

Hematological Changes and Presenting Complaints in Malaria Positive Subjects

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ABSTRACT

Aim: To assess the hematological changes and presenting complaints in Malaria Positive Subjects.

Methods: A total of 200 subjects having malarial symptoms were collected from the outpatients departments of various hospitals. The subjects taking anti malarial drugs were excluded from the study. 2.0 ml of venous blood was drawn aseptically in sterile EDTA vial duly labeled. Hb, TLC, platelet counts were done by automated blood counters, Sysmex XT 1800i. Data collected was entered and analyzed in SPSS version 15.0. P value was calculated between the two means.

Results/Conclusion: Among these 200 subjects, malaria positive cases (Group 1), on both staining methods, were 170 (85%) and malaria negative cases (Group II) were 30 (15%). Hb value was reduced in the MP +ve cases but the statistical difference was insignificant. TLC was reduced in MP +ve cases as compared to MP negative cases having significantly high statistical difference. Platelets count was reduced in MP +ve cases as compared to MP negative cases having significantly high statistical difference.

Keywords: Malaria, hematological changes, symptoms

INTRODUCTION

Malaria (Mala-air Latin for bad air) a global health problem, is responsible for nearly 3 million deaths each year¹. It is a parasitic disease caused by protozoa of genus plasmodium². Malaria, especially that caused by plasmodium Falciparum is acknowledged to be one of the most important and widely spread disease of mankind³. It is widely distributed in the tropical and subtropical zone. It is endemic throughout South and South East Asia, Africa, areas of Middle East and South and Central America⁴. Laboratory diagnosis of malaria routinely is being done by examining blood smear since it was described by Ross in 1903⁵. The most common method of direct microscopy are examination of thick and thin blood films. The thick smear preparation may take 30-60 minutes and interpretation requires considerable experience. Thick films are stained unfixed by Giemsa and it provides sensitivity to the technique. Thin film should be fixed and stained by Giemsa which provides specificity for species identification and helps evaluating the intensity of parasitemia⁶. In thick blood film preparation, detection of parasites is often hampered by the presence of cellular debris⁷. Since the plasmodium Falciparum is trapped in microcirculation for more than half its asexual cycle of 48 hours, even in high parasitemia, only rare parasites may be detected on blood film examination during period of sequestration⁸. Moreover, the positive cases with low parasitemia may be missed due to lack of experienced personnel. The main problem with microscopic diagnosis is that it is time consuming and must be performed by the skilled microscopists⁹.

MATERIALS AND METHODS

Patient with history of Headache, Shivering, High grade fever, Vomiting, Nausea were included in this study. A total

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of 200 cases were included in the present study. 2.0 ml of venous blood was drawn aseptically in sterile EDTA vial duly labeled. All tests were done by automated blood counter Sysmex XT 1800i

RESULTS

Detail of results is given in the following tables.

Table 1: Percentage of malaria positive and malaria negative cases (n=200)

Subjects	Giemsa staining	Acridine orange staining
MP +ve(Group I)	164(82%)	170(85%)
MP-ve(Group II)	36(18%)	30(15%)

Table 2: Presenting symptoms/ signs in respondents

Symptoms/ Signs	=n	%age
Rigors	135	67.5
headache	119	59.5
Nausea	120	60
Vomiting	138	69
Body aches	131	65.5
fever	200	100
Splenomegaly	48	24

Table 3: Hemoglobin, TLC and Platelets count in MP positive and MP negative respondents

	MP positive cases (Group I)	MP -ve cases (Group II)	Level of significance
Hb (g/dl)	11.9±1.92	12.3±2.14	p>0.05 (non significant)
TLC (10 ⁹ /L)	7.2±2.47	8.5±2.3	p<0.05 (significant)
Platelets counts (10 ⁹ /L)	146.8±6.48	270±88.3	p<0.05 (significant)

DISCUSSION

In this study, the main presentation of respondents was fever along with myalgia, nausea, vomiting, headache and rigors. Chief signs of these respondents were splenomegaly 48(24%) and fever 200(100%). The relative percentage of each symptoms and signs has been given in table 2.

