# الأيـــــــة

بسـم الله الرحمن الرحيـم

وَإِن يَمْسَسْكَ اللَّهُ بِضُرٍّ فَلَا كَاشِفَ لَهُ إِلَّا هُوَ وَإِن يُرِدْكَ بِخَيْرٍ فَلَا رَادَّ لِفَضْلِهِ يُصِيبُ بِهِ مَن يَشَاءُ مِنْ عِبَادِهِ وَهُوَ الْغَفُورُ الرَّحِيمُ

## صدق الله العظيم

**سورة يونس الأية (١٠٧)**

# Dedication

To my teachers

Who gave me the gifts of sharing their minds and experiences, so as to be a creative one

To the soul of my father

Who gave me advices and support through the years till his departure. I am very grateful for everything you have done for me

To my mother

Who continually encourage me to success, made me a man and show the meaning of love

To my wife, beloved

For her patience, support, and efforts to make my life shiny, I truly appreciate this.

To my lovely children

Who make happiness and fun in my home and my whole life, may all of my dreams for you come true.

To my colleagues and dear friends

Who always being by my side through good times and bad

With my faithful love and best wishes

# Acknowledgement

By the grace of Allah and his help I completed this study, all praise to him,

I would like to express my appreciation to my advisory committee.

Thanks for giving me the opportunity to discuss this work

Special thanks to

**Dr. Munsoor Mohammed Munsoor**

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# Abstract

This is a descriptive, cross-sectional and analytical study aimed at determining the changes induced by renal failure and hemodialysis in CBC, PT, APTT and Fbg level among 50 patients attending Dr. Selma center for kidney diseases in Khartoum State in June 2011. Male comprises 66 % of patients with age ranged from 16 to 77 years. A questionnaire was used to obtain patient's information as age, gender, duration of dialysis, treatment with Erythropoietin, Folic acid and Iron.

Five ml of venous blood was collected from patients (pre and post hemodialysis) and from 50 normal healthy persons as control, after their consent, dispensed into trisodium citrate and EDTA containers respectively. CBC and coagulation tests were performed using autoanalyzers.

Renal failure caused a statically significant decrease in RBC, Hb, PCV, MCHC, and lymphocyte (P. value 0.000 for all), a significant increase in MCV, RDW, eosinophil (P. value 0.000 for all) and neutrophils (P. value 0.006). Coagulation tests revealed significant reduction in PLT count and MPV (P. value 0.000 for all), a significant increase in PT and APTT (P. value 0.000 for all).

Hemodialysis caused a significant increase in RBC (P. value 0.001), Hb (P. value 0.001), PCV (P. value 0.007), and APTT (P. value 0.000).

# ملخــص الأطروحــة

هذه دراسة تحليلية وصفية لمقطع مستعرض. تهدف إلى قياس التغيرات التى أحدثها الفشل الكلوى و الغسيل الدموى على التعداد الكامل الدم، زمن البروثرومبين، زمن الثرومبوبلاستين الجزئى المنشَط، و مستوى الفبرينوجين عند ٥٠ مريضا يخضعون للعلاج بالغسيل الدموى بمركز د. سلمى لأمراض الكلى بولاية الخرطوم و ذلك فى يونيو ٢٠١١. شكّل الذكور ٦٦% من المرضى الذين تتراوح أعمارهم بين ١٦ و ٧٧ سنة .

تم جمع المعلومات عن المرضى بواسطة الأستبيان كالعمر، النوع، فترة الغسيل الدموى و الأدوية الداعمة الستعملة كالإرثروبوييتين و حامض الفوليك و الحديد.

تم سحب ٥ مل من الدم الوريدى من كل مريض (قبل وبعد الغسيل الدموى) و من أشخاص طبيعيين صحيا بعد موافقتهم، وزعت على حاويتى سترات ثلاثية الصوديوم و EDTA بالتساوى و على الترتيب. تم أداء التعداد الكامل الدم و إختبارات التجلط بواسطة أجهزة تحليل أوتوماتيكية.

