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CLINICAL, HEMATOLOGICAL PROFILE IN MALARIA IN TERITIARY CARE HOSPITAL: A CROSS-SECTIONAL STUDY

General Medicine

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ABSTRACT

Background: Several factors have been attributed to increased morbidity and mortality in malaria with altered haematological and coagulation parameters playing an important role.

Aim:

1. To determine the hematological parameters in patients with malaria.
2. To correlate the hematological and clinical profile with the severity and final outcome.

Materials And Methods: A total of 100 cases with Malaria in medical outpatient and admitted in medical wards of Santhiram medical college and general hospital, Nandyal for a period of 6 Months. **Results:** Of the 100 patients 17 patients had severe anaemia (Hb% <6gm %) and all of these patients were falciparum and mixed infection cases. Thrombocytopenia was observed in 60% of the patients and severe thrombocytopenia (<50,000 cumm) was seen in 5% of the patients. PT and APTT was increased in 22% and 11% of the cases respectively. BT was increased in 5% of the cases. 2 patients in the study expired. **Conclusion:** Severe Anaemia is a poor prognostic factor and has adverse outcome. Thrombocytopenia, increased PT, aPTT does not have any correlation to mortality. Increased BT is associated with high mortality. Mixed infection behaves like falciparum malaria.

KEYWORDS

INTRODUCTION:

Malaria plagued the mankind in the past. Now it is mostly ignored as a simple disease. But one should not forget that it still has vamprical outcomes in few cases. Still it's one of the most endemic disease, especially African tropical countries and India. It is still endemic in many parts of Karnataka, in districts such as Dakshin Kannada and Tumkur.Malarial parasites had their origin in Africa along with the mankind. Fossils of the mosquito show the evidence of malaria 300 million years ago.

Worldwide prevalence of malaria is about 300- 500 million per annum. It is present in more than 100 countries around the world. Most of these are developing countries or under developed countries. So it has a great impact on their economy.

There have been great advances in medical field and we have also been able to understand malaria better. There has been a lot of development in antimalarial drugs. Even with these advances we are not able to completely control or eradicate malaria. Still many deaths occur due to malaria.

In India steps were taken to control malaria such as: National Malaria Control Programme in 1953. This was a huge success. So Government came out with National malaria eradication programme in 1958. Malaria re-emerged in 1960.Later government came with MPO in 1977

Malaria affects almost all the organs in the body. But one of the chief components affected is blood. So this work of mine puts in an effort to correlate the changes in blood in malaria with the clinical outcome.

AIMS AND OBJECTIVES:

1. To determine the hematological parameters in patients with malaria.
2. To correlate the hematological and clinical profile with the severity and final outcome.

MATERIALS AND METHODS:

A Hospital-based observational study was conducted in the Department of General Medicine Santhiram Medical College, and General Hospital for six months after approval from the Hospital Ethics and Research Committee.

DURATION OF STUDY: From December 2023 to May 2024
SAMPLE SIZE: 100
METHODS OF DATA COLLECTION: -Information is collected through a pre structured preform for each study subject.

A detailed history was taken followed by a detailed clinical examination to assess clinical severity and complications.

All the patients in this study were proved to be cases of malaria either by Peripheral smear examination (both thick and thin smear) or MPQBC or by malarial antigen Assay. These investigations were ordered before the antimalarial treatment was started.

Qualifying study subjects will be undergoing detailed history, clinical examination and laboratory investigations.

SAMPLING TECHNIQUE: Simple Random Sampling
INCLUSION CRITERIA:

- All patients who are Diagnosed with Malaria.
- Patients who are willing to participate and give informed consent.

EXCLUSION CRITERIA:

- Chronic liver diseases
- Fever of any other cause
- Febrile thrombocytopenia of other cause.

DATA ANALYSIS:

Data was collected using a pretested proforma meeting the study's objectives. Detailed history, physical examination, and necessary investigations were undertaken.

The chi-square and Fisher's exact test were used in statistical analysis to compare proportions. At a P-value of 0.05, statistical results were considered significant <0.01.

RESULTS:

Table1:
Sex distribution:

Male	Female	Total
66	34	100

Table No. 1 showing male and female distribution

The numbers of males affected in our study were more compared to females. The male to female ratio was 1.94:1.

Table 2 – Age distribution:

Age group	No.	Percentage
20-30	41	41
31-40	33	33

41-50	14	14
51-60	10	10
>60	02	02

In this study the predominant age group affected was the age group between 20- 40 years. More than 70% of the patients were young individual who were working. The numbers of people above the age of 60 years were very less i.e. 2%.

There were no patients above the age of 70 years recorded in this study. The mean age in this study was 34.74 years.

Table 3:
Clinical features:

Symptoms	Pl.falciparum (%)	Pl. vivax (%)	Total(%)
Fever	96.3	94.6	96
Chills and rigors	77.8	70.2	77
Easy fatiguability	31.5	21.6	27
Nausea and vomiting	42.6	45.9	47
Cough	5.5	5.4	7
Altered sensorium	14.8	0	11

Fever: -fever was present in 96% of the total patients. Fever was the presenting complaint in 96.3% of patient with falciparum malaria and it was the presenting complaint in 94.6% of the patients with vivax malaria.

Chills and rigors: chills and rigors was present in 77% of the total patients. It was a presenting complaint in 77.8% of patients with falciparum malaria. It was also seen in 70.27% of patients with vivax Malaria.

