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To study the clinical profile of severe plasmodium vivax malaria experience from tertiary care Centre in Agra

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Abstract
Severe malaria caused by P. vivax infection. Monoinfection by P. vivax can cause severe malaria as seen in P. falciparum.
Aims and Objectives: *To study clinical profile of plasmodium vivax patients admitted in tertiary care center inn Agra and there outcome.*
Method and Material: *This prospective observational study was carried out at F. H. Medical college and Hospital Ethmadpur Agra, included P.vivax positive cases confirmed by both thick and thin blood filmed stained with leishman's stain for malarial parasite and M.P. Elisa. Detailed history, clinical examination, liver, renal and hematological parameter was done in all patients.*
Results: *We studied total 180 patients with plasmodium vivax infection out of which 86 males and 94 females. Most patients with age group 21-30 years (63.3%). Severe malaria was present in 56 cases.*
Thrombocytopenia (52%) was most common complication followed by hepatic (25%), renal(18.5), cerebral(2.7) involvement.
Conclusions: *Severe Plasmodium vivax malaria now very common with increasing renal, liver dysfunction and with altered hematological profile.*
Keyword: *Plasmodium vivax; liver dysfunction; renal dysfunction; hematological profile.*

Introduction

P. vivax malaria with multiple relapse was considered as benign course but now there is changing trend from past few years in clinical manifestations as Plasmodium vivax can cause severe and complicated disease.[1,2]

There are many report of Plasmodium vivax malaria. Milind Y Nadkar et al[3] was done in Mumbai from June 2010-Jan 2011 and Kocher et al[4] in Bikaner in 2009.

Material and Methods

A prospective study was planned from June 2017 to Jan 2018 in F. H. Medical College Ethmadpur, Agra. A total of 180 patients were included who were older than 14 years of age and of either sex and P. vivax positive by thick and thin smear and by Elisa. OPTIMAL malarial antigen test was applied to rule out mixed malarial infection. Detailed history and clinical examination was done at the time of admission routine

hematological and biochemical investigation was carried out.

Results

Out of total 180 patients 84 were positive for peripheral smear and 47 has positive antigen test and 49 has both test positive. Maximum cases were ages between 15-30 years followed by 31-45 years with female predominance. Severe disease present in 56 cases (severe malaria was classified as per WHO 2010 definition.[5])

Thrombocytopenia was observed in 52% cases of vivax all patients platelet counts normalized after treatment. Mucosal rash and petechial rash was observed in 5.55% cases.

TLC was low (<4000/cmm) in 35 cases of vivax which was increased to normal after treatment.

Severe anemia (Hb<6%) was present in total 17 patients out of which 12 patients was females.

Renal failure (S.creatinine>3mg/dl) was present in 12 patients out of which 3 patients need hemodialysis.

Cerebral malaria (coma/multiple convulsions) seen in 5 patients.

Hypotension (SBP <80mmhg) was present in 2 patients. Metabolic acidosis academia (pH <7.25 or plasma bicarbonate <15 mmol/litre) was present in 17 patients.

High bilirubin (>3mg/dl) was present in 45 patients out of which 33 were females and 12 males. The bilirubin level >10mg/dl was present in 6 patient out which 2 were male and 4 female.

Clinical features	Present Study	Song et al[33]	Echeverri et al[32]	Sarkar et al[21]
Fever	100%	100%	99%	
Headache	38.5%	29.5%	99%	
Jaundice	36%		15%	66%
Nausea/ Vomiting	37.5%	34%	39%	
Pain in abdomen	14.5%	34%	34%	
Convulsions				14%
Altered sensorium				56%
Oligouria (<400ml)	18.5%			30%
Petechial/ bleeding	4.5%			2%

Signs	Present Study	Echeweri et al[32] (%)	Sarkar et al[21](%)	Kocher et al[26] (%)
Pallor	39.5%	46		32.5
Icterus	25.5	15	66	57.5
Systolic BP (<90mmHg)				
Hepatomegaly		17	64	57.5
Splenomegaly		10	84	
CNS manifestations				12.5

Discussion

Plasmodium vivax malaria always described as benign disease but in past few years many cases of severe vivax malaria detected. The exact cause of increasing trend in severe vivax malaria is not certain.

The mechanism of severe vivax malaria not fully understood, inflammatory response as well as sequestration of parasitized red cells in microcirculation was thought possible mechanism. Price et al[6] reported that with similar parasitemia load in vivax compared to falciparum malaria TNF-alpha plasma concentration are higher in vivax malaria. Immunological and inflammatory responses play a significant role in pathophysiology of severe vivax malaria.

Andrade et al[7] studied in Brazil that the patients with severe malaria was younger, and lived in the endemic area for shorter time and has less previous episodes of malaria.

Table-1 Patient distribution according to age and sex

AGE	Male	Female	Total
15-30	50	64	114 (63.3%)
31-45	21	15	36 (20%)
46-60	10	11	21 (11.6%)
>60	5	4	9 (5%)
Total	86	94	180

In the present study, the female to male ratio was 1.09:1.In study done by Milind Nadkar et al[8] (2011) male to female ratio was 2.56:1.

