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Study of malarial fever in pediatric patients in clinical symptoms

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Abstract
The aim the present study was to find out the spectrum of clinical manifestations, infecting species, age distribution and mortality in admitted patients of malaria in the selected population.
The study has planned in Anugrah narayan magadh medical college and hospital, gaya, From may 2015 to June 2016. The 50 patients detected with malaria were enrolled in to the study. The age group of the patients are below 10 years. The patients visited to Out Patient Department (OPD) and in-patient department (IPD) of Anugrah narayan magadh medical college and hospital, were considered in the study. All the patients are informed consents. The entire patient's clinical history was collected.
The malaria incidence in higher in male as compared to female Fever is the presenting complaints in almost all the cases. anemia is most common hematological abnormality. Early treatment (< 7days) after onset of symptoms was found to have good prognosis. The incidence of falciparum malaria was higher in our study due to our being tertiary care hospital. Splenomegaly is important sign but its absence, does not rule our malaria. Since this was a retrospective study with small sample size, we could not demonstrate any cyclical changing in clinical profile of severe malaria. There is a there is need for prospective study with bigger sample size find out any changing trend over years.

Keywords: severe malaria, falciparum, mixed, vivax

Introduction
Malaria is a febrile illness characterised by fever and related symptoms. However it is very important to remember that malaria is not a simple disease of fever, chills and rigors. In fact, in a malarious area, it can present with such varied and dramatic manifestations that malaria may have to be considered as a differential diagnosis for almost all the clinical problems! Malaria is a great imitator and trickster, particularly in areas where it is endemic.
Malaria is a mosquito-borne infectious disease affecting humans and other animals caused by parasitic protozoans (a group of single-celled microorganisms) belonging to the Plasmodium type [2]. Malaria causes symptoms that typically include fever, tiredness, vomiting, and headaches [1]. In severe cases it can cause yellow skin, seizures, coma, or death [1]. Symptoms usually begin ten to fifteen days after being bitten [2]. If not properly treated, people may have recurrences of the disease months later [2]. In those who have recently survived an infection, reinfection usually causes milder symptoms [1]. This partial resistance disappears over months to years if the person has no continuing exposure to malaria [1].
The disease is most commonly transmitted by an infected female Anopheles mosquito [2]. The mosquito bite introduces the parasites from the mosquito's saliva into a person's blood [2]. The parasites travel to the liver where they mature and reproduce [1]. Five species of Plasmodium can infect and be spread by humans [1]. Most deaths are caused by P. falciparum because P. vivax, P. ovale, and P. malariae generally cause a milder form of malaria [1, 2]. The species P. knowlesi rarely causes disease in humans [2]. Malaria is typically diagnosed by the microscopic examination of blood using blood films, or with antigen-based rapid diagnostic tests [1]. Methods that use the polymerase chain reaction to detect the parasite's DNA have been developed, but are not widely used in areas where malaria is common due to their cost and complexity [3].
The risk of disease can be reduced by preventing mosquito bites through the use of mosquito nets and insect repellents, or with mosquito control measures such as spraying insecticides and draining standing water [1]. Several medications are available to prevent malaria in travellers to areas where the disease is common [2]. Occasional doses of the combination medication sulfadoxine/pyrimethamine are recommended in infants and after the first trimester of pregnancy in areas with high rates of malaria [2]. Despite a need, no effective vaccine exists, although efforts to develop one are ongoing [2]. The recommended treatment for malaria is a combination of antimalarial medications that includes an artemisinin [1, 2]. The second medication may be either mefloquine, lumefantrine, or sulfadoxine/pyrimethamine [4]. Quinine along with doxycycline may be used if anartemisinin is not available [4]. It is recommended that in areas where the disease is common, malaria is confirmed if possible before treatment is started due to concerns of increasing drug resistance [2]. Resistance among the parasites has developed to several antimalarial medications; for example, chloroquine-resistant P. falciparum has spread to most malarial areas, and resistance to artemisinin has become a problem in some parts of Southeast Asia [2].
The signs and symptoms of malaria typically begin 8–25 days following infection; however, symptoms may occur later in those who have taken antimalarial medications as prevention [5]. Initial manifestations of the disease—common to all malaria species—are similar to flu-like symptoms, and can resemble other conditions such as sepsis, gastroenteritis, and viral diseases [5]. The presentation may include headache, fever, shivering, joint pain, vomiting, hemolyticanemia, jaundice, hemoglobin in the urine, retinal damage, and convulsions [6].

