

# ***Dedication***

*To who did not spare anything to support me*

*My father*

*To the one who taught me patience and success*

*My mother*

*And to whom I live for making their dreams come true*

*My brothers and my sisters*

*I dedicate this humble work*

*Amani*

## **Acknowledgment**

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## **Abstract**

This is a descriptive analytical study carried out on Radio Isotopic Center at Khartoum in period from March 2012 to May 2012. The objective of this study was to measure complete blood count on different types of leukemia among Sudanese pediatric patients. The subjects on this study were 60 patients with leukemia (42 with acute lymphoblastic leukemia, 11 patients with acute myeloid leukemia and 7 patients with chronic myeloid leukemia. Number of males 36 and 24 female. 44 of patients under treatment, 12 patients were new causes and 4 patients had received their treatment. The age of subject in this study were range from 2 to 16 years .there was 40 apparently healthy uses as control group. 2.5 ml of blood sample from patients and control subjects were collected in EDTA container to determine TWBCs. Hb, PCV level and platelet count using automated hematology analyzer (sysmex). TWBCs was significantly high ( $p=0.001$ ), and significant decrease in Hb level ( $p= 0.01$ ), PCV ( $p= 0.05$ ) and platelets count ( $p=0.027$ ) as compared with control group in patients before treatment .TWBCs were significantly decreased as compared to untreated patients ( $p=0.001$ ).Hb and PCV were significantly reduced in treated patients ( $p=0.000$ ) For Hb and PCV. While treatment can cause thrombocytopenia in 32 % ( $n=14$ ) and 63 % ( $n=28$ ) was normal platelet count. Most

common type of leukemia in the study group was ALL, and male was more affected than female.

## مستخلص البحث

هذه دراسة وصفية تحليله أجريت بالمركز القومي للعلاج بالأشعة والطب النووي -الخرطوم في الفترة من مارس 2012 وحتى مايو 2012 م. تهدف هذه الدراسة لقياس تعداد الدم الكلي عند الاطفال السودانيين المصابين بمرض سرطان الدم الأبيض. عدد المرضى المشاركين في هذه الدراسة هم 60 مريض بسرطان الدم (42 مريض بسرطان الدم الليمفاوي الحاد, 11 مريضا بسرطان الدم النقوي الحاد و 7 مرضي بسرطان الدم النقوي المزمن ), عدد الذكور 36 وعدد الإناث 24 . 44 من هؤلاء المرضى يتعاطون العلاج , 12 مريض لم يبدأوا بأخذ العلاج و 4 منهم توقفوا عن العلاج بعد شفائهم من المرض. تتراوح أعمارهم ما بين 2 إلى 6 سنة. وتم اخذ 40 شخصا أصحاء استخدموا كمجموعة ضابطه . تم جمع 2.5 مل من عينات الدم من المرضى والأشخاص وخضعت للفحوصات المعملية التالية التعداد الكلي لكريات الدم البيضاء ,معدل الهيموغلوبين ,تعداد الصفائح الدموية (automated hematology analyzer) ومعدل الهيموتوكريت باستخدام جهاز وأوضح نتائج الدراسة أن هنالك زيادة ذات دلالة احصائية في ( sysmex ), ( $p=0.000$ ), تعداد كريات الدم البيضاء عند الأشخاص الذين لم يبدأوا بأخذ العلاج ويوجد نقص ذو دلالة احصائية في كل من معدل الهيموغلوبين, الهيموتوكريت و( $p=0.05$ ) و( $p=$  ) وتعداد الصفائح الدموية بفروقات معنويه ( $0.01$ )

علي التوالي . أما الأشخاص الذين يتلقون العلاج أظهرت النتائج أن ( $p=0.027$ ) أما معدل ( $p=0.001$ ) هنالك نقص ذو دلالة احصائية في تعداد كريات الدم البيضاء الهيموغلوبين, الهيموتوكريت فأظهرت النتائج أن هنالك نقص ذو دلالة احصائية بفرق معنوي ( $0.000$ ) أما الصفائح الدموية فأوضحت أن هنالك نقص في التعداد عند 32% (عدد 14) أما 63% (عدد 28) فتعداد الصفائح الدموية في المعدل الطبيعي. وجد أن الذكور أكثر أصابه من الإناث وان سرطان الدم الليمفاوي الحاد هو أكثر الأنواع شيوعا في الأعمار الأقل من 16 سنة.

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## **Abbreviation**

|          |                            |
|----------|----------------------------|
| RBCs     | Red blood cells            |
| Hb       | Hemoglobin                 |
| PCV      | Packed cell volume         |
| WBCs     | White blood cells          |
| CD       | Cluster of differentiation |
| NK cells | Natural killer cells       |



|                    |  |
|--------------------|--|
| CBC                | Complete blood count                   |
| ALL                | Acute lymphocytic leukemia             |
| AML                | Acute myelocytic leukemia              |
| CML                | Chronic myeloid leukemia               |
| CLL                | Chronic lymphoid leukemia              |
| EDTA               | Ethylene diamine tetra acetic acid     |
| FAB classification | French-American-British classification |
| GVHD               | Graft-versus-host disease              |
| RICK               | Radio and Isotope Center at Khartoum   |