FREQUENCY AND COMMON CLINICAL FEATURES IN PATIENTS PRESENTING WITH FALCIPARUM MALARIA

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ABSTRACT

Background: Malaria, as an infectious disease and is a major health problem in the world, especially in tropical and developing countries.

Objective: To know the frequency and common clinical features in patients with falciparum malaria.

Materials and Methods: The study was carried out from September, 2017 to September 2018 at District Headquarter Teaching Hospital Dera Ismail Khan, recruiting 66 patients diagnosed with Falciparum malaria. Patients of either gender and all age groups who visited the hospitals with suspected signs and symptoms of malaria (fever, chills, headache, sweats, fatigue, nausea and vomiting) were enrolled in the study. Data was entered and analyzed in software SPSS version 23.

Results: The mean age of all patients was 44.87 years ± 12.89SD while the mean age of patients with falciparum malaria was 40.89 years ± 9.8 SD. 66 (41.51%) patients were having falciparum malaria while plasmodium vivax was diagnosed in 80 (50.31%) patients. Male and female patients having falciparum malaria were 43 (65.15%) and 23 (34.85%) respectively. The maximum patients effected were from the age group of 26-35 years i.e. 20 (30.30%) followed by 18 (27.27%) patients from the age group of 36-45 years. The most common clinical features noted was fever (59 (89.39%)), Headache (43 (65.15%)), Nausea and vomiting (38 (57.57%)).

Conclusion: Malaria is endemic in Dera Ismail Khan with a higher incidence of plasmodium falciparum. An integrated approach is required for its vector control, diagnosis, treatment and prevention of falciparum malaria with the rationale use of antimalarial drugs.

Key words: Clinical Features, Falciparum Malaria, Plasmodium Falciparum.

INTRODUCTION

In 1886, Golgi first described Plasmodium malariae as an infectious disease of humans.[1] Malaria is a serious and important health problem worldwide and the annual estimation of patients contracting malaria is 300–500 million people and annually resulting in 1.5–2.7 million deaths.[2,3]

The genus Plasmodium is an obligate intraerythrocytic protozoa which causes malaria. Malaria in humans is caused by one (or more) of the following four species: *P. falciparum*, *P. vivax*, *P. ovale*, and *P. malariae*.[4]

The clinical symptoms mainly fever and chills and headache in malaria are primarily caused by schizont rupture phase of plasmodium cycle in blood and destruction of erythrocytes. Malaria disease can have a gradual or a fulminant course and may be accompanied by nonspecific clinical feeatures.[5] One of the cause of delay in diagnosis of malaria is that it resembles clinical features those of common viral infections[6,7]. The most common symptoms experienced by patients is fever in more than 92% and chills in 79%. Headaches and diaphoresis are experienced by 70% and 64% patient's respectively[8].

Falciparum malaria can present in the form of severe malaria and it is its one of important forms. In 1990, the World Health Organization (WHO) established criteria for severe malaria and its aim was to help in future clinical and epidemiological studies[9]. In 2000, these criteria were revised by expertise of WHO based on clinical experience in order to include other clinical features and complications and laboratory values that portend a poor prognosis in immune compromised patients[10]. In severe malaria, the major complications included were cerebral malaria, pulmonary edema, acute renal failure, severe anemia, and/or bleeding diasthesis and among the metabolic complications included were acidosis and hypoglycemia as the most common. In severe malaria, any of these complications can develop rapidly and progress to death within hours or days.[11,12]

For diagnosing malaria, examination of the thick and thin blood smear is considered as the 'gold standard' but Light microscopy of thick and thin stained

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blood smears also remains the standard method[13,14]. The sensitivity of thick smears for screening of *Plasmodium* parasites is 20 to 40 times more than thin smears, with a detection limit of 10–50 trophozoites/µl. The advantage of thin smears is that it allows for identification of malaria species along with the diagnosis of mixed infections, parasitemia quantification and the presence of schizonts, gametocytes, and malarial pigment in neu-trophils and monocytes. In the diagnosis of malaria infections, recently important advances have been made including fluorescence microscopy of parasite nuclei, rapid dipstick immunoassay, and polymerase chain reaction assays.[15,16]

