carbohydrate as glycogen. It helps in the conversion of galactose and fructose to glucose, gluco-neogenesis and formation of many important compounds from the intermediate products of carbohydrate metabolism is another function **(Henning, 1981)**.

Protein metabolism :

The most important functions of the liver in protein metabolism are deamination of amino acids, formation of urea for removal of amonia from the body fluids and formation of plasma proteins, synthesis of albumin appeared at the 7 th-8th wk in human foetus and increased in inverse proportion to that of alpha-fetoprotein. By the 3rd-4th month of gestation, the foetal liver is able to produce fibrinogen, transferrin and low density lipoprotein **(Henning, 1981)**.

Lipid metabolism :

The liver have some specific functions in fat metabolism. It helps in beta oxidation of fatty acids and formation of aceto acetic acids, formation of lipoprotein, formation of cholesterol and phospholipids and conversion of carbohydrate and proteins to fat **(Henning, 1981)**.

Biotransformation :

The newborn infant had a decreased capacity to metabolite and detoxify certain drugs, owing to under development of the microsomal component of the liver that was the site of specific oxidative, reductive, hydrolytic and conjugation reactions required for biotransformation **(Soyka, 1981)**.

Excretory functions :

Hepatic excretory function and bile flow were closely related to bile acid excretion and recirculation **(Balistreri et al., 1984)**.

In neonate, there was inefficient ileal reabsorption and a low rate of hepatic clearance of bile acids from portal blood. The latter resulted in elevated serum concentration of bile acids in healthy newborn, often to levels that may suggest affected liver in older individuals **(Balistreri, 1984)**.

PHYSIOLOGY OF THE KIDNEY

The function of the kidney was to keep the volume and composition of the extra cellular fluid within normal limits. It was also concerned with the maintenance of a normal blood pressure and erythropoiesis. The composition and volume of the extracellular fluid was controlled by glomerular filtration and tubular reabsorption or secretion **(Roland et al., 1981)**.

1- Glomerular function :

The hydrostatic pressure imported to the blood by the beat of the heart forced a protein free filtrate of plasma through the walls of the glomerular capillaries, these capillaries may act as ultrafiltrate. The structural basis for the relative impermeability of glomerular capillaries to colloid may be the slit pores which may lie between adjacent pedicels of epithelial cells or the gelatinous basement membrane which allowed free passage of small molecules, through its aqueous phase but retains the larger proteins **(Robert 1981)**.

The glomerular filtrate was a protein free fluid (150-250 liter/day in man). As this ultrafiltrate may travel down the tubule various substances were either substracted or added to it so that only 1-1.5 liter emerges as urine **(Roland and Blantz 1981)**.