Easy Fatiguability: it was observed in 27% of the total cases. 31.5% of the patients with falciparum head easy fatiguability and 21.6% of the patients with vivax malaria had easy fatiguability 22.2% of the patients with mixed infection had easy fatiguability.

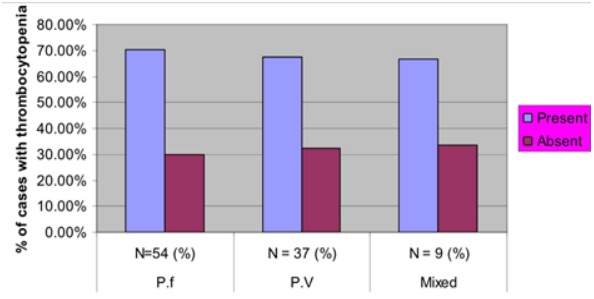
Nausea and Vomiting: Nausea and vomiting was one of the frequent symptom after chills and rigor. It was noted in almost half of the subjects. It was seen in 47% of the total cases. An interesting observation is that majority of the patients with mixed infection i.e. 77.8% of patients has nausea and vomiting. Whereas the symptoms was observed in 42.6% and 45.9% of patients with falciparum and vivax respectively.

Abdomen pain; it was noted in 17% of the total cases. It was seen in about 13.5% of patients with vivax malaria and with 20.4% of patients with falciparum malaria. Most of these patients who had abdominal pain had received treatment earlier elsewhere for fever, the possibility of drug induced gastritis as a major cause for abdominal pain should be considered.

Table 4: Thrombocytopenia in different species of Malaria

Thrombocytopenia	P.f N=54 (%)	P.V N = 37 (%)	Mixed N = 9 (%)	Total N = 100
Present	38 (70.3%)	25 (67.6)	6 (66.7%)	69 (69%)
Absent	16 (29.7%)	12 (32.4%)	3 (3.37%)	31(31%)
	54	37	9	100

In our study thrombocytopenia was observed in 69% of the patients. Out of these 69 patients only 6 patients had severe thrombocytopenia less than 50,000/cumm, 70.3% of the patients with falciparum malaria had thrombocytopenia.



5.5% of the patients with falciparum malaria had platelet count <50,000/cumm. 5.4% of the patients with vivax malaria had secure thrombocytopenia. 1.1% of the patients with mixed infection had severe thrombocytopenia.

DISCUSSION:

In our study the male to female ratio was 1.94:1.The incidence of malaria was more in men than in women due to the working pattern , whereas females are less exposed.

The working group is the age group which is predominantly affected, because this is the group which is exposed to the mosquito bites especially in the fields and outdoors. Also our study follows the age pyramid in our country where the base is formed by young people and apex by the older age who constitute lesser percentage of the population.

Fever was the most predominant complaint in our study i.e. is 96% of the patients presented with fever and 77% of the patients had chills and rigors.

It was also noted that 27% of the patients in our study had easy fatigability as their presenting complaint.

Anaemia was present in 63% of patients in our study the incidence of severe anaemia(Hb <6gm%) was seen in 17% of the patients and it was comparable to study done by Mehta et al which had severe anaemia incidence of 18%.Leucocytosis was seen in 11% of the total patients in our study.

Thrombocytopenia was present in 69% of the cases in the present study.

Thrombocytopenia was present in 70.3% of the cases with falciparum malaria in our study.

In our study 66.6% of the patients with mixed infection had thrombocytopenia.

Prothrombin time: was increased in 22% of the total cases and it was increased in 27.8% Of in cases with falciparum malaria. It was increased in 16.2% and 11.1% of the patients with vivax and mixed infection.

Activated partial thromboplastin time: In our study APTT was found to be increased in 14% of the patients. It was increased in 14.8% of the cases with falciparum malaria and 8.1% of cases with vivax malaria and 33.3% with mixed infection.

In our study 5 patients had increase in bleeding time all the cases were falciparum and mixed infection.4 out of these 5 patients had bleeding manifestations.

CONCLUSION:

The incidence is higher in males than females with peak incidence in 3rd and 4th decade.

- Fever is the presenting complaint in almost all the cases.
- Easy fatiguability indicates severe anaemia in malaria.
- Splenomegaly is an important sign in malaria, but absence of this does not rule
- Out malaria.
- Anaemia is the most common haematological abnormality.
- Thrombocytopenia is very common in malaria, but spontaneous bleeding is rare.
- The higher incidence of falciparum in this study is due to the fact that ours is a
- Tertiary center and the area we conducted study is endemic for falciparum malaria.
- PT and aPTT were prolonged in some cases, predominantly in falciparum and
- Mixed infections, but this does not result in spontaneous bleeding.
- BT was prolonged in 5% of the cases, most of them had spontaneous bleeding. It
- Is also indicator of poor prognosis?
- Severe anaemia is poor prognostic factor and it increased the duration of hospital
- Stay and even mortality.
- Mixed infections behave like falciparum malaria.

List of Abbreviations:
APTT - Activated partial thromboplastin time BT - Bleeding time Cumm - Cubic millimeter
CT - Clotting time
ESR - Erythrocyte sedimentation rate DC - Differential count
PI - Plasmodium
TNF - Tumour necrosis factor
CD - Cluster Differentiation Hb - Hemoglobin
PT - Prothrombin time RFT - Renal function test LFT - Liver function test CXR - Chest x-ray
QBC - Quantitative Buffy Coat PBS - Peripheral blood smear