

Dedication

To my father and mother.....

To my brothers and sisters.....

To my friends.....

*To everyone who helped me to learn new
thing.....*

Acknowledgements

I thank GOD for giving me health and power to reach this level. I would like to express my deep appreciation for my supervisor Dr. Mohammed Bha Eldin Ahmed Saad, who gave me all his time to accomplish this work through this advice, and appreciable help and guidance.

I would like also to thank very much all the staff members of parasitology department, for their support and motivation.

My gratitude is also extended to all colleagues in the Blue Nile state.

Abstract

This study was conducted on 200 blood samples collected from patients attending El-Damazien medical hospital. Out of the blood samples examined, 52 were found positive for malaria infection. This constituted a prevalence rate of 26%.

This study included 105 males. Among them, 25 were infected with a prevalence rate of 23.8%. The study also included 95 females with 27 infected with malaria constituting a prevalence rate of 28.4%. The difference in prevalence rates was found to be statistically insignificant.

The study showed that there was variation in the infection rates among different age groups. The highest infection rate (47.1%) was found in the 11-20 years age group and the lowest infection rate (11.5%) was found in the 21-30 years age group. The difference in prevalence rate was found to be statistically significant.

Various level of parasitaemia was identified. The highest infection rate (40.4%) was found with high parasitaemia (++++), and the lowest infection rate (15.4%) was found with parasitaemia (+++).

Out of the 52 cases infected with *P. falciparum*, 34 were found with low platelets count which constituted an occurrence rate of 65.4%, while the rest of those infected with *P.falciparum* (18) were with normal platelets count which constituted an occurrence rate of 34.6%.

The highest rate (100 %) with low platelets count was found with *P.falciparum* parasitaemia (+++), while the lowest rate (57.1%) was found with *P.falciparum* high parasitaemia (++++). This difference was found to be statistically insignificant.

الخلاصة

قامت هذه الدراسة متضمنة ٢٠٠ عينة دم تم جمعها من مستشفى الدمازين بمدينة الدمازين في ولاية النيل الأزرق .وبعد فحصها وجد أن ٥٢ عينة كانت تحتوي على طفيل الملاريا ومن هنا نلاحظ أن معدل انتشار المرض كان بنسبة ٢٦%.

هذه الدراسة تضمنت ١٠٥ من الذكور ، حيث وجد أن ٢٥ مصابين بالملاريا بمعدل انتشار ٢٣.٨% أيضاً تضمنت الدراسة ٩٥ من الإناث وجد أن ٢٧ منهن مصابات بالملاريا بمعدل انتشار ٢٨.٤% وقد كان هذا الفرق غير مهم إحصائياً .

أظهرت هذه الدراسة إن اكبر معدل انتشار للمرض كان في الفئة العمرية من ١١ الى ٢٠ سنة بمعدل ٤٧.٤% وان اصغر معدل انتشار كان في الفئة العمرية ٢١ الى ٣٠ سنة بمعدل ١١.٥% وقد كان هذا الفرق ذو دلالة إحصائية.

أظهرت هذه الدراسة إن اكبر معدل انتشار كان في مستوى طفلمه عاليه(++++) من الملاريا بنسبه ٤٠.٤%، وان اقل معدل انتشار كان في مستوى طفلمه (+++) من الملاريا بنسبه ١٥.٤%.

أظهرت هذه الدراسة أن من بين ٥٢ حالة مصابه بالبلازموديوم فالسيبرم ، ٣٤ حالة سجلت انخفاض واضح في العد السوي للصفائح الدموية بمعدل حدوث ٦٥.٤% بينما باقي الحالات (١٨) كانوا في مستوى العد الطبيعي بنسبه حدوث ٣٤.٦%.

أيضاً أظهرت الدراسة أن من بين ٥٢ حالة مصابة بالبلازموديوم فالسيبرم ، اكبر معدل حدوث ١٠٠% سجلت انخفاض واضح في العد السوي للصفائح الدموية وجدت في المستوى (+++) وان اقل معدل حدوث كان ٥٧.١% حالة سجلت انخفاض في العد السوي للصفائح الدموية كانت في المستوى (++++) من الملاريا وكان هذا الفرق غير مهم إحصائياً.

List of contents

Content	Page
Dedication	I
Acknowledgment	II
Abstract (English)	III
Abstract (Arabic)	IV
List of contents	V
List of tables	IX
List of figures	X

Chapter 1

Chapter 1 : Introduction and literature review	1
1.1 The <i>Plasmodium</i>	2
1.2 Global distribution of malaria	2
1.3 Transmission of malaria	3
1.4 Life cycle of malaria	3
1.5 Pathology and pathogenesis of malaria	4
1.6 Clinical features of malaria	5
1.6.1 Uncomplicated malaria	5

1.6.2 Severe malaria	5
1.7 Diagnosis of malaria	6
1.7.1 Microscopical examination	7
1.7.2 Rapid diagnostic test	7
1.7.3 Serological tests	8
1.7.4 Molecular diagnosis	8
1.8 Situation of malaria in Sudan	8
1.8.1 Khartoum state	8
1.8.2 Northern and Nile river state	9
1.8.3 Gezira, Sinnar and White Nile state	9
1.8.4 Gadarif, Kassala and blue Nile state	9
1.8.5 The Western states	9
1.8.6 The Southern states	9
1.9 Relation between malaria parasite and reduced platelets count (thrombocytopenia).	10
1.9.1 Platelets	11
1.9.2 Platelets normal range	12
1.9.3 Technique used for platelets count	12
1.9.4 Hemacytometer counting	12

1.9.5 Electronic counting	12
Rationale	14
Study objectives	15

Chapter 2

Chapter 2 : Materials and methods	16
2.1 Study design	16
2.2 Study area	16
2.3 Study population	16
2.4 Study duration	16
2.5 Sample size	16
2.6 Methodology	16
2.6.1 Blood collection	16
2.6.2 Making blood film	17
2.6.2.1 Making thick blood film	17
2.6.2.2 Making thin blood film	17
2.6.3 Staining of blood film for malaria	17
2.6.4 Examination of blood film for malaria	18

2.6.5 Parasitaemia	18
2.6.6 Automated platelets count	18
2.6.6.1 Platelets analysis	18
2.7 Ethical consideration	19
2.8 Data collection	19
2.8.1 Data analysis	19

Chapter3

Results	20
----------------	-----------

Chapter 4

Discussion	31
-------------------	-----------

Conclusions and recommendations	33
----------------------------------------	-----------

References	34
-------------------	-----------

Appendix : questionnaire	38
---------------------------------	-----------

List of tables

Table. NO	Title	Page
1	The overall prevalence rate of malaria in El-Damazien hospital, Blue Nile state.	21
2	The prevalence rate of malaria among patients attending El-Damazien hospital according to gender.	22
3	The prevalence rate of malaria among patients attending El-Damazien hospital according to age groups.	23
4	The prevalence rate of malaria infection among patients attending El-Damazien hospital according to parasitaemia.	24
5	The relationship between <i>P. falciparum</i> infection and low platelets count.	24
6	The relation between <i>P. falciparum</i> parasitaemia and low platelets count.	25

List of figures

Figure. NO	Title	Page
1	The prevalence rate of malaria among patients attending El-Damazien hospital according to gender.	26
2	The prevalence rate of malaria among patients attending El-Damazien hospital according to age groups.	27
3	The prevalence rate of malaria infection among patients attending El-Damazien hospital according to parasitaemia.	28
4	The relationship between <i>P. falciparum</i> infection and low platelets count.	29
5	The relation between <i>P. falciparum</i> parasitaemia and low platelets count.	30