Original Research Article

Atypical Presentations of Malaria with Age and Seasonal Variations

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Abstract

Background: Malaria is a seasonal disease in most parts of India, the maximum prevalence is from June to November.In endemic regions, malaria can present with unusual features due to development of immunity, increasing resistance to antimalarial drugs, and the indiscriminate use of antimalarial drugs. **Aim:** To analyze the atypical presentations of malaria with age and seasonal variations. **Material and Methods:** The study comprised of 630 cases of definitively diagnosed malaria over a period of 3 years from June 2006 to April 2008. A detailed clinical history regarding the type of fever and associated complaints was obtained. **Results:**It was observed that apyrexia was commonly present in the age group of 14-19 yrs (8/31patients) 7.2% vs. overall incidence of 4.92%. Patients in the age group of more than 60 years had higher incidence of throat discomfort (84/630) 23.8% vs. overall incidence of 13.3%).Lack of taste was found to be significantly increased in patients who presented between Oct 06-Jan 07. **Conclusion:** Treating physicians especially those in endemic areas, should be aware of the atypical presentations and variations with age and season tosuspect malaria so that the diagnosis and treatment are timely and morbidity and mortality minimized.

Keywords: malaria, atypical presentation, age, season, lack of taste.

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INTRODUCTION

Malaria is one of the most widespread disease in the world occurring roughly between latitudes 60°N and 40°S. It occurs mostly in the tropical areas where the climatic conditions are most favourable.[1] It is a seasonal disease in most parts of India, the maximum prevalence is from June to November.[2]Least number of cases recorded in winter. This may be due to unsuitable environmental conditions for mosquitoes, severe cold tided over the hibernation. Moreover, in winter season people cover themselves with clothes and blankets, which also protect them from mosquito bites.Just after rainfall, climatic conditions are suitable for transmission of mosquito. It is a common disease and its presenting features have been well described. However, typical presentation is seen in only 50%–70% of the cases with the rest having atypical manifestations. In endemic regions, malaria can present with unusual features due to development of immunity, increasing resistance to antimalarial drugs, and the indiscriminate use of antimalarial drugs.[3] As a result of lack of awareness of atypical manifestations, it is not uncommon for malaria to get diagnosed late or even remain unrecognized, resulting in severe illness or death. Hence, this study was undertaken to analyze the atypical presentations of malaria with age and seasonal variations.

MATERIAL AND METHODS

The study comprised of 630 cases of definitively diagnosed malariaover a period of 3 years from June 2006 to April 2008. A detailed clinical history regarding the type of fever and associated complaints was obtained. A thorough clinical examination was done with special

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consideration to organomegaly and end-organ damage was carried out.

Inclusion criteria

1. Patients attending outpatient department as well as inpatient department (both wards and intensive care unit).
2. Both male and female patients between age group 14 years onwards.
3. Patients with positive malarial smears (more than two),also patients with smear negative with positive rapid malarial antigen test.

Exclusion criteria

1. Smear negative patients for malarial parasite and negative rapid malarial antigen with fever with chills and rigors, inspite of clinical suspicion of malaria.
2. Pregnant females.
3. Patients with chronic systemic disorder like liver cirrhosis, immunocompromised individuals and patients on chemotherapy for malignancy.

All the patients were diagnosedwith conventional thick and thin peripheral smear stained with Leishman stain, examined under oil immersion.[4] The slide was considered negative when there were no parasites in 100 HPF. Rapid diagnostic tests were based on detection of specific plasmodium antigen, LDH (optimal test) for Vivax and HRP2 for falciparum.Complete blood count and peripheral blood findings, liver and kidney function tests were also done.

RESULTS

Majority of the patients were between 20-39 years age group (373 patients).It was observed that apyrexia was commonly present in the age group of 14-19 yrs (8/31patients) 7.2% vs. overall incidence of 4.92%. None of the patients above 60 years had Apyrexia (0/31). Patients in the age group of more than 60 years had higher incidence of throat discomfort (84/630) 23.8% vs. overall incidence of 13.3%). Breathing difficulty was commoner in patients above the age group of 60 years (42.9% vs. overall incidence of 24%).

