

Clinical Profile of admitted children with malarial fever: a retrospective study

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Abstract

Introduction: Malaria continues to be a major public health problem in developing country like India. India contributes to 77% of the total malarial cases in Southeast Asia. **Objective:** The present retrospective study was conducted to find out the clinical profile in admitted pediatric patients of malarial fever. **Methods:** 108 hospitalized laboratory diagnosed malarial pediatric cases admitted to tertiary care hospital from 1st August 2013 to 30th Nov 2015 were studied. Records of all the patients who were discharged with the diagnosis of malaria were retrieved, compiled and analyzed. **Results:** Plasmodium falciparum was commonest implicating agent found in 68 (63%) of 108 children. Fever was the main presenting complains in all cases. Common clinical manifestations noted were organomegaly (63.9%), pallor (43.5%), altered sensorium (21.3%), convulsions (18.5%), clinical icterus (10.2%) and circulatory collapse. Mortality occurred only in children below 5 years with Plasmodium falciparum malaria. **Conclusion:** Plasmodium falciparum infection is common infecting species. Multi organ involvement and severe manifestations commonly observed in falciparum infection. Simple febrile seizures and respiratory symptoms are common with vivax infection. Isolated tender hepatomegaly observed in 9.3% of patients. Mortality noted with plasmodium falciparum malaria in children below 5yrs.

Key words: Malaria, clinical profile, plasmodium falciparum.

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Introduction

Malaria is common parasitic infection causing high mortality and morbidity in children. Globally 69% of total malarial deaths are in children below 5yrs of age in 2015[1]. Mortality due to malaria in India is reported to be around 20.6% in pediatric age group. 60-65% of malaria in india is due to plasmodium falciparum and 35% are due to plasmodium vivax. It is caused by four different species of plasmodium. Severity of clinical manifestations varies with species causing the infection and age of the host. Traditionally severe clinical manifestations are usually reported with plasmodium falciparum. Few recent studies also reported severe manifestations with vivax malaria in children [2]. There is paucity of data of severe manifestations due to vivax in children. Most of the data on profile of severe malaria in children are reported from Africa and few from India [2,3]. The clinical features of malaria in children in endemic areas are nonspecific and vary significantly. The aim of our study was to find out the

spectrum of clinical manifestations, infecting species, age distribution and mortality in admitted patients of malaria in our set up.

Material and Methods

The present retrospective observational study was conducted at Pediatric Department of tertiary care hospital of vizianagram. Case records of confirmed malaria patients admitted from 1st August 2013 to 30th November 2015 were retrieved from Medical Record Department and data was collected in a printed preformed proforma.

Permission from institutional research and ethical committee was taken before commencement of the study.

The diagnosis and confirmation of species of P. falciparum and P. vivax malaria were obtained from the case sheets Diagnosis was done by thick and thin film of peripheral blood smear examination under oil

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immersion with Giemsa stain and Rapid diagnostic test. The inclusion and exclusion criteria for the study were as follow:

Inclusion Criteria

- Children in age group of below 14 years.
- Peripheral smear or rapid malaria antigen test (RMAT) positive for Plasmodium vivax and plasmodium falciparum malaria.

Results

Out of 108 children admitted with malaria 73(67.6%) were males and 35(32.4%) were female with male to female ratio 1:2 (Table-). Majority of children in the present study are under 5 years of age. 47.2%, 29.6% and 23.1% of children are infected with malaria in <5yrs, 5-10yrs and 10-14 yrs age groups respectively.

The age of patients ranged from eight months to fourteen years with mean age of 4.5 years. In the present study P. falciparum was the main infecting species in all age groups (Table-). Maximum malaria cases were due to Pf (63%); Pv was documented in 17.6% and mixed infection in 19.4% cases.

Fever was the presenting complaint present in all the cases. Mean duration between appearance of the fever and admission was 6 days. Organomegaly was commonest clinical sign present in 63.9% of patients. Isolated splenomegaly and hepatomegaly was seen in 28.7% and 9.3% of children.

Hepatosplenomegaly was observed in 25.9% of cases. Pallor was second common clinical sign noted in 43.5% of children. Pallor was observed in thirty five cases of plasmodium falciparum malaria. Respiratory symptoms were seen more in Pv group while hemoglobinuria was common in Pf group (Table-).

Other clinical features noted were: impaired consciousness (21.3%), convulsions (18.5%), icterus (10.2%), pain abdomen, cola colored urine (8.3%). Of the 23 children with impaired consciousness, nineteen had multiple convulsions. Eleven children had hypotensive shock requiring ionotropic support. Out of 108 patients six patients died and two patients left against medical advice.

Table-1: Gender distribution of cases.

Plasmodium species	Female	Male	TOTAL (Percentage)
Plasmodium falcifarum	19	49	68 (63%)
Plasmodium vivax	8	11	19 (17.6%)
mixed	9	12	21 (19.4%)
Total	35 (32.4%)	73 (67.6%)	108

Table-2: Age distribution of malarial cases.

Age group	Pf	Pv	Mixed	Total
<5yrs	32 (29.6%)	12 (11.1%)	7 (6.5%)	51 (47.2%)
5-10yrs	23 (21.3%)	5 (4.6%)	4 (3.7%)	32 (29.6%)
>10yrs	13 (12%)	2 (1.9%)	10 (9.3%)	25 (23.1%)

Table-3: Clinical features of admitted malarial patients.

