



شبكة المعلومات الجامعية

بِسْمِ اللَّهِ الرَّحْمَنِ الرَّحِيمِ

جامعة عين شمس

شبكة المعلومات الجامعية

@ ASUNET



شبكة المعلومات الجامعية

جامعة عين شمس

التوثيق الالكتروني والميكرو فيلم

قسم

نقسم بالله العظيم أن المادة التي تم توثيقها وتسجيلها
على هذه الأفلام قد أعدت دون أية تغيرات



يجب أن

تحفظ هذه الأفلام بعيدا عن الغبار

في درجة حرارة من ١٥-٢٥ مئوية ورطوبة نسبية من ٢٠-٤٠%

To be Kept away from Dust in Dry Cool place of
15-25- c and relative humidity 20-40%



شبكة المعلومات الجامعية التوثيق الالكتروني والميكروفيلم

بعض الوثائق الأصلية تالفة

بالرسالة صفحات لم ترد بالاصل

**Clinical significance of cytokines in Haemodialysis patients
attending the paediatrics dialysis unit, Ain Shams University
Hospitals**

Protocol of thesis Submitted to FOM- SCU for the requirement of partial
fulfilment of MD degree in paediatrics

By

Sherien Abd El- Hamid Shalaby

MB B Ch, MSc in Pediatrics

Supervised by

Prof. Dr:

Amina Abd El- Wahab

Professor and head paediatrics
Department,

Faculty of Medicine

Suez Canal Universtiy

Prof. Dr:

Farida Farid

Professor of paediatrics and Head of
Paediatrics Dialysis Unit

Faculty of Medicine

Ain Shams University

Prof. Dr:

Alaa Abd El- Hafiez Zeitoun

Professor of paediatrics

Faculty of Medicine

Suez Canal University

Prof. Dr:

Fikry Gobran Eskandar

Professor of Clinical Pathology

Faculty of Medicine

Suez Canal University

**Faculty of Medicine
Suez Canal University
2004-2005**

Handwritten signature and initials in black ink, located at the bottom right of the page. The signature appears to be 'Fikry' and the initials are 'G.E.'.

To My Father

List of table

- Table (1): Severity of CRF	5
- The pathophysiologic manifestations of the uremic state are listed in table (2).	7
- Table (3): Causes of ESRD in Children	9
- Table (4): Etiology of ESRD in Patients on Regular HD in Ain Shams University Pediatric Dialysis Unit in the year 2003.	11
- Table (5): Complications of Hemodialysis and Peritoneal Dialysis	23
- Table (6): Advantage and disadvantage of peritoneal dialysis	25
- Table (7): Factors Involved in the pathogenesis of Growth Failure in CRF (Tom et al, 2002)	36
- Table (8): Plasma Proteins of acute phase response	62
- Table (9): Biological Properties of IL-1, IL-6 and TNF (Peraria, 2002)	71
- Table (1) Distribution of both sexes among the different studied groups.	95
- Table (2): show the frequency of the different etiologies of renal failure among the dialysed patients	96
- Table (3): Laboratory data for the studied groups	97
- Table (4): Demographic and clinical data of the hemodialysis patients.	98
- Table (5): Anthropometric data of patients on hemodialysis.	99
- Table (6): Distribution of compromised height group in HD patients.	100
- Table (7): Percentage of HD patients below normal Egyptian controls In patients 1-5years.	101
- Table (8): Percentage of HD patients below normal Egyptian controls in patients 6-10 years.	101
- Table (9): Percentage of HD patients below normal Egyptian controls in patients 11-15 years.	102
- Table (10): Laboratory data of patients on HD	103
- Table (11): comparison between the prepubertal & post pubertal groups.	104
- Table (12): Comparison between the compromised (Ht SDS below - 2) and fair growth (Ht SDS above - 2) groups.	105