Table 1: Atypical Presentations with age distribution

Age Groups	Apyrexia	Lack of Taste	Throat Discomfort	Cough	Pain in Abdo	Diarrhoea	Vomiting	Rash	Urinary Complaints
14-19yrs (111)	8 (7.2%)	0	17 (15.3%)	30 (27.0%)	33 (29.7%)	11 (9.9%)	58 (52.3%)	34 (30.6%)	31 (27.9%)
p-Value	.754		.944	.744	.594	.725	.775	.936	.553
20-39yrs (373)	16 (4.3%)	7 (1.9%)	46 (12.3%)	84 (22.5%)	97 (25.9%)	49 (13.1%)	190 (50.8%)	121 (32.4%)	122 (32.6%)
p-Value	.607	.061	.037	.740	.143	.353	.057	.538	.000
40-59yrs (124)	7 (5.6%)	1 (0.8%)	16 (12.9%)	32 (25.8%)	35 (28.7%)	12 (9.7%)	68 (54.8%)	43 (34.7%)	39 (31.5%)
p-Value	.189	.019	.583	.571	.566	.942	.752	.179	.660
>60 yrs (22)	0	0	5 (23.8%)	5 (23.8%)	8 (38.1%)	2 (9.5%)	14 (66.7%)	5 (23.8%)	7 (33.3%)
p-Value			.106	.056	.653	.188	.441	.842	.592

Lack of taste was found to be less common in the age group of 40-59 years of age (1/8 patients). This showed moderate statistical significance with p -Value 0.019.Also, patients in the age group of 20-39 years showed maximum incidence of lack of taste (7/8 patients; p value 0.021). In the age group of 20-39 yrs, there was increased incidence of throat discomfort noted (p-Value 0.037).There was higher incidence of cough in patients of more than 60 yrs of age (p-Value0.056).

There was increased incidence of vomiting in patients who presented between Oct07 - Jan 08 (p-Value 0.013) with no correlation to type of malarial parasite. Abdominal pain was found to be significantly increased during the period of June – Sept 06 (p-Value 0.018), however there was no correlation with malarial parasite. Urinary complaints more commonly found in the period of Oct'07- Jan'08 (p-Value = 0.029) which were more with patients suffering from P. falciparum infection or mixed infections (p-Value0.015). Rash was found to be moderately increased incidence during the period of Oct07- Jan 08 (P-Value 0.054), however no correlation with malarial parasite.

Table 2: Atypical Presentations with seasonal variation

Season	Apyrexia	Lack of Taste	Throat Discomfort	Cough	Pain in Abdomen	Diarrhoea	Vomiting	Rash	Urinary Complaints
Jun To Sept06(80)	2 (2.5%)	1 (1.3%)	12 (15%)	33 (41.3%)	9 (11.3%)	80 (100%)	19 (23.8%)	25 (31.3%)	37 (46.3%)
p-Value	0.505	0.714	0.124	0.333	0.018		0.347	0.824	0.566
Oct To Jan-07(100)	5 (5%)	1 (1%)	5 (5%)	19 (19%)	16 (16%)	8 (8%)	77 (77%)	19 (19%)	14 (14%)
p-Value	0.52	0.017	0.078	0.440	0.767	0.199	0.288	0.915	0.871
Feb To May07(36)	00	1 (2.8%)	2 (5.6%)	6 (16.7%)	7 (19.4%)	1 (2.8%)	31 (86.1%)	7 (19.4%)	6 (16.7%)
p-Value		0.693	0.169	0.076	0.253	0.693	0.665	0.649	0.363
Jun To Sept07(314)	18 (5.7%)	2 (6%)	28 (8.9%)	80 (25.5%)	121 (38.8%)	38 (12.1%)	129 (41.1%)	130 (41.4%)	126 (40.1%)
p-Value	0.238	0.175	0.230	0.362	0.634	0.435	0.707	0.600	0.027
Oct To Jan-08(76)	3 (3.9%)	2 (2.6%)	26 (34.2%)	13 (17.1%)	20 (26.3%)	22 (28.9%)	60 (78.9%)	22 (28.9%)	15 (19.7%)
p-Value	0.782	0.300	0.615	0.451	0.486	0.474	0.013	0.780	0.587
Feb To Apr08(24)	3 (12.5%)	1 (4.2%)	11 (45.8%)	00	00	5 (20.8%)	14 (58.3%)	00	1 (4.2%)
p-Value	0.505	0.482	0.718			0.510	0.779	0	0.540

