

Splenomegaly in malaria patients in a tertiary care institute: A study from central India

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Abstract

Introduction: The spleen is always affected in person suffered from malaria. The palpable spleen is one of the main clinical symptoms. History of fever, anemia and splenomegaly are predicting symptoms for clinical diagnosis of malaria infection in endemic area. **Material and Methods:** The study was conducted in the department of Medicine, Chirayu medical college and hospital Bhopal. All patients of age equal or greater than 15 years presenting with the fever and had positive peripheral smear for malaria parasite were included in my study. **Results:** 81% (n=21) patients of asexual stage had enlarged spleen where as 19% (n=5) patients of sexual stage had enlarge spleen. There is significant association of splenomegaly with asexual stage. All cases have splenomegaly in mixed species, 41.60% (n=20) splenomegaly seen in *P. falciparum* species and only 20% splenomegaly seen in *P. vivax* species. **Conclusion:** Though clinical examination is one of the good method to detect splenomegaly USG examination is superior as its sensitivity and specificity is higher than clinical examination. Hence it is recommended that splenomegaly be detected by USG examination in cases of malaria.

Keywords: Splenomegaly, Malaria, *P. Falciparum*, *P. vivax*

Introduction

Spleen has an important role in defense mechanism against malarial infection. As the body's largest lymphoid organ, the spleen has a variety of immunologic functions including as a sieve for the blood removing blood cells, microorganisms, and immune complexes.

The spleen was always affected in person suffered from malaria. The palpable spleen is one of the main clinical symptoms. History of fever, anemia and splenomegaly are predicting symptoms for clinical diagnosis of malaria infection in endemic area [1].

The spleen enlargement in an individual occurs if he experiences parasitemia for a period exceeding two weeks. There after the degree of spleen enlargement depends upon the duration of exposure and severity of parasitemia [2]. As the endemicity increases, the average enlargement of the spleen is considered to be greater. Some renowned malariologists have even

considered spleen examination superior to the blood examination. Splenomegaly thus becomes extremely important in reaching a diagnosis in all cases of questionable malaria, especially the ones presenting atypically [3].

The objective of this study was to find out the relationship between Splenomegaly and malaria patients attending OPD of medicine department of Chirayu Medical College and Hospital, Bhopal, M.P.

Material and Methods

It was a cross sectional study, patients were selected from Medicine OPD and indoor wards of Department of Medicine, Chirayu Medical College and Hospital Bhopal. All patients of age equal or greater than 15 years presenting with the fever and had positive peripheral smear for malaria parasite were included in my study.

All the patients who had fever and splenomegaly due to other tropical disease were excluded from the study.

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Procedure: Each case was subjected to detailed interrogation and through clinical, including personal history. Thick and thin film were prepared and stained by JSB staining. Ultra-sonography was done by Shimadzu (SOU-500) and L & T selectra machine with

3.5 MHz sector curved array probe. Subcostal, intracostal and sagittal scan of the spleen were done with patients lying on his or her right side or supine position.

Results

Table No.-1: Age wise distribution of splenomegaly.

Age Group	USG Examination			Total
	Normal	Enlarged	%	
15-20	23	18	69.24	41
31-40	8	7	26.92	15
41-50	7	0	0	7
61-60	4	0	0	4
61-70	2	1	3.84	3
Total	44	26	100	70

χ^2 test = 7.10, p = 0.008

This table shows maximum no. of enlarged spleen found in group 15-30 years 69.24% (n=41). No enlarged spleen is found in 41-60 years age group of patients. There is a significant decreasing trend of splenomegaly in older age group.

Table No.-2: Malaria parasite: stage wise distribution of splenomegaly.

Species	Spleen Enlarge		Total
	Asexual Stage	Sexual Stage	
Mixed	1	1	43
PV	17	3	27
PV	3	1	70
Total	21	5	26
%	81	19	100

χ^2 test = 4.19, p = 0.00001

This table shows 81% (n=21) patients of asexual stage had enlarged spleen where as 19% (n=5) patients of sexual stage had enlarge spleen. There is significant association of splenomegaly with asexual stage.

Table No.-3: Malaria parasite species age wise distribution of splenomegaly.

MP Species	USG Examination			Total
	Normal	Enlarged	%	
Mixed	0	2	100	2
PF	28	20	41.66	48
PV	16	4	20	20

This table shows that all cases of mixed species has splenomegaly, 41.60% (n=20) splenomegaly seen in P. falciparum species and only 20% splenomegaly seen in P. vivax species.

Discussion

In the present study, the maximum number of patients having splenomegaly is 69.24% in the 15-30 years age group. A significantly decreasing trend of splenomegaly in older age group was found.

Size of splenic enlargement in children after the age of 8 to 10 years is affected by development of immunity which reduces parasite density in the peripheral blood and in holoendemic area adult do not show splenic enlargement.³ Sanjib Mohanty et al also found in their study that splenomegaly occurred more frequently in children 76% v/s 61% in adult. So, this study supports our study [4].

In the present study splenomegaly was found mostly (81% patients) in asexual stage (acute infection) of malaria parasite, while only 19% patients with splenomegaly had sexual stage. So there is a significant co-relation of splenomegaly with asexual stage. This may be due to the fact that most of our patients had *P falciparum* infection. In *P falciparum* infection heavy parasitemia is more common, so increased clearance of parasitized and non-parasitized erythrocytes occurs in the presence of splenomegaly [5].

White MS et al in 1986 have reported splenomegaly in 53% cases of acute attack of uncomplicated malaria [6].

In present study 100% patients of mixed species infection had splenomegaly. In *P falciparum* infection 41.66% patients and in *P vivax* infection 20% patients had splenomegaly. So splenomegaly is probably more common in mixed infection than isolated infection.

D. R. Ohalohan also found splenomegaly in 33% patients in mixed infection, 16% in *P falciparum* infection and 9% in *P vivax* infection in their study [7]. Strickland GT et al found in their study that larger the spleen more likely a *P falciparum* infection, whereas *P vivax* was more commonly associated with minimal spleen enlargement [8]. Hazra BR et al found splenomegaly in 40% cases with *P falciparum* infection and only in 18, 18% cases of *P vivax* infection [9].

Generally, spleen enlarges more in *P falciparum* infection due to phagocytosis of parasitized RBC and their accumulation in spleen for clearance. We observed splenomegaly in 41% of *P falciparum* and 20% of *P vivax* patients. An almost similar enlargement of around 39-45% was observed *P falciparum* patients of Saudi Arabia [10,11]. However, much higher rate of

splenomegaly (71%) was recorded in *falciparum* malaria from the other parts of India [12]. This change might be due to differences in the immune status of patients from different malaria transmission regions.

Conclusion

There are various parameters in the clinical examination; of which splenomegaly is one of them and this is directly related with severity of malaria. Though clinical examination is one of the good method to detect splenomegaly USG examination is superior as its sensitivity and specificity is higher than clinical examination. Hence it is recommended that splenomegaly be detected by USG examination in cases of malaria. To prevent further complications in malaria, it is suggested that both *P falciparum* and *P vivax* infections must be treated with the most effective antimalarials, preferably combined therapy aiming at different biochemical targets.

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