Among the 170 of malaria positive (Group I) cases 35.4 % were in the age range of 3-20 years, 46.9% in the age range of 21-40 years and 17.7% were in the age range of 41-70 years. Among malaria negative (Group II) cases 22.2% were in the age range of 3-20 years, 55.6% were in the age range of 21-40 years and 22.2% were in the range of 41-70 years. In malaria positive (Group I) cases 70.7% were male and 29.3 were female. Among malaria negative (Group II) 61.6% was male and 38.9 % were female.

Mean± D of Hb levels in malaria positive (Group I) cases was 11.9±1.92 ranging from 6.2-15 and in malaria negative (Group II) it was 12.3±2.14 ranging from 8.6-14. The statistical analysis was non -significant having $P>0.05$. (Table 3). These statistics of our study are in accordance with data revealed in a study conducted by Ebako et al¹⁰ in which objective of study was to compare anaemia rates in patients with malarial parasitemia and patients without malarial parasitemia. The difference was clinically insignificant ($p=0.06$). Although malarial parasitemic patient had more anemia, significant proportion of patient without malarial parasitemia also revealed anemia. We agree with their findings and would like to add our own feeling as well that in high transmission areas, patient suffering with repeated and frequent attack of malaria, low socioeconomic condition and geographic characteristics may complicate the overall picture of anemia.

Platelets have been extensively studied in malaria. Thrombocytopenia has been found in different species. The mean platelet count in our study group I (MP +ve) subjects was observed as $146.8\pm 6.48\times 10^9/L$ ranging from 14 to $356\times 10^9/L$. MP –ve cases (group II) revealed the mean platelet

count of $270\pm 88.3\times 10^9/L$ with a range of 110 to $470\times 10^9/L$. (Table 3). The difference in the mean platelet count was significant ($p<0.05$). These results are consistent with the study of Dolo et al 2010¹¹.

REFERENCES

1. Makler MT, Palmer CT, and Agar AL. a review of practical techniques for the diagnosis of malaria. *Ann Trop Med Parasitol* 1998; 92:419-33.
2. Santiso R. Effects of chronic parasitosis on women's health. *Inter J Gynaecol Obstet* 1997; 58:129-36.
3. Chattani J, Davidson D, Engers H. Malaria: Tropical development research institute (TDRI) eleventh programme report, 2002;15-27
4. Cowan GO and Heap BJ. Malaria In. Cowan GO and Heap B J ends. *Clinical tropical medicine* London: Chapman and Hall Medical 2001; 1- 21.
5. Rickman LS. Rapid diagnosis of malaria by A/O staining of centrifuged parasites. *Lancet* 2001; 98:68-71.
6. Chiodini PL, Moody AH , Cook AH. Rapid diagnosis of malaria by fluorescence microscopy. *Lancet* 1991; 337:624.
7. Vanden J, Verowt T, Van Gompel A. Evaluation of 2 tests based on detection of histidine rich protein for diagnosis of imported plasmodium Falciparum malaria. *Tran R Soc Trop Med Hyg* 1998; 92:285-8.
8. Wongsrichnalai. Rapid test for malaria diagnosis. *Lancet* 1992; 338:413.
9. Kawamoto F. Rapid diagnosis of malaria by fluorescence microscopy with light microscopy and interference filters. *Lancet* 1991; 29:200-02.
10. Ebako N T, Eric A A, Peter M. An update of malaria infection and anemia in adults in Buae, Cameroon. *J BMC Research Notes* 2010; 3:121.
11. Dolo A, Diallo M, Saye R, Konare A, Quattra A, Poudiougou et al. Obstacles to laboratory diagnosis of malaria. *Medicine Tropicale*, 2010:158-162