DISCUSSION

The highest numbers of patients were between 20-39 years age group (373 patients). This can be explained by the fact that people in this age group are more likely to be outdoors and mobile. Also, the state of immunological balance against malaria is achieved, late in adulthood.Gopinathan VP *et al* found 126 patients (70%) in the same age group in his study group of 180 patients.[5] Maximum number of cases were observed in Monsoon months from June to September (394/630 patients; 62.53%) and post Monsoon period from October to January i.e. (176/630 patients; 27.93%). Rainy season increases transmission of malaria by providing stagnant water which serves as breeding places for mosquitoes. Increased resumption of construction activity in this area immediately after the monsoons are over, provide artificial reservoirs of water for the breeding of the mosquitoes. We believe this could explain the high number of cases seen during the immediate post-monsoon period. Least number of cases was observed during summer i.e. between February to May.[2] Lack of taste was found to be significantly increased in patients who presented between Oct06-Jan 07; however lack of taste did not show any preference for any type of malarial infestation.There was increased incidence of vomiting in patients who presented between Oct07 - Jan 08 (p-Value 0.013) with no correlation to type of malarial parasite. Abdominal pain was found to be significantly increased during the period of June 06 – Sept 06 (p-Value 0.018), however no correlation with malarial parasite. Urinary complaints more commonly found in the period of Oct 07- Jan 08 (p-Value0.029) and during the same period with P.Falciparum malarial infestation.(p-Value0.015). The atypical clinical presentation of patients in this study was many, though none showed statistical significance. In this study, it was observed that few patients who were malaria smear positive also had complaints of lack of taste. We noted a total of 8 patients (1.3%) of which majority had P. vivax infection (6/8 patients). Lack of taste was found to be significantly increased in patients who presented between Oct06-Jan 07; however lack of taste did not show any preference for the type malarial infestation. Review of literature and journals did not reveal any study which had noted lack of taste as a significant presenting complaint. 84 patients (13.33%) presented with throat discomfort. In the age group of 20-39 yrs throat discomfort in patients with P. falciparum was significantly higher as against the patient who had only P. vivax (p-Value -0.010). 151 (24%) patients had complaints of cough at presentation. The cough was usually non-productive and often present for days before presentation. A significant finding was the higher incidence of cough in patients of P. falciparum infestation who were more than 60 yrs of age (p-Value 0.005). We wanted to ascertain whether the cough could be due to the seasonal (winter) throat infections we see. Analysis of the seasonal variation of cough in these patients, showed majority of these patients presented in monsoon months rather than in winter (28.68%). Significant number of patients present with abdominal pain (173patients; 27.46%)) out of which maximum cases observed with P. falciparum malaria (87 patients (26.03%).All patients with abdominal pain had associated diarrhoea and vomiting. The nature of pain was dull aching, diffuse all over the abdomen. The pain subsided with recovery from primary disease. More than 50% patients presented with

vomiting at time of presentation (52.4% p-Value 0.146). All age groups had similar incidence of vomiting at the time of presentation. The type of infestation did not reveal any statistically significant difference, though more patients with P. vivax presented with vomiting. Surprisingly, fewer patients presented with vomiting in the monsoon months (37.56%). Kortepter *et al*in his study, reported an incidence of vomiting to an extent of 31%.[6] Malaria is a multisystem disorder which can mimic many diseases. Physicians, especially those in endemic areas, should be aware of the atypical presentations and variations with age and season tosuspect malaria so that the diagnosis and treatment are timely and morbidity and mortality minimized.

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