# ADENOSINE DEAMINASE IN CHILDREN WITH ACUTE HEPATITIS

## **THESIS** SUBMITTED FOR PARTIAL FULFILMENT OF MASTER DEGREE IN **PEDIATRICS**

Βy **Rimon Rifaat Mahrous** M.B.B.Ch. Faculty of Medicine

qu682

#### SUPERVISED BY

Ain Shams University

Prof. Dr. Galila M. Mokhtar

Prof. of Pediatrics Faculty of Medicine Ain Shams University

Dr. Nancy A. Kashef Lecturer of Pediatrics Faculty of Medicine Ain Shams University

Dr. Hanaa A. Amer Faculty of Medicine

Prof. of Clinical Pathology Ain Shams University



118.923623 R. R

**Faculty of Medicine Ain Shams University** 1998



#### ACKNOWLEDGMENT

I would like to express my deep gratitude and sincere appreciation for Prof. Dr. Galila Mohamed Mokhtar, one of the most prominent professors of pediatrics, Faculty of Medicine, Ain Shams University for her kind supervision and enthusiastic guidance and encouragement. It was a great honor to work under her supervision.

My deep thanks and gratitude to Dr. Nancy Ahmed Kashef, Lecturer of Pediatrics, Faculty of Medicine, Ain Shams University, who shared in conductance of this work with her valuable support and guidance.

I am also deeply thankful to Dr. Hanaa Ahmed Amer, Lecturer of Clinical Pathology, Faculty of Medicine, Ain Shams University for her great help and supervision of laboratory part of this work.

## LIST OF ABBREVIATIONS

ADA	Adenosine deaminase
ALP	Alkaline phosphatase
ALT	Alanine transaminase
AST	Aspartate transaminase
BSF2	B stimulatory factor 2
CDNA	Complement deoxyribonucleic
	acid
CMV	Cytomegalovirus
EBV	Epstein Barr Virus
EPO-R	Erythropoietic receptor
ESR	Erythrocyte sedimentation rate
G-CSF-R	Granulocytic colony stimulating
	factor receptor
HAV	Hepatitis Λ virus
HBc <b>A</b> b	Hepatitis B core antibody
HBcAg	Hepatitis B core antigen
HBsAb	Hepatitis B surface antibody
HBs <b>A</b> g	Hepatitis B surface antigen
HBs cellulose	Hepatitis B surface antibody
	cellulose
HBV	Hepatitis B virus
HCV	Hepatitis C virus
HCV Ab	Hepatitis C virus antibody
HDV	Hepatitis delta virus
Hep G2 cell	Hepatitis G2 cells
HEV	Hepatitis E virus
HIV	Human immunodeficiency virus
HLA	Human leucocyte antigen
NANB	Non-A non-B hepatitis
PCR	Polymerase chain reaction
RIBA	Recombinant immunoblot assay
SđAg	Small delta antigen
SOD	Superoxide dismutase
TNF	Tumour necrosis factor

#### TABLE OF CONTENTS

Introduction and Aim of the Work	1
Review of Literature	
Viral hepatitis	2
Viral hepatitis A	4
Viral hepatitis B	10
Non-A, non-B hepatitis,	
type C hepatitis	40
Viral hepatitis D or Delta hepatitis	52
Viral hepatitis E	56
Viral hepatitis F, hepatitis G	59
Adenosine deaminase (ADA)	60
Subjects and Methods	68
Results	77
Discussion	11:
Summary	119
Recommendations	12:
References	12
Arabic summary	

<u>ب</u> ب

## LIST OF TABLES

No.	Title	Page No.
1	Clinical and laboratory data of patients	
2	with nepatitis A	78
~	Clinical and laboratory data of patients with hepatitis B and C	ı
3	Clinical and laboratory data of controls	80
4	Clinical data in all patients	82 84
5	Comparison between all patients and	64
1	Controls as regards biochemical parameters	85
6	Comparison between HAV positive patients	
	and controls as regards biochemical	
7	parameters	86
,	Comparison between HBV positive patients and controls as regards biochemical	1
'n	parameters	_
8	Comparison between HCV positive patients	87
	and controls as regards biochemical	ł
_	parameters	88
9	Comparison between HBV+HCV positive	
	patients and controls as regards	
10	biochemical parameters	89
10	Comparison between HAV positive patients and HBV positive patients as regards	
	biochemical parameters	1
11	Comparison between HAV positive patients	90
	and HCV positive patients as regards	
	blochemical parameters	91
12	Comparison between HAV positive patients	
	and HCV positive patients as regards	!
13	biochemical parameters	92
	Comparison between HAV positive patients and HBV+HCV positive patients as regards	
	biochemical parameters	93
14	Correlation between serum ADA and other	93
	Diochemical parameters in all patients	94
15	Correlation between serum ADA and other	'
	biochemical parameters in all HAV positive	[ ]
16	patients	95
10	Correlation between serum ADA and other	
İ	biochemical parameters in all HBV positive patients	_
17	Correlation between serum ADA and other	96
	biochemical parameters in all HCV positive	
	patients	97
18	Correlation between serum ADA and other	31
Ì	biochemical parameters in all HRV+HCV	' <u> </u>
19	positive patients	98
17	Analysis of variance among patient groups	99

#### LIST OF FIGURES

No.	Title	Page No.
1 2	Typical course of hepatitis A Clinical biochemical and serological	7
3	events following infection with hepatitis B virus Role of adenosine deaminase in the	25
4	catabolism of purines Distribution of patients among different	61
5	types of viral hepatitis Mean level of serum ADA in both patients	100
6	and control groups Mean level of serum ADA in viral hepatitis A and control groups	101
7	Mean level of serum ADA in viral hepatitis B and control groups	102 103
8	Mean level of serum ADA in viral hepatitis C and control groups	104
9	Mean level of serum ADA in different types of viral hepatitis and control groups	105
10 11	Regression analysis showing negative correlation between ESR and ADA among all studied patient groups Regression analysis showing negative	106
12	correlation between lymphocytic count and ADA among all studied patient groups Regression analysis showing negative	107
13	correlation between total bilirubin and ADA among all studied patient groups	108
13	Regression analysis showing negative correlation between ALT and ADA among all studied patient groups	109
14	Regression analysis showing negative correlation between AST and ADA among all	133
	studied patient groups	110

# -1-

# INTRODUCTION AND AIM OF THE WORK