Dedication

To the heart of my life

My father

To the candle which burn to light my life

My mother

To those who have made it possible

My teachers

To who ever encouraged me

My sister, colleagues and my friends

I dedicate this work

Malaz .....

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Praise to “Allah” the most gracious and the

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Abstract

This is case-control analytical study that aimed to determine platelet count and indices , also to detect hemoglobin electrophoresis and sickling test in sickle cell patients in Khartoum state. This study was conducted during September-2018 to April-2019 in Khartoum state. following informed consents, one hundred person were included (fifty were cases (26 males and 24 females) and fifty were controls (25 males and 25 females)blood samples were taken from both group at Alzaytouna Specialist Hospital.

Two ml of venous blood were collected from hundred individuals into EDTA containers. All samples were tested for platelets count and indices, sickling test and hb electrophoresis. The blood samples were tested by sysmex (kx-21N), a fully automated device and Mini cap Cibia for Hb electrophoresis, all results were analyzed by (SPSS) program. The frequency of sickle cell anemia showed that there were 26 individuals (52%) sickle cell trait (hb-AS), and 24 individuals (48%) were sickle cell disease (hb-SS).

The results showed that platelets counts and platelet indices (MPV , PDW and PCT) were higher in case compared with controls(P:0.000), (P:0.000), (P:0.005) and (P:0.000) respectively. but the platelets indices P-LCR (P:0.666) difference were not changed. Mean of plt count, MPV, PDW, PCT and P-LCR were (425.64 ± 171.250), (10.250 ± 1.2706), (10.474 ± 2.0546), (.3966 ± 0.15175) and (20.458 ± 509672) respectively in case group. Whereas were found in control group (283.78 ± 59.283), (9.4101±1.0148), (11.454 ± 1.6375), (0.2632 ± .05468) and (21.014 ± 6.8568) respectively .

The mean of HbF in SS (20.12±14.25), AS (17.45±27.134) and not found in AA individuals. The highest level of HbS was seen in SS (75.38±15.25), AS (42.88±17.294) and not found in AA persons. The level of HbA was found to be highest in AA individual (97.34 ± 0.47), AS (34.92 ± 28.92) and not found in SS individuals.$HbA_2$was observed in little amount in SS (3.0 ± 0.65), AS (3.19 ± 0.801) and AA (2.7 ± 0.47) individuals.

ملخص البحث

هذه دراسة وصفية تحليلية هدفت لتحديد تعداد الصفائح الدموية ومؤشراتها ، اختبار المنجلة والرحلان الكهربائي للخضاب عند المصابين بالانيميا المنجلية فى ولاية الخرطوم .أجريت هذه الدراسة فى الفترة من سبتمبر–2018 إلى ابريل– 2019 بولاية الخرطوم. أخذت الموافقة من المرضى وقد تمت إحاطتهم بأهداف البحث. تم أخذ عينات من 100 شخص (50 عينة من المرضى(26 عينة من الرجال و24 عينة من النساء)،50 عينة من الأصحاء(25 عينة من الرجال و25 عينة من النساء) أخذت وحللت فى مستشفى الزيتونة التخصصي.

تم سحب 2 مل من الدم الوريدى من مائة شخص ووضعها فى وعاء يحتوى على مادة مانعه للتجلط. ثم اختبار جميع العينات لتعداد الصفائح ومؤشراتها، فحص التمنجل والرحلان الكهربائي للخضاب. تم تشخيص العينات بواسطة جهاز سيسمكس(kx-21N الآلي)، minicapcibia لتحديد الرحلان الكهربائي للخضاب وتحليلها بالحاسوب باستخدام برنامج الحزمة الإحصائية (SPSS) .أوضحت النتائج ان عدد ستة وعشرين هم من حاملي فاقة الدم المنجلية (hb-As) ويشكلون نسبة (52%) بينما هناك أربعة وعشرين مريضا يشكلون نسبة (48%) هم من المصابين بفاقة الدم المنجلية (hb-SS) .

وجد ارتباط قوى بين عدد الصفائح الدموي mومؤشرات الصفائح الدموية (Platelet count, MPV, PCT and PDW) لمجموعة المرضى مقارنة بالمجموعة الضابطة والزيادة ت شكل اختلاف ذا دلالة(P<0.005) (P<0.000),((P<0.000) (P<0.000)على التوالي. بينما(P>0.666) P-LCR لا تشكل اختلاف ذو دلالة. متوسط الصفائح الدموية ومؤشراتها (Platelet count, MPV, and PDW (PCT) (.3966 ± 0.15175), (10.474 ± 2.0546), (10.250 ± 1.2706), (425.64 ± 171.250) and (20.458 ± 509672) على التوالي عند المرضى. بينما وجد المتوسط في المجموعة الضابطة (0.2632 ± .05468) and (11.454 ± 1.6375), (9.4101±1.0148), (283.78 ± 59.283) (21.014 ± 6.8568) على التوالي .

وجد ان متوسط HbF عند المصابين بالانيميا المنجلية (SS) هو (20.12±14.25) ،وحاملى الانيميا المنجليه (AS) هو (17.45±27.134) ولا يوجد فى الاشخاص السليمين . متوسط HbS يوجد بكمية كبيرة فى ال SS وهو (15.25±75.38)، وال AS هو(17.294±42.88) وغير موجود ايضا فى الاشخاص السليمين.اعلى متوسط ل HbA موجود عند الاشخاص السليمين وهو (0.47±97.34)، وال AS وهو (34.92±28.302)، وغير موجود عند ال SS. بكميات قليلة يوجد HbA2 فى ال SS بنسبة (3.0±0.65)، وعند ال AS بنسبة (3.19±.801) وعند الاشخاص الطبيعين بنسبة (2.7±0.47).

Abbreviations

SCD	Sickle cell disease
Ml	Milliliter
C/L	Cell per liter
CBC	Complete blood count
EDTA	Ethylene diaminetetraacetic acid
Hb-F	Fetal hemoglobin
FL	Fimto liter
g/dl	Gram per deciliter
g/l	Gram per liter
Hb	Hemoglobin
Hb-AS	Heterozygous Sickle cell trait
Hb-SS	Homozygous Sickle cell disease
MCH	Mean cell hemoglobin
MCHC	Mean cell hemoglobin concentration
MCV	Mean cell volume
PCV	Package cell volume
Pg	Pico gram
Plt	Platelets
PCR	Polymerase chain reaction
RBCs	Red blood cells
Hb-S	Sickle hemoglobin
SNP	Single nucleotide polymorphism
SPSS	Statistical Package for Social Science
TWBCs	Total white blood cell counts
Hb-A	Adult hemoglobin
PC	Platelets counts
MPV	Mean Platelet Volume
PDW	Platelet Distribution Width
PCT	Platelet Crit
P-LCR	Platelet Large Cell Ratio
B.D.W	Buffer distilled water
UL	Micro liter
V/V	Volume per volume
TEB	Tris/ EDTA/borate
GP	Glycoprotein
CD	Cluster of differentiation
ADP	Adenosine Diphosphate
G-6-PDD	Glucose 6 phosphate dehydrogenase deficiency
VWF	Von willebrand factor
TPO	Thrombopoitein

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