Clinical features	N=108	Pf	Pv	Pv/Pf	%
Fever	108	68	19	21	100%
Pallor	47	40	02	5	43.5%
Splenomegaly	31	22	05	4	28.7%
Hepatomegaly	10	09	0	01	9.26%
Hepato Splenomegaly	28	24	01	3	25.9%
Icterus	11	06	0	05	10.2%
ALOC	23	16	02	05	21.3%
Convulsions	20	11	04	05	18.5%
shock	11	07	0	04	10.2%
Cola urine	09	07	0	02	8.3%
Resp.Symptoms	15	04	09	02	13.9%
Death	06	06	0	0	5.5%

Discussion

Malaria continues to be common cause of morbidity and mortality in children. Globally 60% of clinical malarial cases and 80% of deaths occur in young children [4]. In the present study majority of children are under the age of 5 years (47.2%). Clinical manifestations of malaria may be severe in infants and young children due to lack of partial immunity resulting due repeated malarial infections.

Boys were more affected than females in the present study with only 32.4% of females being affected. Kumari M et al. found similar results in their study with 34.0% girls were affected with malaria [5].

Plasmodium falcifarum is the most frequent implicating species accounting for 64% of cases. P vivax and mixed infections accounted for 17.6% and 19.4% of cases respectively. Study by P verma et al in 179 children observed p falcifarum malaria in 57.8% of cases and p vivax and mixed infection in 13.7% and 27.4% of children respectively [6]. In the present study p falcifarum is common agent in all the age groups. This is in contrast to studies which have found high prevalence of p vivax [7]. In the present study p vivax is found in 17.6% of children. Species infecting the children may vary even in the same country because of different prevailing ecologic conditions resulting in breeding of different vectors. Study of prevalence of malaria in agency areas of Andhra Pradesh showed p falcifarum to be frequent infecting agent in all seasons [8].

Fever was the presenting complaint found in all the admitted cases. Mean duration of onset of fever and admission was 5 days. Similar observation were made by studies done by Taksande et al [9] and Kaushik et al [2].

Pallor in malaria is due to combination of multiple factors. Rapid destruction and removal of RBC by spleen and ineffective erythropoiesis is mainly responsible. Pallor was observed in 40(58.8%) compared to 5(23.8%) of mixed infections. This correlated with finding of studies in Thailand where they found that likelihood of developing pallor was 1.8 times less in mixed malaria as compared to falcifarum malaria [10]. Pallor was noted in 96% of falcifarum malaria cases by Gohiya et al. in their study [11].

Organomegaly was noted in 63.9% of children. Enlargement of spleen alone and along with enlargement of liver was seen in 46/68 (67.6%), 6/19 (31.5%) and 7/21 (21.4%) cases of p falcifarum, p vivax and mixed infections respectively. Enlargement of spleen is due vascular congestion and endothelial proliferation. High spleen palpable rate indicate high endemicity of malaria.

Majority of the patients enrolled in this study are drawn from high transmission areas of malaria. Splenomegaly was recorded in 59% of P. vivax, 68.8% of P. falcifarum and 73.6% mixed P. infected patients in study of 502 malaria patients who are above 12yrs of

age [12]. Hepatomegaly was tender in majority of cases and seen in 35.2% of cases. In 102 children below 12 yrs study splenomegaly was found in 97.16% of cases and hepatomegaly in 51.7% of cases by Saira Merchant et al [13]. Similar observation made by Gohiya P et al in 150 children of falcifarum malaria in children [11].

High colored urine found in 8.3% of patients. These children had history of intake of inadequate doses of quinine prescribed by local practitioners. In our study colocolored urine was observed in falcifarum and mixed infections.

Haemoglobinuria can also occur in patients with normal erythrocyte G6PD levels who receive quinine for severe malaria [14]. Cola coloured urine improved on treatment for malaria.

All the children who exhibited cola colored urination had clinical icterus. Icterus is found in 10.2% of children with falcifarum and mixed infection. Intravascular haemolysis contributing to these clinical observed features. Study done by Chaudhary et al observed icterus in 49% of cases which is quite high compared to our study [15].

Altered level of sensorium was found in 21.3% of children of which 18.5% had convulsions. Febrile seizures noted in vivax malaria below 5yrs. Rapid rise and higher fever trends are seen in vivax malaria due to lower fever threshold despite low parasitemia [16].

Respiratory symptoms (cough, distress) observed in 9/19 (47.3%) of vivax malaria. Sequestration of P vivax infested RBC and greater inflammatory response to parasite leading to capillary alveolar dysfunction noted in vivax malaria [17]. This might perhaps explain respiratory manifestations observed in our study.

Death had occurred in 6 patients. All the patients were Plasmodium falcifarum positive and expired within 72hrs of admission. All the patients who expired had altered sensorium, severe anemia and shock.

Conclusion

P falcifarum malaria is still a major problem affecting the health of children in this area. Severe manifestations are observed with mono falcifarum malaria.

Respiratory manifestations are more commonly observed in vivax malaria whereas mixed infections are presenting with less severe symptoms.

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