- Table (13): Correlation between the anthropometric measures and the different parameters.	106
- Table (14): comparison of mean serum levels of IL-1Ra, IL-6Ra ,and sTNFRI in different studied groups.	110
- Table (15): Comparison of mean serum levels of IL-1Ra, IL-6Ra,and sTNFRI between (serum albumin SDS below - 2) and (serum albumin SDS above - 2) groups.	114
- Table (16): Comparison mean serum levels of IL-1Ra, IL-6Ra and sTNFRI between the compromised (Ht SDS below - 2) and fair growth (Ht SDS above - 2) groups.	115
- Table (17): Comparison of mean serum levels of IL-1Ra, IL-6Ra and sTNF-R1 between dialyzed patients with body temperature>37.2c and patients with temperatures 36-37.2c during the session.	116
- Table (18): Comparison of mean serum levels of IL-1Ra, IL-6Ra and sTNF-R1 between dialyzed patients who receive erythropoietin dose of 1.5IU/Kg/WK and those who require >1.5IU/Kg/WK.	117
- Table (19): Comparison of mean serum levels of IL-1Ra , IL-6Ra and sTNF-R1 between dialyzed patients with symptomatic hypotension and those with normal blood pressure.	117
- Table (20): Comparison of mean serum levels of IL-1Ra, IL-6Ra and sTNF-R1 between dialyzed patients with normal sleeping pattern and those who experience daytime sleepiness.	118
- Table (21); The correlation between means of age and sex of the studied group and means of levels of IL-1Ra, IL-6Ra and sTNF-R1.	119
- Table (22): The correlation between the levels of IL-1Ra, IL-6Raand sTNF-R1and different anthropometric measures.	119
- Table (23): The correlation between the levels of IL-1Ra, IL-6Ra and sTNF-R1and temperature, symptomatic hypotension and daytime sleepiness.	120
- Table (24): the correlation between the levels of IL-1Ra, IL-6Ra and sTNF-R1and erythropoietin dose, and hemoglobin level in patients who require higher doses of erythropoietin.	121
- Table (25): the effect of the type of membrane on the mean serum levels of IL-1Ra, IL-6Ra and sTNF-R1.	122

ACKNOWLEDGEMENTS

Over all and firstly unbounded thanks are to ALLAH for giving me everything which enabled me to establish this work.

I would like to thank my supervisor

Prof.Dr Amina Abd el-Wahab professor of paediatrics and head of paediatrics department Suez canal university for patience, kindness, encouragement, resignation at time, providing continuous helpful advice, and despite many horrendous personal problems.

I wish , could find good enough words to express my great appreciation to *Prof.Dr Alaa Zeitoun* professor of paediatrics ,Suez canal university for his scrupulous infinite help and constructive guidance in choosing and implementing all vital steps of this work,.

My supreme gratitude to *Pro.Dr Farida Farid*, professor of paediatrics , and head of the Dialysis unit,Ain shams university t, for her continuous expert advice, guidance, and being a very rich source of information in paediatrics nephrology, and dialysis, her moral support cannot be praised.

Would greatly thank *Prof.Dr Fikry Gobran* professor of clinical pathology Suez Canal University for his continuous guidance through conducting this work.

I would like to thank my patients who took part in the study for giving so much of their effort and time.

I am also thankful for all my colleagues in the Dialysis unit, Ain shams university for assistance, critical comments and inspiration. I gratefully acknowledge the financial support of The Suez Canal University I'd like to express my deepest gratitude to my family for their practical and emotional, patient, support encouragement and Faith in my study and me.

List of Fig

- Figure (1) represents the numbers of the female and male subjects in the three groups .	95
- Figure (2): show the frequency of the different etiologies of renal failure among the dialyzed patients	96
- Fig (3,4): Significant negative correlation between the duration of the disease and TSF SDS,GV SDS	107
- Fig (5,6): Significant negative correlation between GFR and BMI ,TSFSDS Correlation between GFR and GVSD.	108
- Fig (7 ,8): Significant negative correlation between sTNFRI and the BMI ,TSF SDS.	109
- Fig (9): Comparison of mean serum levels of IL-1Ra between the different studied groups.	111
- Fig (10): Comparison of mean serum levels of IL-6Ra between the different studied groups.	112
- Fig (11): Comparison of mean serum levels of Stnfr1 between the different studied groups.	113

CONTENTS

Chapter 1: Introduction and Literature Review	<u>1</u>
Chronic renal failure	<u>5</u>
Immunological dysfunction	<u>26</u>
<i>Inflammation –The Silent problem in ESRD.</i>	<u>29</u>
<i>Growth in children with renal diseases.</i>	<u>34</u>
<i>Assessment of growth.</i>	<u>41</u>
<i>Nutrition in renal insufficiency.</i>	<u>49</u>
<i>The Cytokine network.</i>	<u>53</u>
<i>Interleukins (ILS):</i>	<u>57</u>
<i>Interleukin 1 (IL-1)</i>	<u>57</u>
<i>Interleukin 6(IL-6)</i>	<u>66</u>
<i>Tumor necrosis facror - alpha (TNF-α)</i>	<u>72</u>
Chapter 2:Subjects and Methods	<u>88</u>
Chapter 3: Results	<u>93</u>
Chapter 4: Discussion	<u>123</u>
Chapter 5: Conclusion and Recommendatios	<u>139</u>
Chapter 6: References	<u>141</u>
Chapter 7: English Summary.	<u>167</u>
Chapter 8: Arabic Summary	
APPENDIX	

