

بِسْمِ اللَّهِ الرَّحْمَنِ الرَّحِيمِ

قال الله تعالى

الم (1) ذَلِكَ الْكِتَابُ لَا رَيْبَ فِيهِ هُدًى
لِّلْمُتَّقِينَ (2) الَّذِينَ يُؤْمِنُونَ بِالْغَيْبِ
وَيُقِيمُونَ الصَّلَاةَ وَمِمَّا رَزَقْنَاهُمْ يُنْفِقُونَ
(3) وَالَّذِينَ يُؤْمِنُونَ بِمَا أُنْزِلَ إِلَيْكَ وَمَا
(أُنْزِلَ مِنْ قَبْلِكَ وَبِالْآخِرَةِ هُمْ يُوقِنُونَ (4)

صدق الله العظيم

سورة البقرة الآيات 1-4

Dedication

I dedicate this work to:-

My mother who constantly beg Allah to give me strength to go on studying
without hindrance .

Half of apple my husband who encouraged me to go on study .

My friends stand behind me at time of needs

Acknowledgement

I would like to express my gratefulness and sincere thank to my supervisor **Dr. Mohieldeen Abaas Abdalla** without his strict continuous guidance this work could have not been a reality. I ask his forgiveness if I cause for him any trouble .

Also I thank all those who I am gave help to me during the preparation of this research specially my friends .

Abstract

This study was a cross sectional study ;conducted in AL Rakha hospital , from 5/5/2012 to 5/6/2012 to estimate PT, APTT, TT, Fibrinogen level , D-dimer among patients of diabetes mellitus type II .

4.5ml venous blood collected from fifty patients of diabetes mellitus type II in trisodium citrate anticoagulant , the result compared with thirty normal healthy non diabetic individuals and collected data were analyzed by Statistical package of social science (SPSS) , the research revealed the following results:

There was insignificant difference of PT/second in diabetic patient type II when compared with control group (P value > 0.05),also there was insignificant prolongation of APTT in diabetic type II when compare with control group (p value > 0.05).

Significant increased in TT/second , fibrinogen level and D-dimer in the diabetes patients when compared with control group (P.value.00) .

Also there were insignificant difference of PT/second, APTT/second,TT Fibrinogen level and D-dimer in male ,when compared with female the study reveal the (P value> 0.05).

Also there were insignificant difference of PT/second, APTT/second,TT ,Fibrinogen and D-dimer in duration of disease with (P value>0.05)).

Also there were insignificant difference of PT/second, APTT/second,TT Fibrinogen and D-dimer age group (P value >0.05),

The results obtained indicated that measurement of thrombin time (TT),fibrinogen, and D-dimer were necessary when evaluating patient with diabetes mellitus type II there was clinical evidence of hemostatic abnormality.

ملخص البحث

هذه دراسة وصفية قطاعية أجريت في مستشفى الرخا بولاية الخرطوم في الفترة من 5/2012 الي 6/ 2012. هدفت الدراسة لقياس, زمن البروثرومبين زمن الثرومبوبلاستين الجزئ المنشط , زمن الثرومبين, الفبرينوجين و دي دايمر للمصابين بمرض السكر من النوع الثاني المترديدون على مستشفى الرخاء . أخذت 4.5 مليلتر من الدم الوريدي من 50 مريض ووضعت في حاوية تحتوي علي مانع تجلط ثلاثي سترات الصوديوم واستخلص المصل فقير الصفائح الدموية لقياس, زمن البروثرومبين زمن الثرومبوبلاستين الجزئ المنشط , زمن الثرومبين, الفبرينوجين و دي دايمر وقورنت النتائج مع عينة من 30 من الاصحاء كمجموعة ضبط. وتم تحليل النتائج بواسطة برنامج الحزم الاحصائية للعلوم الاجتماعية اصدارة 11.5 , تم حساب المتوسط وكانت النتائج كالآتي :

وجدت فروقات ذات دلالات غير معنوية بين المصابين بمرض السكر من النوع الثاني في متوسط زمن البروثرومبين , متوسط زمن الثرومبوبلاستين الجزئ المنشط , بالنسبة للمرضي , عندما قورنت مع المتوسطات في مجموعة الضبط (القيمة المعنوية اكبر من 005),

وجدت فروقات ذات دلالات معنوية بين المصابين بمرض السكر من النوع الثاني في متوسط الفبرينوجين و ديدايمر, زمن الثرومبين بالنسبة للمرضي عندما قورنت المتوسطات مع مجموعة الضبط (القيمة المعنوية اقل من 005) .