In the present study, the maximum 63.3% cases were seen in the age group of less than 30 yrs. followed by 20% in 31-45 years. The mean age of presentation was found to be 35.2 years which

correlate with study by Milind Y Nadkar[3]. The study conducted by Kocher et al[4] was 29.65 years.

In the present study, fever was the presenting symptom in all the patients. This finding correlates with the results obtained from studies conducted by Song et al[9] (2003) and Echeverri etal[10] (2003).

Nausea /Vomiting were observed in 37.5%.This correlates with the similar findings of Echeverri et al (2003) and Song et al.

Jaundice was seen in 36%. Jaundice in malaria is multifactorial hepatic dysfunction due to microvascular sequestration of parasitized red cells causes significant rise in serum bilirubin. The finding was reported among 15% of the patients by Echeverri et al at Columbia but Sarkaret al[11] reported jaundice in 66% of cases. Such a high percent of jaundice in Sarkar et al study might be due to inclusion of only severe malaria patients in their study, whereas present study included all the mild, moderate and severe vivax malaria cases.

Neurological involvement in the form of seizures and altered sensorium were observed among 9.5% of the patients which is in contrast to the results of Kocher et al and Sarkar et al with a finding of 12.5% and 70% respectively. The higher incidence of cerebral malaria in their study was due to the fact that only patients who fulfilled the WHO criteria of severe malaria were included, whereas the present study included all P. vivax malarial cases.

Acute renal failure present in 12 patients due to vivax malaria, acute renal failure has reported earlier in studies.[12,13] Acute tubular necrosis due to renal ischemia is the predominant mechanism.[14]

Oliguria was seen in 18.5% of the patients. This is in contrast to the study by Sarkar et al, in which the incidence was 30% as they had included only severe P.vivax malaria cases.

Bleeding was present in 4.5% patient in current study which required blood transfusion during the course of hospitalization. Study by Sarkar et al reported bleeding in 2% of the patients.

Pallor was present in 39.5% in cases. Severe anemia occurs in vivax malaria due to recurrent bouts of hemolysis of predominantly uninfected erythrocytes with increased fragility Icterus was present in 25.5% in cases. Sarkar et al and Kocher et al reported icterus in 66% and 57.5% of the patients respectively; higher incidence is because they include only patients who fulfilled the WHO criteria of severe malaria, whereas present study included all P.vivax cases.

Hepatomegaly present in 20% of cases and splenomegaly were noted in 34.5% of cases. It was seen in 17% and 10% of the cases respectively in the study done by Echeverri et al at Columbia.

Conclusion

Severe malaria due to plasmodium vivax now very common renal, cerebral, hepatic, involvement occurs with increasing frequency anemia and thrombocytopenia is very common in vivax malaria so vivax malaria no longer is benign condition.

References

1. Barbara S, Focus on Plasmodium vivax. *Trends Parasitology* 2002;18:287–289.
2. Piscot S, Is Plasmodium vivax still a paradigm for uncomplicatedmalaria? *Med Mal Infect* 2006;36:406–413.
3. Milind Y Nadkar, Abhinay M Huchche, Raminder Singh. Clinical Profile of Severe Plasmodium vivax Malaria in a Tertiary Care Centre in Mumbai from June 2010-January 2011. JAPI • october 2012 • VOL. 60
4. Kochar DK, Saxena V, Singh N, Kochar SK, Kumar SV, Das A, Plasmodium vivax malaria. *Emerg Infect Dis* 2005;11:132–134.
5. WHO (2010), p. 35.
6. Price RN, Tjitra E, Guerra CA. Vivax malaria: neglected and not benign. *Am J Trop Med Hyg*2007;77(6suppl):79-87.

7. Andrade B, Reis-Filho A, Souza-Neto SM. Severe plasmodium vivax malaria exhibits marked inflammatory imbalance. *Malaria Journal* 2010;9:13 doi:10.1186//1475-2875-9-13.
8. Milind Y Nadkar, Abhinay M Huchche, Raminder Singh. Clinical Profile of Severe Plasmodium vivax Malaria in a Tertiary Care Centre in Mumbai from June 2010-January 2011. JAPI • october 2012 • VOL. 60
9. Song,chancahal Gera, JasbirDhanoa. Vivax induced ARDS: Report of two cases. J Assoc Physicians India 2010; 58:44-5.
10. Echeverri M, Alveraz G, Cormona J. Clinical and Laboratory FiindingOf Plasmodium vivax Malaria in Colombia. RerInst Med Trop Sao Poulo 2003;45:29-34
11. Sarkar D, Ray S, Saha M, Chakraborty A, Talukdar A. Clinico-laboratory profile of severe Plasmodium vivax malaria in a tertiary care centre in Kolkata. Trop Parasitol 2013;3:53-7
12. Prakash J, Singh AK, Kumar NS, Saxena RK. Acute renal failure in Plasmodium vivax malaria.*J Assoc Physicians India* 2003;51:265-7.
13. Syed Munib, Syed Shernaz Jamal. Outcome of haemodialysis inacute renal failure due to malaria: A single centre study. *JPMI*2006;20:135-8.
14. Lipin Prasad, Sujathan, Ajith K. Isolated plasmodium vivax malaria associated thrombocytopenia (case report). *Clin Biochem* 2001;34:341-4.