List of Fig

- Figure (1) represents the numbers of the female and male subjects in the three groups .	95
- Figure (2) : show the frequency of the different etiologies of renal failure among the dialyzed patients	96
- Fig (3,4) : Significant negative correlation between the duration of the disease and TSF SDS,GV SDS	107
- Fig (5,6) : Significant negative correlation between GFR and BMI ,TSFSDS Correlation between GFR and GVSD.	108
- Fig (7 ,8) : Significant negative correlation between sTNFR1 and the BMI ,TSF SDS.	109
- Fig (9): Comparison of mean serum levels of IL-1Ra between the different studied groups.	111
- Fig (10) : Comparison of mean serum levels of IL-6Ra between the different studied groups.	112
- Fig (11) : Comparison of mean serum levels of Stnfr1 between the different studied groups.	113

List of table

- Table (1): Severity of CRF	5
- The pathophysiologic manifestations of the uremic state are listed in table (2).	7
- Table (3): Causes of ESRD in Children	9
- Table (4): Etiology of ESRD in Patients on Regular HD in Ain Shams University Pediatric Dialysis Unit in the year 2003.	11
- Table (5): Complications of Hemodialysis and Peritoneal Dialysis	23
- Table (6): Advantage and disadvantage of peritoneal dialysis	25
- Table (7): Factors Involved in the pathogenesis of Growth Failure in CRF (Tom et al, 2002)	36
- Table (8): Plasma Proteins of acute phase response	62
- Table (9): Biological Properties of IL-1, IL-6 and TNF (Peraria, 2002)	71
- Table (1) Distribution of both sexes among the different studied groups.	95
- Table (2): show the frequency of the different etiologies of renal failure among the dialysed patients	96
- Table (3): Laboratory data for the studied groups	97
- Table (4): Demographic and clinical data of the hemodialysis patients.	98
- Table (5): Anthropometric data of patients on hemodialysis.	99
- Table (6): Distribution of compromised height group in HD patients.	100
- Table (7): Percentage of HD patients below normal Egyptian controls In patients 1-5years.	101
- Table (8): Percentage of HD patients below normal Egyptian controls in patients 6-10 years.	101
- Table (9): Percentage of HD patients below normal Egyptian controls in patients 11-15 years.	102
- Table (10): Laboratory data of patients on HD	103
- Table (11): comparison between the prepubertal & post pubertal groups.	104
- Table (12): Comparison between the compromised (Ht SDS below - 2) and fair growth (Ht SDS above - 2) groups.	105

- Table (13): Correlation between the anthropometric measures and the different parameters.	106
- Table (14): comparison of mean serum levels of IL-1Ra, IL-6Ra ,and sTNFR1 in different studied groups.	110
- Table (15): Comparison of mean serum levels of IL-1Ra, IL-6Ra,and sTNFR1 between (serum albumin SDS below - 2) and (serum albumin SDS above - 2) groups.	114
- Table (16): Comparison mean serum levels of IL-1Ra, IL-6Ra and sTNFR1 between the compromised (Ht SDS below - 2) and fair growth (Ht SDS above - 2) groups.	115
- Table (17): Comparison of mean serum levels of IL-1Ra, IL-6Ra and sTNF-R1 between dialyzed patients with body temperature>37.2c and patients with temperatures 36-37.2c during the session.	116
- Table (18): Comparison of mean serum levels of IL-1Ra, IL-6Ra and sTNF-R1 between dialyzed patients who receive erythropoietin dose of 1.5IU/Kg/WK and those who require >1.5IU/Kg/WK.	117
- Table (19): Comparison of mean serum levels of IL-1Ra , IL-6Ra and sTNF-R1 between dialyzed patients with symptomatic hypotension and those with normal blood pressure.	117
- Table (20): Comparison of mean serum levels of IL-1Ra, IL-6Ra and sTNF-R1 between dialyzed patients with normal sleeping pattern and those who experience daytime sleepiness.	118
- Table (21); The correlation between means of age and sex of the studied group and means of levels of IL-1Ra, IL-6Ra and sTNF-R1.	119
- Table (22): The correlation between the levels of IL-1Ra, IL-6Raand sTNF-R1and different anthropometric measures.	119
- Table (23): The correlation between the levels of IL-1Ra, IL-6Ra and sTNF-R1and temperature, symptomatic hypotension and daytime sleepiness.	120
- Table (24): the correlation between the levels of IL-1Ra, IL-6Ra and sTNF-R1and erythropoietin dose, and hemoglobin level in patients who require higher doses of erythropoietin.	121
- Table (25): the effect of the type of membrane on the mean serum levels of IL-1Ra, IL-6Ra and sTNF-R1.	122