بِسْمِ اللّهِ الرَّحْمَنِ الرَّحِيمِ

قال الله تعالى

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

صدق الله العظيم

سورة فصلت الآية(53)

Dedication

To my lovely parents

To my lovely wife and my sweetly daughters Sejoud & Malaz

They are always been the candles of my life

My teachers, friends and colleagues

With my love

Abuzar

Acknowledgment

Primarly my 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 would like to express my sincere thanks and gratitude 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 Nazar Abd Elhafeez, Mohammed Ali Abdalla., Ala-Eldin and Razan Mohammed. Abd. Elmotalab and to all friends who have been supported throughout this work.

Abstract

This study was analytical, descriptive and cross-sectional conducted to determine the sickle cell disease and sickle cell trait frequency among Eastern Heglig area in patients referred to Heglig hospital in 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 hematological 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 (17.2 years). The results showed that percentage of sickle cell trait and sickle cell disease were (40) and (10) respectively.

Hemoglobin level, total erythrocyte and packed cell volume of the sickle cell disease patients were (6.67g/dl), (2.4 X 10^6/Cumm) and (20.7%), respectively.

There were no significant differences in sickle cell disease and normal individuals in mean cell haemoglobin concentration (32.2g/dl), mean cell volume (86.68fl) and mean cell hemoglobin (27.98 pg) ($p < 0.399$, $p < 0.203$ and $p < 0.189$ respectively,

The total leukocytes (15.1X 10^3 / Cumm) $p < 0.000$) and platelets count (452.5X 10^3 / Cumm) $p < 0.005$) 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.

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هذه دراسة م قطعية, وصفية وتحليلية. تم إجراؤها لتحديد تردد مرض ف قر الدم المنجلي وحاملي خله الكريّه المنجليه في قبيله المسيريه المترددين علي مستشفي هجليج من منط قه شرق هجليج في الفترة ما بين نوفمبر 2008 إلي مارس 2009.

تم إعلام مائة (100) مشارک بأهداف البحث وأُخذت موافقتهم, ثم أُخذت مائة عينة دم , 2.5 مل من كل مشارک 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 (17.2سنة). ونسب تردد مرضي ف قر الدم المنجلي وحاملي المرض 10 % , 40% علي التوالي.

وُجد أن مستوي الهمغلوبين, مجموع تعداد خلايا الدم الحمراء وحجم الخلية المحشوة لمرضي ف قر الدم المنجلي (6.67 جم/100 مل), (2.4 $X\ 10^6$ /مل ^{3}) و (20.7 %) علي التوالي.

كما لم تُوجد فروق ذات دلالة إحصائية في متوسط تركيز الهمغلوبين للخلية (32.2 جم/100 مل $p<0.399$, متوسط حجم الخلية 86.68 فيمتوليتر $p < 0.203$) ومتوسط همغلوبين الخلية ($p < 0.189$ 27.98) بيكوجرام).

وُجدت زيادة ذات دلالة إحصائية في مجموع تعداد خلايا الدم البيضاء ($p < 0.000$ 15.1 X 10^3 /مل ^{3}) وتعداد الصفائح الدموية $p < 0.005$ 452.5 X 10^3 /مل ^{3}) 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 تلک المنط قة.

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AST	Aspartate transaminase.
CBC	Complete blood count.
CO_2	Carbon dioxide.
Glu	Glutamic acid.
IL-2	Interleukin-2
ISCS	Irreversibly sickle cell disease.
IEF	Isoelectric focusing.
EDTA	ethylene-diamine-tetra-acetic acid
Fe^{++}	Ferrous iron
HCT	Hematocrit
Hb	Hemoglobin
Hb S	Hemoglobin S
Hb A	Hemoglobin A
Hb A_2	Hemoglobin A_2
Hb E	Hemoglobin E
Hb F	Hemoglobin F
HPFH	Hereditary persistence of fetal hemoglobin
HPLC	high performance liquid chromatography
LCD	Liquid crystals display.
MCV	Mean cell volume
MCH	Mean cell haemoglobin
MCHC	Mean cell hemoglobin concentration
O_2	Oxygen
PCV	Packed cell volume
PLT	Platelet
PF	Plasmodium falciparum
RBC	Red blood cell.
RDW	Red blood cell distribution width
SCA	Sickle cell anemia.
SCD	Sickle cell disease
SPSS	Statistical package for social sciences
TNF-α	Tumor necrosis factor-alpha
TWBCs C	Total white blood cells count.
TRBCs C	Total red blood cells count.
Val	Valine
WBC	White blood cell.

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