أحدث الفشل الكلوى إنخفاضا ذو دلالة إحصائية فى تعداد الخلايا الحمراء، تركيز خضاب الدم، حجم الخلايا المتراكمة، متوسط تركيز خضاب الدم فى الخلايا، و الخلايا اللمفاوية (P. value 0.000 للكل). كما أوضح إرتفاعا ذو دلالة إحصائية فى كل من متوسط حجم الخلية ، RDW، و الحمضات (P. value 0.000 للكل) و للعدلات (P. value 0.006).

أظهرت إختبارات التجلط إنخفاضا ذو دلالة إحصائية فى تعداد الصفائح الدموية و متوسط حجم الصفيحة الدموية ( P. value 0.000 للكل) كما أظهرت زيادة ذات دلالة إحصائية فى زمن البروثرومبين و زمن الثرومبوبلاستين الجزئى المنشط ( P. value 0.000 للكل).

أحدث الغسيل الدموى إرتفاعا ذو دلالة فى كل من تعداد الخلايا الحمراء (P. value 0.001)، تركيز خضاب الدم ( P. value 0.001)، حجم الخلايا المتراكمة (P. value 0.007) و زمن الثرومبوبلاستين الجزئى المنشط (P. value 0.000) .

# Abbreviations

| | |
|---|---|
| ADP | Adenosine diphsophate |
| AKI | Acute kidney disease |
| AML | Acute myeloid leukaemia |
| APTT | Activated Partial Thromboplastin Time |
| βTG | B-thromboglobulin |
| ATP | Adenosine triphosphate |
| BFU-E | Burst-forming unit, erythroid |
| BUN | Blood urea nitrogen |
| CBC | Complete Blood Count |
| CD | Cluster of differentiation |
| CFU-E | Colony-forming unit, erythroid |
| CKD | Chronic kidney disease |
| CRF | Chronic renal failure |
| CV | Co-efficient of variation |
| DIC | disseminated intravascular coagulation |
| DNA | Deoxyribonucleic acid |
| EBV | Epstein-Barr virus |
| EDTA | Ethylene diamine tetra acetic acid |
| eGFR | Estimated Glomerular filtration rate |
| EPOR | Erythropoietin receptor |
| ESRD | End Stage Renal Disease |
| Fbg | Fibrinogen |
| FDPs | Fibrinogen degradation products |
| G-CS | granulocyte-colony-stimulating factor |
| GFR | Glomerular filtration rate |
| GM-CSF | Granulocyte-macrophage colony-stimulating factor |
| GP 1b | Glycoprotein 1b |
| Hb | Hemoglobin |
| HD | Hemodialysis |
| HIV | Human immunodeficiency virus |
| HMWK | High-molecular weight kininogen |
| HLA | Human leucocyte antigen |
| Ig E | Immunoglobulin E |

| | |
|---|---|
| IL-1 | Interleukin-1 |
| MCH | Mean Cell Hemoglobin |
| MCHC | Mean Cell Hemoglobin Concentration |
| M-CSF | Macrophage- colony-stimulating factor |
| MCV | Mean Cell Volume |
| MDRD | Modification of diet in renal disease |
| mRNA | Messenger ribonucleic acid |
| MPV | Mean platelet volume |
| NAP | Neutrophil alkaline phosphatase |
| NCKDS | National Center For renal Diseases and Surgery |
| NK | Natural killer cell |
| PAI-1 | Plasminogen activator inhibitor-1 |
| PCV | Packed Cell Volume PCV |
| PD | Peritoneal dialysis |
| PDGF | Platelet-derived growth factor |
| PF4 | Platelet factor 4 |
| PLT | Platelets count |
| pmp | per million population |
| PT | Prothrombin Time |
| RBC | Red blood cell count |
| RDW | Red cell distribution width |
| rh EPO | Recombinant erythropoietin |
| RNA | Ribonucleic acid |
| SLE | Systemic lupus erythematosus |
| SPSS | Statistical package for social sciences |
| TCR | T-cell receptor |
| TF | Tissue factor |
| TFPI | Tissue factor pathway inhibitor |
| TNF | Tumour necrosis factor |
| t-PA | Tissue plasminogen activator |
| TWBC | Total white blood cell count |
| TxA2 | Thromboxane A2 |
| URR | Urea reduction ratio |
| VWF | von Willebrand factor |

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