

الآية

قال تعالى:

بسم الله الرحمن الرحيم

(اقْرَأْ بِاسْمِ رَبِّكَ الَّذِي خَلَقَ (1) خَلَقَ الْإِنْسَانَ مِنْ عَلَقٍ (2) اقْرَأْ وَرَبُّكَ الْأَكْرَمُ

(3) الَّذِي عَلَّمَ بِالْقَلَمِ (4) عَلَّمَ الْإِنْسَانَ مَا لَمْ يَعْلَمْ (5))

صدق الله العظيم

الآيات من سورة العلق الآية (1-5)

Dedication

To those who taught us "Don't ever give up a head" and enhance me to
improve myself though all my walks of life and support me to my study

My parents

To whom started with me step by step

My supervisor

To those encourage and help me

My friends

To those who have made it possible

My teachers

To any person who support me till I reach this stage

Acknowledgment

Sincerer regards at the first and last to our greatest goad Allah for
providing me the strength to fulfill this study

I would like to thank my supervisor Professor.Babiker Ahmed
-for his supervision and advances

Special thank to Sudan cardiac center staff and to all who help me to
complete this research

Abstract

This is a cross sectional study conducted in Sudan cardiac center during period from February to May 2016 to measurement of Prothrombin Time ,Activated Partial Thromboplastin Time and platelet count in open heart surgery patients.

Seventy patients were informed about this study, 5ml of blood sample was collected before and after surgery, 2.5ml in KEDTA anticoagulant container for each patients, automated hematological analyzer Sysmex KX21N was used to count platelet, and 2.5 ml in trisodium citrate to separate plasma using manual method for coagulation profile, the result was analyzed by using statistical package of social sciences program SPSS version(11.5) .

The result showed Prothrombin Time(PT) before surgery was 24.32 ± 8.6 seconds and after surgery was 27.46 ± 9 seconds with significant difference ($P.value = 0.00$), and Activated Partial Thromboplastin Time (APTT) before surgery was 41.49 ± 7 seconds and after surgery was 43.94 ± 7.8 seconds with significant difference ($P.value = 0.00$), and platelet count before surgery was 247 ± 89.9 and after surgery was 243 ± 88.6 with significant difference ($P.value = 0.00$).

PT and APTT showed prolongation after surgery due to neutralization of heparin with protamine and massive activation of haemeostasis,also due to heparin that taken to patients during and after surgery ,associated with decrease in platelets count after surgery .

مستخلص البحث

هذه دراسة تحليلية مقطعية تم إجراؤها في مركز السودان للقلب في الفترة ما بين فبراير إلى مايو 2016 لقياس زمن البروثرومبين، زمن الثرومبوبلاستين المنشط الجزئي و عدد الصفائح الدموية في مرضي عمليات القلب المفتوح سبعة مريض تم إخطارهم بهذه الدراسة تم اخذ 5مل عينه دم قبل وبعد العملية الجراحية لكل مريض 2,5 مل وضعت في حاويه تحتوي علي مانع تجلط ثنائي بوتاسيوم امين الايثلين رباعي حمض الخليك واستخدم جهاز التحليل الزاتي لقياس الصفائح الدموية و 2,5 مل عينه دم في حاويه تحتوي علي مانع تجلط ثلاثي سترات الصوديوم وفصلت البلازما باستخدام الطريقة اليدوية لقياس زمن البروثرومبين والثرمبوبلاستين المنشط الجزئي وحللت النتائج باستخدام برامج الحزم الاحصائية والنظم الاجتماعية (نسخه 11,5).

أظهرت النتائج أن متوسط زمن البروثرومبين قبل الجراحة $24,32 \pm 8,6$ ثانيه وبعد الجراحة $27,46 \pm 9$ ثانيه. مع اختلاف ذو دلالة إحصائية ($P.value=0.00$) وان زمن الثرومبوبلاستين المنشط الجزئي قبل العملية الجراحية $41,49 \pm 7$ ثانيه. وبعد العملية الجراحية $43,94 \pm 7,8$ ثانيه مع اختلاف ذو دلالة احصائية ($P.value= 0.00$) وان عدد الصفائح الدموية قبل العملية الجراحية $247 \pm 89,9$ وبعد العملية الجراحية $243 \pm 88,6$ اختلاف ذو دلالة احصائية ($P.value= 0.00$).

أثبتت الدراسة زيادة في زمن البروثرومبين والثرمبوبلاستين المنشط الجزئي نتيجة للنشاط الزايد لعوامل التجلط أيضا نتيجة للهيبرين الذي يعطي للمريض اثناء وبعد العملية الجراحية مصحوبة بنقصان في عدد الصفائح الدموية بعد العملية الجراحية.

Abbreviations

ADP : Adenosine diphosphate
AHG : Antihemophilic globulin
AHF : Antihemophilic factor
APTT: Activated partial thromboplastin time
CABG: Coronary artery bypasses Grafting
CHD : Coronary Heart disease
CVD : Cardio vascular disease
DIC : Disseminated intravascular coagulation
ECs : Endothelial cells
GP1b : Glycoprotein 1b
HMWK: High molecular weight kininogen
LLF : Laki-Lorand factor
PFA : Platelet function analysis
PG12 : Prostaglandin 12
PLAs : Activation of phospholipase enzyme
PPP : Platelet poor plasma
PT : Prothrombin Time
PTA : Plasma thromboplastin antecedent
PTC : Plasma thromboplastin component
RBCs : Red blood cells
TF : Tissue factor
TFPI : Tissue factor pathway inhibitor
TLR : Transmyocardial laser revascularization
TT : Thrombin Time
TXA2:ThromboxaneA2
VADs: Ventricular assist devices
VK : Vitamin k

vWF : vonWillebran Factor

WBCs: White blood cells

Table of contents

Title	Pages No
الايه	1
Dedication	11
Acknowledgment	111
Abstract	1V
مستخلص البحث	V
Abbreviation	V1
Table of contents	V111
List of tables	X
List of figures	X1
Chapter One	
Introduction and Literature Review	
1.2.1 Physiology of heart	3
1.2.2Heart valve	4
1.2.3 Heart disease	4
1.2.4Types of heart surgery	4
1.2.5Post operating bleeding after heart surgery	5
1.2.6Potential complication during heart surgery	5
1.2.7Components of normal homeostasis	6
1.2.8 Functions of homeostasis	8
1.2.9 Classification of homeostasis'	9
1.2.10 Rationale	22
1.2.11 Objectives	23
Chapter Two	
Material and Methods	

2.1 Study design	24
2.2 Study area	24
2.3Study population	24
2.4Inclusion criteria	24
2.5 Exclusion criteria	24
2.6 Sample size	24
2.7Tool of data collection	24
2.8 Data analysis	24
2.9 Ethical consideration	25
2.10 Sample collection	25
2.11 Methodology	25
Chapter Three	
Results	
3.Results	29
Chapter Four	
Discussion ,Conclusion and Recommendations	
4.1 Discussion	37
4.2 Conclusion	39
4.3Recommendations	40
Chapter Five	
References	
References	41
Appendices	44

List of tables

No	Title	Pages No
1.1	Coagulation factor nomenclature and synonyms	19
3.1	Distribution of population	29
3.2	PT between gender	31
3.3	APTT between gender	32
3.4	Platelet count between gender	33
3.2	Comparison of prothrombin before and after surgery	34
3.3	Comparison of APTT before and after surgery	35
3.4	Comparison of Platelet before and after surgery	36

List of figures

No	Title	Page No
1.1	Blood clots (plugging the bricks)	7
1.2	Mechanism of clot formation	10
3.1	Distribution of patients according to ages	30