

بسم الله الرحمن الرحيم

**Sudan University of Science and Technology**

**College Of Graduate Studies**

**Measurement of Prothrombin time and Activated Partial Thromboplastin  
time in ladies with Abortion attending Khartoum Teaching Hospitals**

قياس زمن البروثرومبين والثرمبوبلاستين النشط في الاجهاض لدي السيدات في مستشفيات الخرطوم  
التعليمية

*A thesis submitted for partial fulfillment of the requirement of the Degree of  
Master in Hematology and Immunohematology*

**By:**

Eglal Hassan Hwite Allah

B.Sc. M.L.S (Sudan University of Science and Technology-2003)

P.G.D Medical laboratory science (Alzaiem Alazhary University- 2007)

**Supervisor:**

**Dr. Khalda Mirghani Hamza**

2013



بِسْمِ اللَّهِ الرَّحْمَنِ الرَّحِيمِ

قال الله تعالى

سَنُرِيهِمْ آيَاتِنَا فِي الْآفَاقِ وَفِي أَنْفُسِهِمْ حَتَّى يَتَبَيَّنَ لَهُمْ أَنَّهُ  
الْحَقُّ أَوَلَمْ يَكْفِ بِرَبِّكَ أَنَّهُ عَلَى كُلِّ شَيْءٍ شَهِيدٌ

صدق الله العظيم

سورة فصلت الآية ٥٣



## **DEDICATION**

For soul of my father

And my lovely mother

For my brothers and sister

For all who tacked my a letter

,,, I dedicate this works,,,

**Eglal**



## **ACKNOWLEDGEMENT**

Firstly grateful thank to Allah.....

Then to my supervisor....Dr \ Khalda Mirghani Hamza for all the support and giddiness she showed with every student .....

To the department of OBS in Alsheed Ali Abd Alfatah Teaching Hospital, and to my collages in the laboratory ....

To all my collages in other Teaching Hospitals how help me in this study.

Finally allot of thanks to all how help me to complete this study.

**Eglal**



## **ABSTRACT**

This is case control and analytical study ,conducted at Khartoum Teaching Hospitals in May 2013 to September 2013 .The study aimed to determine Prothrombin time (PT) and Activated Partial Thromboplastin time (APTT) in women with abortion.

Seventy samples had been taken from women with abortion, during their bleeding, and were collected, twenty sample from normal pregnant collected as control sample. Venous blood sample had taken; 2.25ml of blood was added to 0.25 ml of Tri Sodium Citrate in tri sodium container. Semi-automatic Coagulometer instrument was used to measure Prothrombin time and Activated Partial Thromboplastin time.

The study included four groups, classified according to the month of abortion from first month to forth month. The study showed the most common age group of abortion, was from 25 to 29 years .The third month of pregnancy was the most common month of abortion.

The study conclude that, there is significant reduce in Activated partial Thromboplastin time, from the control groups. No significant statistical changes between the study groups (P.Value=0.921). Prothrombin time show significant increased, from the control group. But no significant statistical change between the study groups (P.Value=0.915).



## مستخلص البحث

هذه دراسة حالة مقارنة تم اجراؤها في المستشفيات التعليمية بمدينة الخرطوم في الفترة من مايو ٢٠١٣ الي سبتمبر ٢٠١٣ و هي تهدف لقياس البروثرومبين وزمن الثرومبوبلاستين النشط في حالات النساء المجهضات.

اخذت سبعين عينة من النساء ذات الاجهاض حضرن اثناء النزيف بعد موافقتهن علي المشاركة في الدراسة ،واخذن عشرين عينة من النساء ذوات الحمل الطبيعي كضبط جودة ،تم اخذ ٢.٢٥مل من الدم الوريدي اضيفت الي ٠.٢٥ مل من سترات الصوديوم الثلاثية في الحاوية المخصصة . استخدم جهاز Coagulometer الشبه الي لقياس زمن البروثرومبين ،وزمن الثرومبوبلاستين النشط . الدراسة تضمنت اربعة مجموعات ، قسمت حسب شهر الاجهاض ، من الشهر الاول الي الشهر الرابع للحمل ، وجد ان اكثر فئة عمرية عرضة للاجهاض (25-29) سنة واكثر الشهور عرضة للاجهاض كانت في الشهر الثالث للحمل %٠. لم تظهر الدراسة اي اختلافات ذات دلالة احصائية بين مجموعات الدراسة في زمن البروثرومبين وزمن الثرومبوبلاستين النشط .

