

## **Dedication**

To the heart of my life, my family

To all teachers and colleagues

To those who are inside and outside Sudan  
I dedicate this work

## **Acknowledgment**

I would like to express my sincere thanks and graduate to my supervisor Dr. Sana EL Tahair for her close supervision, encouragement and sustained support

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## Abstract

Sickle cell disease is a hereditary disorder common in Sudan usually in the west. It is one of the haemolytic anaemias that shortened the life of the red blood cells. Sickle cell shape occur due to polymerization of haemoglobin S which is present due to substitution of valine for glutamic acid at position 6 of the  $\beta$ -globin chain. Fetal haemoglobin (Haemoglobin F) is increased in sickle cell disease.

This study aimed to determine fetal haemoglobin (Haemoglobin F) level in patients with sickle cell disease and sickle cell trait. The study carried out in 100 predetermined samples collected crosssectionally in Kosti hospital during the period of September 2008 to March 2009. 90 samples were sickle cell disease and sickle cell trait and 10 samples were used as control.

The techniques used were ,Complete blood count (CBC) by sysmex hematological analyzer - Sickling test - The alkaline method for haemoglobin electrophoresis ( cellulose acetate electrophoresis ) – Estimation of haemoglobin F level by the Modified Betke Method.

The study showed that the mean level of haemoglobin F in patients with sickle cell disease receiving hydroxyurea was 21.98 % , and the level of Haemoglobin F in those who were not receiving hydroxyurea was 16.8 % while it was 1.5 % in sickle cell trait and 0.46 % in normal individuals.

## الابنومانجلي

الابنومانجلي مرض وراثي شائع في السودان و في غربه خاصة. هو واحد من الابنومانات الانحلالية التي تؤدي إلى قصر عمر خلايا الدم الحمراء. شكل الخلية المنجلية يظهر نتيجة لاستبدال حمض الفالين لحمض الجلوتاميك في الموضع السادس لسلسلة -<sup>α</sup>-قلوبين. خضاب الدم الجنيني يزداد في حالة الابنومانجلي. هذه الدراسة تهدف إلى قياس مستوى خضاب الدم الجنيني لمرضى وحاملي مرض الابنومانجلي.

تمت الدراسة بجمع مائة عينة دم بمستشفى كوستى في الفترة من سبتمبر 2008 إلى مارس 2009 منها 90 عينة من مرضى الابنومانجلي وحاملي المرض و 10 عينات من الأصحاء اخذت كضابط.

التقنيات التي استخدمت هي : فحص الدم الكامل بواسطة جهاز ال Sysmex اختبار الابنومانجلي - الرحلان الهيموغلوبين بواسطة Cellulose acetate electrophoresis قياس الهيموغلوبين الجنيني بواسطة Modified Betke Method

اظهرت الدراسة ان متوسط مستوى الهيموغلوبين تالجينيني في مرضى الابنومانجلي الذين يتناولون هيدروكسى يوريا كانت 21.98 % ومستوى الهيموغلوبين تالجينيني في المرضى الذين لا يتناولون هيدروكسى يوريا كانت 16.8 % حيث كانت 1.5 % في حاملي المرض و 0.46 % في الأصحاء

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