

SPLENOMEGALY IN MALARIA: A CLINICAL AND ULTRASONOGRAPHIC STUDYGopal Kanwar¹, Shashi Paikra², Kamaljit Basan³**HOW TO CITE THIS ARTICLE:**

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ABSTRACT: Malaria is a protozoan disease, transmitted by the bite of the infected Anopheles mosquito. There are four species of plasmodia causing the disease, but the two causing the morbidity and mortality are the plasmodium falciparum and the vivax. The disease invariably causes splenomegaly, which can be evaluated and assessed for the better prognosis of the patient. The study shows the evaluation of splenomegaly, both clinically and USG examination. **AIMS AND OBJECTIVES:** The main aim of this study is to show the prevalence of splenomegaly in malaria and compare with USG examination. **MATERIAL AND METHODS:** The patients included in the study were suffering from malaria (smear positive) belonging to the age group of 15 to 70 years, at Chhattisgarh Institute of Medical Sciences, Bilaspur (CG). The time span of the study was 1 year. Measurement of splenic enlargement was done, both clinical and with ultrasound. The observations were tabulated and assessed. The patients excluded were those having fever and splenomegaly resulting from tropical disease. **RESULTS:** The USG examination to detect splenomegaly in cases of malaria, is more sensitive and specific as compared to the clinical examination. **CONCLUSION:** It is recommended that splenomegaly in malaria should be detected by USG examination as compared to clinical examination. **KEYWORDS:** Splenomegaly, Ultrasound, Anopheles.

INTRODUCTION: Malaria is a protozoan disease transmitted by the bite of the infected Anopheles mosquito. It is the most important parasitic disease of humans, with transmission in 103 countries affecting > 1 billion people and causing 1-3 million deaths each year. Malaria remains today, as it has been for centuries, a heavy burden on tropical communities, a threat to non-endemic countries and a danger to travelers.¹ four species of genus plasmodium causes malarial infection in humans. These are plasmodium falciparum, plasmodium vivax, plasmodium ovale and plasmodium malaria. Plasmodium vivax is most widely distributed and responsible for maximum cases, causes relatively mild illness without any major complication. Plasmodium falciparum is responsible for most of the complication of malaria including cerebral malaria.

Almost all death in malaria are because of plasmodium falciparum. Plasmodium ovale is mainly confined to Africa. Plasmodium malaria caused least but most persistent infection. Malaria is a major threat to the population. The hilly and forested tribal belt of Chhattisgarh are endemic for malaria. In clinical studies, if fever associated with spleen enlargement and anemia, which are usually encountered in a chronic case, a clinical diagnosis of malaria is almost certain and laboratory confirmation is a mere formality.² Splenic enlargement is one of the three main characteristic of malaria (Fever, anemia, splenomegaly).³ Splenomegaly is stated to occur in 85 to 100% of all malaria cases. As the endemicity increases, the average enlargement of the spleen is considered to be greater.³ some renowned malariologists have even considered spleen examination superior to the blood examination.³ Splenomegaly thus becomes extremely important in reaching a diagnosis in all cases of questionable malaria, especially the ones presenting atypically.

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This is especially so in the peripheral and remote areas where the laboratory facilities may not exist at all or may not be reliable.⁴ Therefore splenomegaly becomes the most effective tool for the diagnosis. It has been seen that the spleen enlargement in an individual occurs when patient experiences parasitemia for a period exceeding more than two weeks. Thereafter the degree of spleen enlargement depends on the treatment. The spleen continues to grow in size, in cases who do not receive any treatment, or given incomplete chemotherapy for malaria during the fever episodes⁵. There might be cases of splenic enlargement in some of the tropical areas where there is existence of a tropical disease and hence a proper history of intermittent fever should be taken.

AIMS AND OBJECTIVES:

1. To show the prevalence of splenomegaly in malaria by clinical examination.
2. To compare the prevalence of splenomegaly by clinical and USG examination.

MATERIAL AND METHODS: Selection of patients in this study was done from Medicine OPD and wards of Department of Medicine, CIMS, Bilaspur, and Chhattisgarh.

Inclusion Criteria: All patients of age equal and greater the 15 years presenting with the fever and having positive peripheral smear for malaria parasite.

Exclusion Criteria: All the patients who had fever and splenomegaly due to other tropical disease.

Measurement of Spleen Enlargement: This method of measuring malaria endemicity was first used by Dumpster in 1848 in India. Later on, an arbitrary classification of spleen enlargement was suggested by Hackett's.⁶ and has been internationally accepted. The degree of splenic enlargement is used to classify malaria endemicity of and area.

Palpation can be accomplished by bimanual palpation, this method is a reliable technique.⁷ Percussion for splenic dullness was done by the Nixon and Castell's techniques.⁷ The Physical examination techniques of palpation and percussion are imprecise at best. The presence of an enlarged spleen can be more precisely determined, by liver spleen radionuclide scan, CT, MRI or USG. The latter technique is the current procedure of choice for routine assessment of spleen size (Normal=max. cephalo caudal diameter of 13 cm), due to the fact that it has high sensitivity and specificity, safe, noninvasive, quick, mobile and less costly.⁷ The patients who were positive for malaria were subjected to clinical and USG examination.