Among the available tests, polymerase chain reaction based tests are more sensitive and specific than the other tests, and it can detect a very low concentration of parasite in blood upto 10 parasites/µl blood. Malaria antibody detection is also used for diagnosis but it has no value in the diagnosis of acute malaria and is mainly used for epidemiologic studies.[17,18]

MATERIAL AND METHODS

The study was carried out from September, 2017 to September 2018 at District Headquarter Teaching Hospital Dera Ismail Khan, recruiting 66 patients diagnosed with Falciparum malaria. Patients of either gender and all age groups who visited the hospitals with suspected signs and symptoms of malaria (fever, chills, headache, sweats, fatigue, nausea and vomiting) were enrolled in the study.

The purpose and benefits of the study were explained to all patients and a written informed consent was taken. All the patients underwent detailed history of the disease, relevant clinical examination followed by routine investigations. Blood samples by pricking with disposable lancet from fingers of all patients with suspected malaria disease were taken and examined through microscopy. Fingertips of each patient was cleaned with methylated spirit. Both thick and thin blood smears were prepared on the same slide, fixed with methyl alcohol, stained with Giemsa stain according to standard procedures and examined under 100X oil immersion objective. To attain percentage of infected red blood cells, asexual parasites were counted on thin blood films among 1000 red blood cells. If on thick film, no parasites were seen in 200 fields, slides were declared negative. The type of treatment offered to the patients was according to medical ethics, non-harmful and beneficial.

A printed proforma was filled for each patient at the time of blood collection to have information about the name, address, sex and age of the patient, clinical features and type of malaria parasite. Data was entered and analyzed in software SPSS version 23.

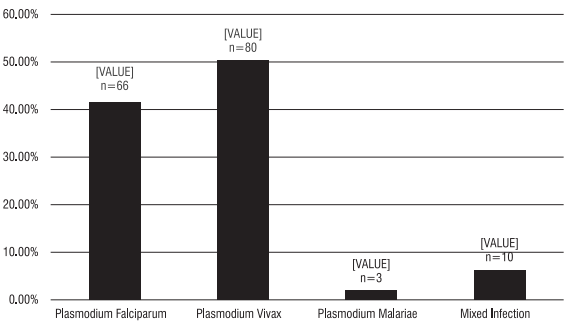
RESULTS

The total number of patients with malaria were 159. Out of these, 66 (41.51%) patients were having falciparum malaria while plasmodium vivax was maximum i.e. 80 (50.31%). (Graph no. 1)

The mean age of all patients was 44.87 years ± 12.89SD while the mean age of patients with falciparum malaria was 40.89 years ± 9.8 SD.

There were more male patients having falciparum malaria as compared to females i.e. 43 (65.15%) vs 23 (34.85%). The maximum patients effected were from the age group of 26-35 years i.e. 20 (30.30%) followed by 18 (27.27%) patients from the age group of 36-45 years. (Table No. 2)

The most common clinical features note was fever in 59 (89.39%), Headache in 43 (65.15%), Nausea and vomiting in 38 (57.57%) patients. Severe malaria was



Graph No. 1 Distribution of Types of Malaria

Table No. 1: Distribution Of Plasmodium Falciparum Malaria According To Age And Gender

Age Groups (years)	Frequency
16-25	7 (10.61%)
26-35	20 (30.30%)
36-45	18 (27.27%)
46-55	15 (22.72%)
56 and above	6 (9.09%)
Gender	
Male	43 (65.15%)
Female	23 (34.85%)

Table No. 2: Clinical Features Of Patients Presenting With Falciparum Malaria

Clinical feature	Frequency
Fever	59 (89.39%)
Headache	43 (65.15%)
Nausea and vomiting	38 (57.57%)
Abdominal Pain	22 (33.33%)
Severe malaria	5 (7.57%)

noted in 5 (7.57%) patients. (Table No. 2)

