A STUDY OF INTERCELLULAR ADHESION MOLECULE -1 IN NEONATAL SEPSIS

Submitted For Partial Fulfilment
Of Master Degree In Paediatrick

Hala Salah El-Din Ahmed

(M.B.B.Ch.)

Supervised by

Dr. Magda Abd El - Moneim Khazbak

Assistant Professor of Paediatrics

Ain Shams University

Dr. Mohammed Nasr El-Din El-Barbary

Lecturer of Paediatrics Ain Shams University

Dr. Hala Ahmed Talkhan

Lecturer of Clinical Pathology Ain Shams University.

> Faculty of Medicine Ain Shams University. 1996



ACKNOWLEDGEMENT

I would like to express my sincere gratitude and deepest thanks to **Dr. Magda Abd El-Moneim Khazbak**, assistant professor of Paediatrics, Ain Shams University, to whom I am greatly indebted for her valuable guidance, expert assistance, and fruitful criticism. Without her support, it wouldn't have been possible to complete this work.

My deepest thanks and my sincere respects to **Dr.**Mohammed Nasr El-Din El - Barbary, lecturer of Paediatrics, Ain Shams University, for his help, careful guidance and supervision during every step of this work.

I wish to express my deepest thanks to **Dr. Hala Ahmed Talkhan**, lecturer of Clinical Pathology, Ain Shams University,
for her valuable assistance in this work.

Finally, I wish to thank all the doctors and nurses of the NICU of Maternity Hospital Ain Shams University for their cooperation.



CONTENTS

	Subjects	Page
•	Introduction and Aim of the Work	1-3
•	Review of Literature	4-52
	★ Neonatal septicaemia	4-37
	☆ Intercellular adhesion molecules	38-52
•	Subjects and Methods	53-61
•	Results	62-88
•	Discussion	. 89-96
•	Summary and Conclusion	. 97-98
٠	Recommendations	. 99
٠	References	. 100-128
•	Arabic Summary	•

ABBREYIATIONS

AIDS : Acquired immune deficiency syndrome

BD : Base deficit C₃ : Complement₃

cDNA : Cloned deoxyribonucleic acid

cICAM-1 : Circulating intercellular adhesion molecule -1

CMV : Cytomegalovirus

CNS : Central nervous system

CRP : C-reactive protein
CS : Caesarean section
CSF : Cerebrospinal fluid

CT : Computerised tomography

DIC : Disseminated intravascular coagulopathy

ELAM-1 : Endothelial leucocyte adhesion molecule-1

ESR : Erythrocyte sedimentation rate

F : Female

GA : Gestational age

GBS : Group B. Streptococci

GIT : Gastrointestinal tract

GP : Glycoprotein

HIV : Human immune deficiency virus

ICAM-1 : Intercellular adhesion molecule-1

ICAM-2 : Intercellular adhesion molecule-2

ICAM-3 : Intercellular adhesion molecule -3

IFN γ : Interferon γ

IgA, IgG, IgM: Immunoglobulins A, G and M

IL. Interleukin -1

IL₂: Interleukin -2

IL₆ : Interleukin -6

IL₈: Interleukin -8

I/T : Immature / total neutrophil ratio

LAD : Leucocyte adhesion deficiency

LFA-1 : Lymphocyte function associated antigen-1

M : Male

Mac-1 : Macrophage-1

MAG : Myelin - associated glycoprotein

mRNA : Messenger ribonucleic acid

NCAM : Neural cell adhesion molecule

PGE: Prostaglandin E

PMN : Polymorph nuclear leucocyte

PPHN: Persistent pulmonary hypertension of the newborn

PROM: Premature rupture of membrane

RBC: Red blood cell

RDS : Respiratory distress syndrome

RES : Reticulo-endothelial system

sICAM-1 : Serum intercellular adhesion molecule-1

TCR : Tcell receptors

TLC : Total leucocytic count

TNF : Tumour necrosis factor

VD : Vaginal delivery

VLBW: Very Low birthweight

LIST OF TABLES

Page
Table I :The relationship of attack rates and fatalities of neonatal group B Streptococcal early onset disease to perinatal characteristics
Table II: The incidence of the neonatal GBS sepsis in women with different antenatal risk factors
Table III: The clinical sepsis score
Table IV: The values of neutrophilic cells in healthy neonates
Table V: The haematological scoring system. 23
Table VI: Antimicrobial therapy of neonatal sepsis33
Table VII: Correlation of ICAM-1 expression on B-lymphoid tumours
Table 1: The clinical data of the cases of neonatal sepsis 63-64
Table 2: The laboratory data of the cases of neonatal sepsis 66-67
Table 3: The clinical and laboratory data of the contro group. 69
Table 4: Statistical analysis of Hb in cases and control group. 70
Table 5: Statistical analysis of RBCs in cases and control group.

Γable 6	: Statistical analysis of TLC in cases and control group
Fable 7:	Statistical analysis of neutrophils in cases and control group
Fable 8:	Statistical analysis of band forms in cases and control group
Table 9:	Statistical analysis of platelets in cases and control group
Table 10	D: Statistical analysis of serum ICAM - 1 in cases and control group
Table 1	1: Statistical analysis of CRP in cases and control group
Table 12	2: Correlation study between ICAM-1 and CRP among patient group
Table 1	3: Correlation study between B. Strept, Staph, E-coli, Klebsiella and ICAM-1 among patient group79
Table 1	4: Correlation study between ICAM-1 and gram -ve organisms among patient group80
Table 15	5: Statistical analysis of the values of the serum ICAM- 1 between preterms, fullterms with sepsis and the control group
Table 1	6: Correlation study between all studied parameters among patient group82

Page

LIST OF FIGURES

	rag	, (
Figure	1: Comparative study between control and patient group regarding TLC.	3
Figure	2: Comparative study between control and patient group regarding absolute neutrophil count84	1
Figure	3: Comparative study between control and patient group regarding absolute band cell count	5
Figure	4: Comparative study between control and patient group regarding platelet count.	5
Figure	5: Comparative study between control and patient group regarding ICAM-1.	
Figure	6: Scatterdiagram showing correlation between ICAM 1 and WBCs among patient group	