ايضا اوضحت الدراسة انه ليس للنوع ولا العمر اي تاثير علي متغيرات الدراسه بقيمه معنويه (اكبر من 05). ولا فترة المرض تاثير علي المتغيرات بقيمه معنويه (اكبر من 05) . أشارت المحصلة علي ان قياس والفبرينوجين و ديدايمر , وزمن الثرومبين ضرورية عند المصابين بمرض السكر من النوع الثاني

List of Contents

NO	Contents	Page
1.	الاية	I

2.	Dedication	II
3.	Acknowledgment	III
4.	Abstract	IV
5.	Abstract(Arabic)	V
6.	List of Contents	VI
7.	List of tables	X
8.	List of figures	XI
9.	Abbreviations	XII
	Chapter One	
	Introduction & Literature Review	
1:1	Introduction	1
1:2	Literature Review	3
1:2:1	Coagulation Mechanism	3
1:2:1:1	Platelet Activation	3
1:2:1:2	The Coagulation cascade	4
1:2:1:1	The Coagulation cascade of secondary hemostasis	4
2:1:3	Tissue factor pathway (extrinsic)	5
1:2:1:4	Contact activation pathway (intrinsic pathway)	6
1:2:1:5	Final Common pathway	6
1.2.1.6	Cofactors	7
1.2.1.7	Regulators	7
1.2.1.8	Fibrinolysis	9
1.2.1.9	Role in immune system	9
1.2.1.10	Platelet disorders	9
1.2.1.11	Disease and clinical significance of thrombosis	10
1.2.1.12	Testing of coagulation	11

1.2.2	Diabetes Mellitus	12
1.2.2.1	Classification	13
1.2.2.1.1	type 1 diabetes	13
1.2.2.1.2	Type II diabetes	13
1.2.2.1.3	Gestational Diabetes	14
1.2.2.2:	Cause of diabetes	16
1.2.2.3	Signs and symptoms of diabetes	16
1.2.2.4	pathophysiology	16
1.2.2.5	Diagnosis	18
1.2.2.6	Complication	19
1.2.2.7	Management	20
1.2.2.8	Life style modification	20
1.2.2.9	Support	21
01.3	The role of coagulation factors in diabetes patient	21
1.4	Coagulation Profile in Diabetes and its Association With Diabetic Micro vascular complications	21
1.5	Reduced Fibrinogen Survival in diabetes mellitus	22
1.6	Increased thrombotic tendency in the vascular complication of diabetes	22
1.7	Coagulation factor V111 activity in diabetic patients.	22
1.8	Plasminogen Activation in Diabetes Mellitus	23
1.3	Rationale	24
1.4	Objectives	25
1.4.1	General objective	25
1.4.2	Specific objectives	25

	Chapter Two	
	Materials and methods	
2.1	Study design	26
2.2	Study population	26
2.3	Sample size	26
2.4	Inclusion criteria	26
2.5	Exclusion criteria	26
2.6	Sample collection	26
2.7	Ethical consideration	26
2.8	Data collection	27
2.9	Methodology	27
2.9.1	Coagulometer	27
2.9.2	Prothrombin Time	27
2.9.3	Activated Partial Thromboplastin Time (APTT)	28
2.9.4	The Thrombin Time Assay	29
2.9.5	Fibrinogen Assays	30
2.9.6	D-Dimer test	30
2.10	Data analysis	31
3	Chapter Three	32
	Results	
4	Chapter Four	36
	Discussion, Conclusion and Recommendations	
4.1	Discussion	36
4.2	Conclusion	39

4.3	Recommendations	40
	References	41
	Appendices	45

List of Tables

NO	Title	Page
Table 1.1	Comparison between type 1 and typeII	15
Table 1.2	2006 WHO Diabetes Criteria (ADA ,2010)	18
Table.3.1	Comparison between the diabetic patient type 2 and control in the mean values of PT, APTT, TT, Fibrinogen, and D-dimer	32
Table .3.2:	Comparison between the mean values of PT, APTT ,TT Fibrinogen, and D-dimer according to gender	33
Table .3.3	Comparison between the mean values of PT,APTT TT, Fibrinogen and D-dimer according to age group:	34
Table. 3.4:	Comparison between the mean values of PT, ApTT , TT Fibrinogen ,and D-dimer according to duration:	35

List of Figures

NO	Title	Page
1:2:1:2	The Coagulation cascade	4
Figure 3.1	Frequency of case and control	46
Figure 3.2	Frequency of mal and female	47
Figure3.3	Frequency of age group /years	48
Figure 3.4	Frequency of duration group /years	59

Abbreviations

APC: Activated protein C

APTT: Activated partial thromboplastin time.

CNS: Central Nerves System.

DF: Dilution Factor.

DKA : Diabetic Ketoacidosis .

DM: Diabetes Mellitus .

DU. disease: Duration of disease .

IDDM: Insulin Dependant Diabetes Mellitus .

LADA: Laten Autoimmune Diabetes of Adults.

NIDDM: Non insulin Dependant Diabetes Mellitus

PPP:Platelet Poor Plasma.

PT: Prothrombin Time.

SD: Standard Deviation.

SPSS: Statistical Package of Social Science.

TFPI: Tissue Factor Path Way Inhibitor.

VWF : von Willebrand Factor