Dedication

To my family

Teachers

Colleagues

Acknowledgement

I gratefully acknowledged the guidance and encouragement afforded me in the preparation of this thesis by many friends and colleagues.

In particularly, my thanks to Dr. Malik H. Alfadni, Ustas:Abdelgadir H. Alagib, and Dr. Tarig A. Almisbah for thier great helps and assistance and my special thanks to my colleagues Miss Tagwa Yousif Kaboshia for her tireless assistance and constructive criticism with respect to both accuracy and content. Without the help of these people this thesis would have taken another year to prepare and Iam immensely grateful to them. They have always patient and has shown the kind of interest in my thesis.

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Abbreviations

CBC : Complete blood count

C/l : Cell per liter

EDTA : Ethylene diamine tetraacetic acid

FL : Fimto-liter

g/ dl : Gram per deciliter

g/ l : Gram per liter

Hb : Hemoglobin

Hb–AS : Heterozygous Sickle cell trait

Hct : Hematocrit

Hb-F : Fetal hemoglobin

Hb-S : Sickle hemoglobin

Hb-SS : Homozygous sickle cell disease

LYM : Lymphocyte

MCH : Mean cell hemoglobin

MCHC : Mean cell hemoglobin concentration

MCV : Mean cell volume

OPSI : Overwhelming post- (auto) splenectomy

NEUT : Neutrophil

PCA : patient-controlled analgesia

PCR : Polymerase chain reaction

PCV : Packed cell volume

Pg : Pico-gram

PLT : Platelets

RBCs : Red blood cells

SNP : Single nucleotide polymorphism

SPSS : Statistical Package for Social Sciences

TWBCs : Total white blood cells count

W-LCR : WBC-large cell ratio

W-MCR : WBC-middle cell ratio

W-SCR : WBC- small cell ratio

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هذه دراسة وصفية،م قطعية و تحليلية هدفت للم قارنة بين الطرق التقليدية و الحديثة لتشخيص مرض الأنيميا المنجلية لتحديد وجود ونسب فاقة الدم المنجلية بمستشفى البلك . اجريت هذة الدراسة فى الفترة من شهر سبتمبر-٢٠٠٨الى شهريناير -٢٠٠٩بولاية الخرطوم.اخذت المواف قة من المرضى و قد تمت احاطتهم باهداف البحث.تم أخ\مائة عينة بسحب ٢ مل من الدم الوريدى ووضعها فى وعاء يحتوى على مادة مانعة للتجلط.تم اختبارجميع العينات لتعداد الدم الكامل

- فحص التمنجل والرحلان الكهربائى للخضاب

تم تحليل البيانات بالحاسوب باستخدام برنامج الاحصاء للتحليل الاجتماعى .اوضحت النتائج ان عدد ٧جرام/ □اربع وسبعون مريض هم من حاملى فاقة الدم المنجلية بنسبة ٨٢٪. ان تركيز خضاب الدم يتراوح بين ٤ ١٠جرام/ديسيلترالعدد المتبقى فى المعدل الطبيعى.عدد كريات الدم البيضاء بنسبة ٨٢,٤ ٪ من □ديسيلتر،٨ ١١×١٠^٩ خلية/لتر و ١٧,٨ ٪ من المرضى اكثر من الحد الاعلى للمعدل□المرضى فى المعدل الطبيعى للكريات البيضاء ٤ ٤٠٠ ×١٠^٩□الطبيعى<١١×١٠^٩ خلية/لتر. عدد الصفائح الدموية بنسبة ٩٦٪ من المرضى فى المعدل الطبيعى ١٥٠ خلية/لترو ٤,١٪ اعلى بزيادة طفيفة من المعدل الطبيعى.ان عدد ستة عشرمريض هم مصابيين بفاقة الدم المنجلية ٧جرام/ديسيلتر،٩جرام/ديسيلتر. عدد كريات الدم البيضاء □بنسبة ١٧,٨٪. ان تركيز خضاب الدم يتراوح بين ٤ والصفائح الدموية بنسبة ٥٠٪من المرضى فى المعدل الطبيعى بينما ٥٠٪من المرضى اعلى من المعدل الطبيعى. كل النتائج تمت مقارنتها بنتائج عشرة افراد اصحاء.اوضحت النتائج ان نسبة فاقة الدم المنجلية الاعلى بين

ا قبائل كانت ل قبائل المسيرية و الهوسا ١٥.٦٪ و النسبة الادنى ل قبائل الهواوير ،بنى هلبة والجموعية بنسبة

● ١٧٪

وتمت المقارنة بين الطرق التقليدية والطرق الحديثة في التشخيص ووجد أن الطرق الحديثة

● تؤكد التشخيص الزي تم بواسطة الطرق التقليدية

Abstract

This was prospective, cross-sectional and analytical study that aim to determine the incidence Sickle Cell Anemia in patients referred to Al-block hospital, and to compare the results which obtained by conventional techniques with that obtained by modern methods. This study was conducted during Four months from September-2008 to January-2009 in Khartoum state – Sudan. Following informed consents a total of hundred individuals were bled. Two mls of venous blood was collected randomly from hundred individual into EDTA containers. All samples were tested for Complete blood count, Sickling test and Hemoglobin Electrophoresis. The results were analyzed using SPSS program. The results that obtained by conventional techniques were compared with that obtained by modern methods which showed similarity between the two results. Incidence of sickle cell anemia types in our group regarding to our results showed that there were seventy four patients with the frequency of (82.2%) sickle cell trait (Hb-AS). Their hemoglobin concentration ranged between 4-7g/dl, 8-10 g/dl and other with normal concentration. The total white blood cell count 82.4% of them was found within the normal range (4-11×10^9 cell/liter) and17.9% was with increased above the upper limit of normal range (>11000 cell/liter). About the platelets count 96% of patients were revealed within normal range of platelets count (150-400×10^9 cell/liter) and 4.1% were found slightly increased above the

normal range. The others were sixteen patients were occurred with the incidence of sickle cell disease (Hb-SS) (constitute 17.8% of study group). Their hemoglobin concentration was ranged between 4-7g/dl (93.8%), 9g/dl (6.3%). The total white blood cells and platelet counts 50% of patients were found within normal range of both the total white blood cell and the platelet and 50% were increased above the normal range of both. All results were compared with ten normal individual as control group.

The greatest percentage of sickle cell anemia was found in Almisseria tribe and Alhowsa tribe with the frequency of (15.6%) and the lower percentage was found in Alhawaweer, Banyhalba and Algamoia tribes with the percentage of 1.1%.

The results that obtained by the conventional methods were confirmed by modern methods that used in diagnosis of Sickle Cell Anemia.

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