

**Sudan University of Science and Technology**

**Collage of Graduate Studies**

**Detection of Glycogen and Reticulin fibers in  
Trephine Bone Marrow Biopsies in Leukaemic  
patients**

**الكشف عن الريتكولين وليف الجلايكوجين في عينة  
نخاع العظم لدي مرضي سرطان الدم**

A thesis submitted in partial fulfillment for the degree  
of MSc in Histopathology and cytology

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بِسْمِ اللَّهِ الرَّحْمَنِ الرَّحِيمِ

قال الله تعالى

وَالْأَرْضَ مَدَدْنَاهَا وَأَلْقَيْنَا فِيهَا رَوَاسِيَ وَأَنْبَتْنَا  
﴿فِيهَا مِنْ كُلِّ شَيْءٍ مَوْزُونٍ﴾ ١٩

صدق الله العظيم

سورة الحجر الآية 19

# Dedication

I dedicate this work to my parents. Who managed to give me rust of being successfully in my educational life.

The work also is more over dedicated to the young generation to come...

Deeply, I also dedicate this project to my brothers, sisters and friends who encourage and impressed upon me the importance of education.

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## **Abstract**

This study was carried out in Radiation and Isotope Centre -Khartoum (RICK) during the period between June to November 2007. The study based on the histological features of trephine biopsy in leukemic patients.

Trephine biopsies were taken from 50 patients. Fixed in formalin and embedded in paraffin wax then trephine biopsies were treated with subsequent method for preparing section and stained by Periodic acid Schiff's reagent (PAS) and silver stain.

The result obtain from this study showed that when stained by silver stain 4% were strongly stained in acute lymphocytic leukemia, 4% were strongly stained in acute myeloid leukemia, 2% were strongly stained in chronic lymphocytic leukemia, 1% was strongly stained in chronic myeloid leukemia. Of the 50 studied cases. These findings strongly approve the role of special stains in the confirmation of the pathological diagnosis.

By PAS stain in ALL 4 (8%) were strong stained. In AML 3(6%) were strong. Lastly in CML 6 (16%) were strongly stained.

These findings strongly approved the importance of glycogen and reticulin in trephine biopsies and this was found to be statistically significant ( $P<0.02$ )

## خلاصة البحث

أجريت هذه الدراسة في المركز القومي للعلاج بالأشعة والطب النووي بالخرطوم في الفترة من يونيو إلى نوفمبر 2007 واعتمدت الدراسة علي الظواهر النسيجية لعينة نخاع العظم المأخوذة من مرضي سرطان الدم.

خمسون مريضاً أخذت منهم عينات نخاع العظم وتم تثبيتها بمادة الفورمالين وغمرت بالشمع وعولج النسيج بالطرق التقليدية حتي استخرج الم قطع وصبغ بمحلول حامض شفس البيريونك وصبغة نترات الفضة.

أظهرت النتائج انه بإستخدام صبغة نترات الفضة كانت الصبغة ذات فعالية عالية في 4% من الالبيضاخ الليمفاوي الحاد و 4% من الالبيضاخ الذ قوي الحاد و 2% من الالبيضاخ الليمفاوي المزمن و 1% من الالبيضاخ الذ قوي المزمن.

عند إستخدام محلول حامض شفس البيريونك كانت الصبغة ذات فعالية عالية في 8% من الالبيضاخ الليمفاوي الحاد و 6% من الالبيضاخ الذ قوي الحاد و 16% من الالبيضاخ الذ قوي المزمن.

هذه النتائج تدعم بقوة أهمية الجلايكوجين والريتكيلين في صبغة نخاع العظم بدلالة احصائية عالية ( $P < 0.02$ ).

## **Lists of contents:**

<b>Content</b>	<b>Page No</b>
○○○○○○○ ○○○	II
<b>Dedication</b>	III
<b>Acknowledgement</b>	IV
<b>Abstract</b>	V
○○○○○ ○○○○○	VI
<b>Lists of contents</b>	VII
<b>Lists of tables</b>	VIII
<b>Lists of figures and photographs</b>	IX
<b>Lists of abbreviations</b>	X
<b>Chapter One : Introduction&amp;Objectives</b>	1
<b>Chapter Two : Literature Review</b>	4
<b>Chapter Three: Material and methods</b>	12
<b>Chapter Four: Results</b>	15
<b>Chapter Five: Discussion</b>	32
<b>Conclusion and Recommendation</b>	34
<b>Chapter Six : References</b>	35
<b>Appendix 1 : Questionnaire</b>	37
<b>Appendix 11 : Material and instruments</b>	38

## **Lists of tables**

<b>Table</b>	<b>Page No</b>
Table (1) Distribution of study population by age.	17
Table (2) Distribution of study population by gender and type of leukemia.	19
Table (3) Distribution of study population by demographic distribution.	21
Table (4) Distribution of study population by residence and type of leukemia.	23
Table (5) Distribution of study population by silver stain.	24
Table (6) Distribution of study population by PAS stain and type of leukemia.	25
Table (7) Distribution of study population by silver stain and sample type.	26
Table (8) Distribution of study population by PAS stain by sample type.	27



## List of photographs

<b>Photograph</b>	<b>Page No</b>
Microphotograph (1):	28
Microphotograph (2):	29
Microphotograph (3):	30
Microphotograph (4):	31

## **List of abbreviations**

ALL	Acute lymphoblastic leukemia
AML	Acute myeloid leukemia
B.M	Bone marrow
CHO	Carbohydrates
CLL	Chronic lymphoblastic leukemia
CML	Chronic myeloid leukemia
FCM	Flow Cytometry
H&E	Haematoxylin and eosin
HTLV-I	Human T- cell leukemia virus I
N.K	Natural killer
PAS	Periodic acid Schiff's
Ph	Philadelphia chromosome

# CHAPTER ONE

## INTRODUCTION

# CHAPTER TWO

## LITERATURE REVIEW

# CHAPTER THREE

## MATERIALS AND METHODS

# CHAPTER FOUR

## RESULTS

# CHAPTER FIVE

## DISCUSSION

# CHAPTER SIX

## REFERENCES



# APPENDIX (I)

## QUESTIONNAIRE

# APPENDIX (II)

## MATERIALS AND INSTRUMENTS