The classic symptom of malaria is paroxysm—a cyclical occurrence of sudden coldness followed by shivering and then fever and sweating, occurring every two days (tertian fever) in P. vivax and P. ovale infections, and every three days (quartan fever) for P. malariae. P. falciparum infection can cause recurrent fever every 36–48 hours, or a less pronounced and almost continuous fever.

Severe malaria is usually caused by P. falciparum (often referred to as falciparum malaria). Symptoms of falciparum malaria arise 9–30 days after infection [6]. Individuals with cerebral malaria frequently exhibit neurological symptoms, including abnormal posturing, nystagmus, conjugate gaze palsy (failure of the eyes to turn together in the same direction), opisthotonus, seizures, or coma [6].

The aim the present study was to find out the spectrum of clinical manifestations, infecting species, age distribution and mortality in admitted patients of malaria in the selected population.

Materials & Methodology

The study has planned in Anugrah narayan magadh medical college and hospital, gaya,From may 2015 to June 2016. The 50 patients detected with malaria were enrolled in to the study. The age group of the patients are below 10 years. The patients visited to Out Patient Department (OPD) and in-patient department (IPD) of Anugrah narayan magadh medical college and hospital, were considered in the study. All the patients are informed consents. The entire patient's clinical history was collected.

The inclusion and exclusion criteria for the study were as follow:

Inclusion Criteria

- Children in age group of below 10 years.
- Peripheral smear or rapid malaria antigen test (RMAT) positive for Plasmodium vivax and plasmodium falciparum malaria.

Exclusion Criteria

- Patient presenting with fever (Malarial parasite negative on peripheral smear and/or RMAT negative) but treated empirically like malaria.

Results & Discussion

The data from the 50 patients were collected and discussed as follows.

Table 1: Gender distribution of cases

Plasmodium species	Female	Male	Total
Plasmodium falcifarum	10	16	26
Plasmodium vivax	5	8	13
mixed	5	6	11
Total	20	30	50

Table 2: Age distribution of malarial cases

Age group	Plasmodium falcifarum	Plasmodium vivax	Mixed
<5yrs	8	5	3
5-7yrs	12	4	5
7-10yrs	6	4	3
Total	26	13	11

Table 3: Clinical Symptoms

	Plasmodium falcifarum	Plasmodium vivax	Mixed
Inpaired consciousness	7	3	3
Prostration	2	2	1
Multiple convulsions	3	1	1
Respiratory distress	2	0	0
Circulatory collapse	1	0	0
Clinical jaundice	2	2	1
Spontaneous bleeding	3	2	0
Normocytic anemia	1	1	2
Hemoglobinuria	1	1	1
Renal impairment	2	0	1
Hypoglycemia	1	0	0
Metabolic Acidosis	1	1	1
Total	26	13	11

Results & Discussion

This retrospective study revealed that among 26 children's were positive for P.falciparum; 13 cases positive for P. vivax and 11 cases were positive for 11 cases.

In a study by Yadav *et al*. [7] cerebral malaria, severe anemia and shock were more frequently observed in P.falciparum group, while hepatic, renal, respiratory, and bleeding complications were more commonly seen in P.vivax positive patients. In the present study, there was no statistically significant difference in clinical manifestations among all the three groups except for the prostration which was more frequent in P.vivax group and hemoglobinuria in P.falciparum group.

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*. [8].

The malaria incidence in higher in male as compared to female Fever is the presenting complaints in almost all the cases. anemia is most common hematological abnormality. Early treatment (< 7days) after onset of symptoms was found to have good prognosis. The incidence of falciparum malaria was higher in our study due to our being tertiary care hospital. Splenomegaly is important sign but its absence, does not rule our malaria. Since this was a retrospective study with small sample size, we could not demonstrate any cyclical changing in clinical profile of severe malaria. There is a there is need for prospective study with bigger sample size find out any changing trend over years.

Since this was a retrospective study with small sample size, we could not demonstrate any cyclical changes in clinical profile of severe malaria over a period of four years. There is a need of prospective study with bigger sample size to find out any changing trend over years.

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