بِسْمِ اللّهِ الرَّحْمَنِ الرَّحِيمِ

قال الله تعالى

يَا أَيُّهَا النَّاسُ إِنْ كُنْتُمْ فِي رَيْبٍ مِنَ الْبَعْثِ فَإِنَّا خَلَقْنَاكُمْ مِنْ تُرَابٍ ثُمَّ مِنْ نُطْفَةٍ ثُمَّ مِنْ عَلَقَةٍ ثُمَّ مِنْ مُضْغَةٍ مُخَلَّقَةٍ وَغَيْرِ مُخَلَّقَةٍ لِنُبَيِّنَ لَكُمْ وَنُقِرُّ فِي الْأَرْحَامِ مَا نَشَاءُ إِلَى أَجَلٍ مُسَمًّى ثُمَّ نُخْرِجُكُمْ طِفْلًا ثُمَّ لِتَبْلُغُوا أَشُدَّكُمْ وَمِنْكُمْ مَنْ يُتَوَفَّى وَمِنْكُمْ مَنْ يُرَدُّ إِلَى أَرْذَلِ الْعُمُرِ لِكَيْلَا يَعْلَمَ مِنْ بَعْدِ عِلْمٍ شَيْئًا وَتَرَى الْأَرْضَ هَامِدَةً فَإِذَا أَنْزَلْنَا عَلَيْهَا الْمَاءَ اهْتَزَّتْ وَرَبَتْ وَأَنْبَتَتْ مِنْ كُلِّ زَوْجٍ بَهِيجٍ

صدق الله العظيم

سورة الحج الآية 5

Dedication

To my lovely parents

My sisters and brothers

Who have always been the candles of my life

And the wind beneath my wings until I complete this work

Acknowledgment

Primary my prays and thanks should be to Allah, the almighty most gracious and most merciful, who grated me the serenity, means of strength and patience to accomplish this work.

I deeply indebted to my supervisor **Dr. Malik Hassan Ibrahim Elfadni** for his valuable help and guidance during this study, I'm also grateful to his keen interest, patience assistance and invaluable advice.

My appreciation is extended to all the medical staff in Heglig hospital and staff of National Health Laboratory department of haematology.

My special thanks are expressed to my colleagues Mohammed A. A. Allah, Alla Eldeen and Razan M. A. Elmotalab and to all my friends who have been very supportive throughout this work.

Abstract

This study was hospital analytical, descriptive and cross-sectional conducted to determine the sickle cell disease and sickle cell trait frequency in Sudanese patient in Heglig area in Western of Southern Kordofan state in the period between November 2008 to February 2009.

One hundred (100) patients were informed about the study and agreement for participation was obtained. A venous blood of 2.5 ml was collected in EDTA containers and investigated for sickle cell disease and sickle cell trait, a complete blood count (CBC), sickling test and haemoglobin electrophoresis were carried out.

Fully automated haematological analyzer (Sysmex Kx 21N), Electrophoresis tank and power pack were used for analysis and statistical package for social sciences (SPSS) computer program version 13 was used for data processing.

The mean age of the sickle cell disease patients was (7.92). The results showed that percentage of sickle cell trait and sickle cell disease were (52) and (14) respectively. The sickling test showed that (71%) of the study population were negative sickling test, the remain (29%) were positive.

Haemoglobin level, total erythrocyte and packed cell volume of the sickle cell disease patients were (6.59), (2.43) and (22.02), respectively.

There were no significant differences in sickle cell disease and normal individuals in mean cell haemoglobin concentration (29.80), mean cell volume (92.50) and mean cell haemoglobin (26.48) ($p < 0.095$, $p < 0.226$ and $p < 0.400$ respectively,

The total leukocytes (20.4) $p < 0.000$) and platelets count (280.78) $p < 0.044$) were significantly elevated in sickle cell disease when compared with normal individuals.

In conclusion, sickle cell anaemia is highly frequent in the studied area, which is most likely due to the consanguineous marriages.

[illegible]

هذه دراسة م قطعية, وصفية وتحليلية. تم إجراؤها لتحديد تردد مرض ف قر الدم المنجلي وحاملي مرض ف قر الدم المنجلي في المرضي السودانيين في منط قة هجليج غرب ولاية جنوب كردفان في الفترة ما بين نوفمبر 2008 إلي مارس 2009.

تم إعلام مائة (100) مريض بأهداف البحث وأُخذت موافقتهم, ثم أُخذت مائة عينة دم , 2.5 مل من كل مريض في حاويات تحتوي علي مانع التجلط (ethylene-diamine-tetra-acetic acid (EDTA))) . تم إجراء اختبارات تعداد الدم الكامل, اختبار التمنجل و الرحلان الكهربائي للهمغلوبين.

تم استخدام جهاز (Sysmex) ر قم (Kx 21N) يعمل أوتوماتيكيا, جهاز الرحلان الكهربائي للهمغلوبين و برنامج الحزم الإحصائية للعلوم الاجتماعية نسخة ر قم 13 للتحليل الإحصائي.

و قد أظهرت النتائج الإحصائية أن متوسط أعمار مرضي ف قر الدم المنجلي (7.92). ونسب تردد مرضي ف قر الدم المنجلي وحاملي المرض 14% , 52% علي التوالي. أما اختبار التمنجل أظهر أن (71 %) أظهروا نتيجة سالبة, أما (29%) أظهروا نتيجة موجبة.

وُجد أن مستوي الهمغلوبين, مجموع تعداد خلايا الدم البيضاء وحجم الخلية المحشوة لمرضي ف قر الدم المنجلي (6.59), (2.43) و (22.02) علي التوالي.

كما لم تُوجد فروق ذات دلالة إحصائية في متوسط تركيز الهمغلوبين للخلية (29.80) ($p < 0.095$), متوسط حجم الخلية (92.50) ($p < 0.226$) ومتوسط همغلوبين الخلية (26.48) ($p < 0.400$).

وُجدت زيادة ذات دلالة إحصائية في مجموع تعداد خلايا الدم البيضاء (20.41) ($p < 0.000$) وتعداد الصفائح الدموية (280.78) ($p < 0.044$) م قارنةً بأفراد أصحاء.

وُجد أن تردد ف قر الدم المنجلي وحاملي مرض ف قر الدم المنجلي عالي في المنط قة التي تمت دراستها, وهذه الخلاصة مردها لزواج الأ قارب المنتشر في تلك المنط قة.

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List of abbreviations

AVN	Avascular necrosis
CBC	Complete blood count
CD 64	Cluster differentiation 64
CD 36	Cluster differentiation 36
gp Ib	Glycoproteins Ib
gp IX	Glycoproteins IX
gp V	Glycoproteins V
G-6-PD	Gglucose-6-phosphate dehydrogenase
FN	Fibronectin
Hb	Haemoglobin
Hb S	Haemoglobin S
Hb A	Haemoglobin A
Hb E	Haemoglobin E
Hb F	Haemoglobin F
HPFH	Hereditary persistence of fetal haemoglobin
LDH	Lactate dehydrogenase
MCV	Mean cell volume
MCH	Mean cell haemoglobin
MCHC	Mean cell haemoglobin concentration
O_2	Oxygen
PCV	Packed cell volume
RBC	Red blood cell.
SCD	Sickle cell disease
SPSS	Statistical package for social sciences
TWBCs C	Total white blood cells count.
TRBCsC	Total red blood cells count.
TSP	Thrombospondin
VCAM-1	Vascular cell adhesion molecule 1
vWF	von Willebrand factor
WBC	White blood cell.
2,3-DPG	2,3 diphosphoglycerate

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