تلخصت الدراسة في وجود نقصان ذا دلالة احصائية في زمن الثرومبوبلاستين النشط بين مجموعة الدراسة ومجموعة المقارنة ،ولكن لاتوجد اختلافات ذات دلالة احصائية بين مجموعات الدراسة .بينما اظهر زمن البروثرومبين زيادة ذا دلالة احصائية عن مجموعة المقارنة ،لكن لم يكن هنالك اختلاف ذا دلالة احصائية بين مجموعات الدراسة .



## Contents

Topic	Page
الاية	I
Dedication	II
Acknowledgment	III
Abstract	IV
ملخص الدراسة	V
Table contents	VI
List of table	X
Abbreviations	XI
<b>CHAPTER ONE</b>	
<b>Introduction and literature review</b>	
1-1 Introduction	1
1-2 literature review	2
1-2-1The blood	2
1-2-1-1The blood function	2



1-2-1-2 Blood composition	3
1-2-1-2-1 Plasma	3-4
Erythrocytes	4-5
Hemoglobin	5
Leukocyte	6
WBCs in pregnancy	6
Platelets	7
Function of platelets	8
Platelets aggregation	8-9
1-2-2 Coagulation	10-11
a-Coagulation path way	11-12
b-Initiation of coagulation	13
c-Amplification	13-14
d-Coagulation inhibitor	14-15
e-Tests of coagulation	16
-Prothrombin time	16-18
-International Normalize Ratio	18
-other test for coagulation	20
1-2-3 Haemostatic change during pregnancy	20-21



1-2-3-2 Coagulation factors	21
1-2-3-3 Fibrinolysis	21-22
1-2-3-4 Cause of abortion	22-23
1-3 Rational	24
1-4 Objective	25
1-4-1 General objective	25
1-4-2 Specific objectives	25
<p style="text-align: center;"><b>CHAPTOR TWO</b></p> <p style="text-align: center;"><b>Material and Methods</b></p>	
2-1 Study design	26
2-2 Sample size	26
2-3 Inclusion criteria	26
2-4 Exclusion criteria	26
2-5 Ethical consideration	27
2-6 Method of data collection	27
2-7 Procedure of sample collection	27
2-7-1 Requirements	27
2-7-2 Procedure	27
2-8 Centrifugation ,preparation of platelet poor plasma	27



2-9 Procedure of PT	28
2-10 Procedure of APTT	28
2-11 Quality control of the test	29
2-12 Data analysis	29
<b>CHAPTOR THREE</b>	
<b>Result</b>	
Result	30-31
<b>CHAPTOR FOUR</b>	
<b>Discussion, Conclusion and Recommendation</b>	
4-1 Discussion	36
4-2 Conclusion	37
4-3 Recommendation	38
<b>References</b>	
References	39-41



### List of Tables

Table	Subject	Page
3-1	Distribution of study group according to age	32
3-2	Distribution of study group according to month of abortion	32
3-3	Mean of APTT at group of study	33
3-4	APTT between study and control group	33
3-5	Mean of PT at group of study	34
3-6	PT between study group and control group	34
3-7	Mean of INR at group of study	35
3-8	INR between study group and control group	35

### List of figures

Figure	Subject	page
1	Path way of coagulation	16



## **Abbreviations**

PT	Prothrombin time
APTT	Activated partial thromboplastine time
APH	Anti partum hemorrhage
PPH	Post partum hemorrhage
TAFI	Thrombin – activatable fibrinolysis inhibitor
TPA	Tissue plasminogen activator
PTI-2	plasminogen activator inhibitor -2
VWF	Von willebrand factor
RCOA	Ristocetin co factor A
PTTK	Partial thromboplastin time with kaolin
KCCT	Kaolin- cephalin clotting time
LA	Lupus Anticoagulant



TAT	Thrombin- anti thrombin complex
EPCR	Endothelial protein C receptor
ACA	Anti Cardiolipin Antibodies
APA	Anti Phospho lipid Antibodies
APS	Anti Phospholipid syndrome