RESULTS:

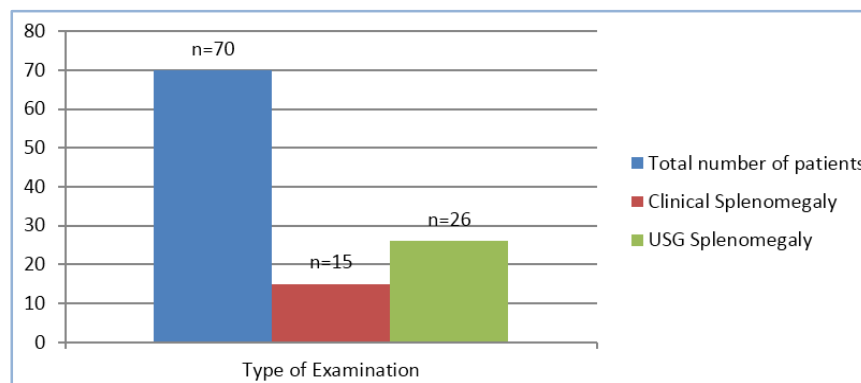


Fig. 1

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The results show that out of total 70 patients studied, all the patients definitely had malaria. Clinical examination revealed splenomegaly only in 15 patients, whereas 26 patients had splenomegaly in USG examination.

Sl. No.	Sex	No. of Patients	%
1	Male	43	61
2	Female	27	39

Table 1: Sex Wise Distribution of Patients: (n=70)

61% (n=43) are males and 39% (n=27) females.

Age group	Total. of patients	%
15-20	16	22.85
21-30	25	35.71
31-40	15	21.42
41-50	7	10.00
51-60	4	5.71
61-70	3	4.28
Total	43	100

Table 2: Age Wise Distribution of Patients: (n=70)

The range of patient's age from 15-70 years. The maximum no. of patients is in between 21-30 years group 35% (n=25), the minimum no. of patients in age group of 61-70 years 4% (n=3).

Malaria parasite species	No. of patients	%
PF	48	68.57
PV	20	28.57
Mixed	2	2.85
Total	70	

Table 3: Species Wise Distribution of Patients

The total no. of patients with plasmodium falciparum species infection is 68.57% (n=48), plasmodium vivax species infection is 28.57% (n=20), and total no of mixed infection is 2.857% (n=2).

Clinical Examination		USG Examination	
		Normal	Enlarged
Not Palpable	55	44	11
Palpable	15	0	15
Total	70	44	26

Table 4: Spleen Examination: Clinical Method V/S Usg

Clinical examination spleen, which is palpable in 21.42% (n=15) patients while on USG examination, the spleen is enlarged in 37.14% (n=26) patients.

Age Group	USG Examination			Total
	Normal	Enlarged	%	
15-30	23	18	69.24	41
31-40	8	7	26.92	15
41-50	7	0	0	7
51-60	4	0	0	4
61-70	2	1	3.84	3
Total	44	26	100	70

Table 5: Age Wise Distribution of Splenomegaly

χ^2 test= 7.10 p =<0.008 Enlarged spleen was predominantly found in 15 - 30 years age group of patients. There is a significant decreasing trends of splenomegaly in older age group.

DISCUSSION: This present study of 70 patients aged between 15-70 years, was conducted in the Department of Medicine CIMS, Bilaspur (CG). A higher male predominance was seen, (n=43) and maximum number of cases were in age group of 21-30 years (n=25). The possibility of this fact may be due to the outdoor work in cases of younger males. The Plasmodium Falciparum infection was more predominant (n=48) as the area is more endemic. Clinical examination of spleen revealed palpable spleen in 21.42% (n=15) patients, while on USG examination, spleen was enlarged in 37.14% patients (n=26).

All the cases of palpable spleen, were also detected by USG examination. Therefore the sensitivity of USG examination is better than clinical examination, which is consistent with the other study (i.e. 100%).⁸ Enlarged spleen was predominantly found in 15-30 years age group of patients.

There is a significant decreasing trends of splenomegaly in older age group. There is a significant co-relation of splenomegaly with asexual stage. This may be due to the fact that most of the patients had Plasmodium falciparum infection, where more parasitemia occurs,^{9,10} Plasmodium falciparum infection had larger spleen as compared to other species.¹¹ Fever with chills was the most common presentation in all cases and altered sensorium/unconsciousness (n=27) was observed in cases suffering with plasmodium falciparum infection.

CONCLUSION: Splenomegaly is one of the findings in cases of malaria. This is directly related with severity of malaria. There are various methods to detect splenomegaly. Though clinical examination in one of the good methods 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.

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