DISCUSSION

WHO has categorized Pakistan with high malaria burden and transmission. The annual reported cases are about 1.6 million cases, due to which malaria is labelled as second most frequently reported disease after acute respiratory infection[19]

In Pakistan, 64% and 36% of malaria cases are attributed to *Plasmodium vivax* and *P. falciparum*, respectively[20]. In our study, 41.51% patients were reported having falciparum malaria while plasmodium vivax was noted in 50.31% patients. In a study by Zubairi ABS et al, 83.1%, 13.2% and 3.7% were found to have *P. vivax* infection, *P. falciparum* infection, and mixed infections (*P. vivax* and *P. falciparum),* respectively. They reported that 39.0% patients had at least 1 complication by World Health Organization criteria. In 51.0% cases of *P. falciparum* infections severe malaria developed[21] Murtaza G et al, have reported falciparum ratio ranging from 33% to 47% with an average of 41%.[22] Yasinzai MI et al,[23] have reported the incidence of *Plasmodium falciparum as* 69.5% and that of *P. vivax* was 30.2%. Also the incidence was higher (75.9%) in males. *Plasmodium vivax* was observed to be more common 54.34 % than *P. falciparum* 44.78%. Male children were about two times more commonly affected than female i.e. 65.21% vs 34.78%.[24] Hermansyah B et al,[25] has reported 28% patients diagnosed as P. falciparum mono-infection, 12 (41%) as P. vivax mono-infection and nine (31%) as mixed infections, confirmed by PCR. On the other hand some studies has reported very low incidence of falciparum malaria. In a study by Ullah Z et al,[26] P. vivax was 90.6% while P. falciparum was noted in 6.4% and mixed infection in 3% patients. No case was found for P. ovale and P. malariae. Among the positive cases for malaria, 66.5% were males while 33.5% were females.

Males were more effected as compared to females and the male to female ratio was almost double in our study i.e. 65.15% vs 34.85%. This higher incidence in males might be due to their higher exposures to malaria vector, less covering of the body as compared to females. Due to sociocultural norms in Dera Ismail Khan, females have restricted mobility. This might be another factor for less incidence of malaria in females. similar types of observations have been noted by Yasinzai MI,[23] Tareen AM[27], Karim AM[28] and Khan K.[29]

In our study, the most common clinical features note was fever (89.39%), Headache (65.15%) and nausea and vomiting (57.57%). Severe malaria was noted in 7.57% patients.

In a study by Beg MA,[30] fever was the most common presenting symptom noted in 97% patients and it was regardless of species. Chills and vomiting WERE OBSERVED IN 62.7% and 54.1% patients. They also observed that vomiting was more frequent in P. falciparum malaria compared to P. vivax (62.0% vs. 46.7%, respectively; odds ratio (OR) = 1.86, p = 0.001). Also abdominal pain was more in Plasmodium falciparum-infected patients as compared to vivax malaria. (28.5% vs. 20.0%; OR = 1.60, p = 0.024). In the literature, Severe malaria has been reported in the range of 1–38%[31].

In our study, none of the patients was infected with P. ovale while P. malariae was noted in in only 1.89% patients. The reason for such results might be the small sample size and the rareness of these species in Dera Ismail Khan.

There are several limitations of our study. Patients admitted to DHQ hospital, Dera Ismail Khan may not have been representative of the general population or the surrounding catchment area. Bias may have been introduced due to missing or incomplete documentation of case histories in the medical records. Parasitemia was assessed at the time of admission only and could have biased results.

CONCLUSIONS

Malaria is endemic in Dera Ismail Khan with a higher incidence of plasmodium falciparum. The most important thing for control of falciparum malaria is to concentrate on vector control. Also, an integrated approach is required for diagnosis, treatment and prevention of falciparum malaria with the rationale use of antimalarial drugs to reduce the morbidity and mortality.

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