

قال تعالى :

{وَقُلِ اعْمَلُوا فَسَيَرَى اللَّهُ عَمَلَكُمْ  
وَرَسُولُهُ وَالْمُؤْمِنُونَ وَسُتُّرُّونَ إِلَى  
عَالَمِ الْغَيْبِ وَالشَّهَادَةِ فَيُبَيِّنُكُمْ بِمَا  
كُنْتُمْ تَعْمَلُونَ }

صدق الله العظيم

سورة التوبه الآية 105

# Dedication

To All We Love

&

Cherish

## Acknowledgment

First of all thanks for Allah that giving me the power and will to complete this study.

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# Abstract

This was descriptive and cross-sectional study was carried out in Khartoum state during the period from November 2008 to January 2009.

The study was designed to determine the pattern of inheritance of sickle cell anemia in parents of patients who referred to three hospital of Khartoum State.

Hundred parents (50 mother and 50 father) were selected for this study, from Khartoum pediatric Hospitals, (2,5) ml of venous blood was taken from all parents and put it in an anticoagulant container. Complete blood count (CBC) was determined by use of Sysmex instrument N-50, and samples were investigated for HbS by use of sickling test. Hemoglobin electrophoresis was performed to determine the pattern of inheritance of sickle cell gene.

The results were as followed:

97% of samples were heterozygous form of Hb S ( $\beta\beta^S$ ) and the remaining were homozygous form of HbS ( $\beta^S\beta^S$ ). 89% red cell morphology was normocytic normochromic cells, and the remaining were microcytic normo-hypochromic cells. The means of count and cell indices in the carrier and diseased parents as follows respectively: the mean of white blood cells count(TLC) was  $8.5 \times 10^9/l$  and  $6.9 \times 10^9/l$ , the mean of red blood cell count(RBC) was  $4.6 \times 10^{12}/l$  and  $3.9 \times 10^{12}/l$ , the mean of hemoglobin(Hb) was 13g/dl and 9g/dl, the mean of hematocrit(PCV) was 41.2% and 39.3%, the mean of mean cell volume (MCV) was 86.2 and 86.3fl, the mean of mean cell hemoglobin(MCH) was 30pg and 29.1pg the mean of mean cell hemoglobin concentration (MCHC) was 31.2% (58%) and 31.3%, the mean of platelets count(PLT) was  $207 \times 10^3/\mu l$  and  $298 \times 10^3/\mu l$ .

The highest frequency of sickle cell anemia was found in Messaria tribe (40%), followed by Bargo tribe (30%), Hausa and Rezaigat (8%), Taisha and Jawama (6%), and Zagawa (2%).

# مستخلص الدراسة

اجريت هذه الدراسة الوصفية التحليلية في ولاية الخرطوم في الفترة من نوفمبر 2008 حتى يناير 2009 وذلك لتحديد النمط الوراثي لاباء المرضى المترددين على ثلاثة مستشفيات بولاية الخرطوم، تم اختيار مائة من الابوين (50أب. 50أم) لاجراء هذه الدراسة ، تم اخذ 2,5 مل من الدم في وعاء مانع للتجلط من كلا الابوين، تم قياس صورة الدم الكامل باستعمال جهاز سيسماكس وتم اختبار العينات لهيماقلوبين 5 باستعمال الإختبار المنجلي، عمل الفصل الكهربائي لهيماقلوبين لتحديد النمط الوراثي وكانت النتائج كالتالي :

97% من العينات كانت تحمل الشكل الغير متجانس لهيماقلوبين 5 والبقية عبارة عن الشكل المتجانس لهيماقلوبين، 89% من شكل الخلايا الحمراء عبارة عن خلايا طبيعية اللون والحجم والبقية عبارة عن خلايا طبيعية-قليلة اللون وطبيعة الحجم، وكان متوسطات عدد ومعاملات الخلايا في الاباء الحاملين والمرضى على التوالي كالتالي: متوسط عدد كرات الدم البيضاء  $4.6 \times 10^9 / \text{لتر}$  و  $6.9 \times 10^9 / \text{لتر}$  و متوسط عدد خلايا الدم الحمراء  $10^12 \times 3.9 / \text{لتر م}$ ، و متوسط الهيماقلوبين 13 جرام % و 9 جرام % و متوسط الهيماتوكريت 41.2 % و 39.3 % و متوسط حجم الخلية 86.3 فيمتو / لتر و 83.2 فيمتو / لتر، و متوسط هيماقلوبين الخلية 30 بيكتو جرام و 29.1 بيكتو جرام ، و متوسط تركيز هيماقلوبين الخلية 31.2 % و 31.3 % . و متوسط عدد الصفائح الدموية  $207 \times 10^3 / \text{ميكرولتر}$  و  $298 \times 10^3$  ،

اعلى تكرار للانيميا المنجلي وجد في قبيلة المسيرية (40%) تبعتها قبيلة البرقو (30%) ثم الهوسا والرزيقات (8%) والتعايشه والجواعة (6%) والزغاوة (2%) .

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