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HEMATOLOGICAL VARIATIONS AND PRESENTING COMPLAINTS IN PATIENTS WITH POSITIVE MALARIAL PROFILE

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Abstract:

Objective: *To assess hematological changes and report symptoms in people with positive malaria result.*

Methods: *A total of 200 people with symptoms of malaria were collected from outpatient departments of Jinnah Hospital Lahore for one-year duration from March 2019 to March 2020. People taking antimalarial drugs were excluded from the study. 2.0 ml of venous blood was withdrawn aseptically into a sterile, appropriately labeled EDTA vial. Hb, TLC, platelet counts were performed using Sysmex XT 1800i automated blood counters. The collected data was entered and analyzed in SPSS version 15.0. P-value was calculated between two means.*

Results / Conclusions: *Among these 200 patients, the malaria-positive cases (Group 1) with both staining methods were 170 (85%) and the malaria-negative cases (Group II) were 30 (15%). Hb was lowered in MP + ve cases, but the statistical difference was not significant. TLC was reduced in MP + ve cases compared to MP negative cases, showing a significant statistical difference. Platelet counts were reduced in MP + ve cases compared to MP + negative cases, showing a statistically significant difference.*

Key words: *Malaria, hematological changes, symptoms.*

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INTRODUCTION:

Malaria (Mala-air means bad air), a global health problem, is responsible for nearly 3 million deaths each year. It is a parasitic disease caused by protozoa of the genus Plasmodium. Malaria, especially caused by Plasmodium Falciparum, is considered one of the most important and widespread diseases of mankind. It is widespread in the tropical and subtropical zones. It is endemic throughout South and Southeast Asia, Africa, areas of the Middle East, and South and Central America. Laboratory diagnosis of malaria is routinely done through blood smear testing as described by Ross in 1903. The most common method of direct microscopy is the examination of thick and thin blood films. The preparation of a thick smear can take 30-60 minutes and the interpretation requires a lot of experience. Thick films are dyed unfixed by Giemsa, which ensures sensitivity to the technique. The thin film should be fixed and tinted with Giemsa, which ensures specificity in species identification and helps in assessing the intensity of parasitemia. When preparing a thick blood film, the detection of parasites is often made difficult by the presence of cellular debris. Since the Falciparum plasmodium is trapped in the microcirculation for more than half of its 48-hour asexual cycle, even with severe parasitemia, only rare parasites can be detected on blood smear during the sequestration period. Moreover, positive cases with low parasitemia may be overlooked due to a lack of experienced staff. The main problem with microscopic diagnosis is that it is time consuming and must be performed by qualified microscopes.

MATERIALS AND METHODS:

A patient with a history of headache, chills, high grade fever, vomiting and nausea was included in the study. A total of 200 people with symptoms of malaria were collected from outpatient departments of Jinnah Hospital Lahore for one-year duration from March 2019 to March 2020. 2.0 ml of venous blood was withdrawn aseptically into a sterile, appropriately labeled EDTA vial. All tests were performed using a Sysmex XT 1800i automatic blood meter

RESULTS:

Details of the results are given in the tables below.

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 symptom of respondents was fever along with myalagia, nausea, vomiting, headache and chills. The main symptoms of these respondents were splenomegaly 48 (24%) and fever 200 (100%). The relative percentages of all symptoms and signs are shown in Table 2.

Of the 170 malaria patients (Group I), 35.4% were in the age range of 3–20 years, 46.9% in the age range of 21–40 years, and 17.7% in the age range of 41–70 years. Among cases without malaria (group II), 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 age range of 41–70 years. In malaria-positive cases (Group I), 70.7% were male and 29.3% female. Among malaria negative individuals (Group II) 61.6% were males and 38.9% females.

The mean ± D of the Hb level in cases with a positive test for malaria (Group I) was 11.9 ± 1.92 in the range of 6.2-15, and in patients with malaria (Group II) 12.3 ± 2.14 in the range 8.6-14. Statistical analysis was negligible with P> 0.05. (Table 3). These statistics in our study are consistent with the data disclosed in the study by Ebako et al. 10, which aimed to compare the rates of anemia in patients with malarial parasitemia and patients without malarial parasitemia. The difference was not clinically significant (p = 0.06). Although the patient with malaria parasitemia was more anemic, a significant proportion of the patients without malaria parasitemia were also anemic. We agree with their feelings and would also like to add our own perception that in areas with high transmission, patients suffering from repeated and frequent malaria attacks, low socioeconomic status and geographic characteristics can complicate the overall picture of anemia.

Platelets have been extensively studied in malaria. Thrombocytopenia has been found in various species. The mean number of platelets in our study group I (MP + ve) was 146.8 ± 6.48x109 / l ranging from 14 to 356 x 109 / l. The cases of MP –ve (group II) showed a mean platelet count of 270 ± 88 .3x109 / L ranging from 110 to 470x109 / L (Table 3). The difference in the mean platelet count was significant (p <0.05). These results are consistent with the study by Dolo et al. 2010.

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